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Participatory action research in a time of COVID and beyond

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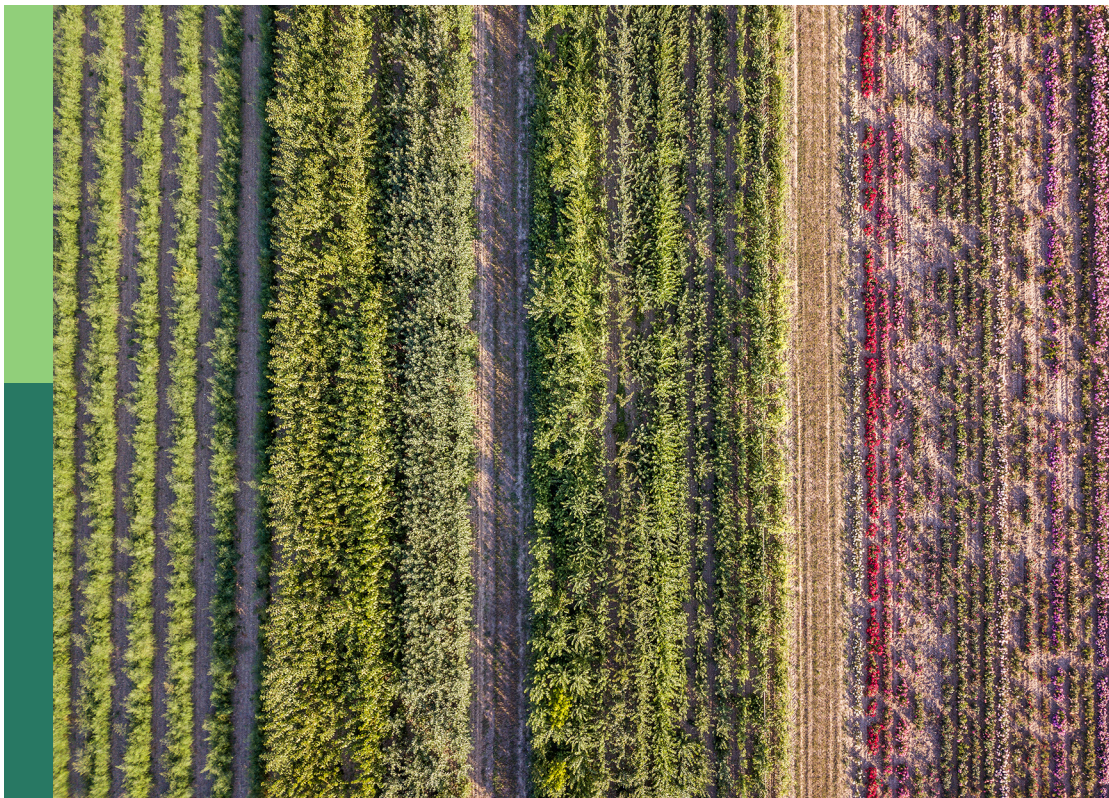

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Participatory action research in a time of COVID and beyond

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Editorial: Participatory action research in a time of COVID and beyond

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Editorial on the Research Topic
Participatory action research in a time of COVID and beyond

Participatory action research in a time of COVID and beyond

The outbreak of COVID-19 in early 2020 was a challenge for any practitioner intent on engaging in authentic dialogue for people-centered, place-based transformative praxis with the most marginalized in society–be they in Europe or the Majority World. The pandemic called on us to explore new and creative methodological approaches, to find new ways to manage the everyday challenges of project management and facilitation, and to stimulate critical thinking about the ethics and principles of undertaking PAR when travel is curtailed. It also raised important questions about the value of our work, in a context that was possibly altering the precepts of PAR itself, if not the need and reasons for it.

This Research Topic explores how researchers identifying their work as "participatory" adapted to the pandemic. It analyses how remote and virtual ways of conducting fieldwork affect the power imbalances in the researcher-participant relationship, and to what extent the pandemic might foster new opportunities to build capacity to conduct research. It further asks how knowledge co-production, co-facilitation, and co-analysis can be supported remotely, and which tools might be helpful. These questions are highly relevant to all scholar-activists and researcher-practitioners, whether using participatory or non-participatory approaches, and who will need to adapt in an increasingly uncertain future.

The 10 articles vary in scale and ambition - from a multi-actor project for city food systems in Belgium (Medina-García et al.) and across multiple cities (Manderscheid et al.) to a feminist food collective in Cape Town (Paganini et al.), farm-scale agroecological learning in Puerto Rico (Félix and Sanfiorenzo), adaptation practices among local livestock-keepers in East Africa (Habermann et al.), and ecosystem-based assessments by farmers in

Tajikistan (Spies et al.). Others focused on reconfiguring power through PAR (McKinnon et al.), navigating qualitative research (Gailloux, et al.), and the displacement of the scholar in the neoliberal university (Auerbach, Muñoz, Affiah et al.; Auerbach, Muñoz, Walsh et al.).

Methodological approaches and tools–Transitioning online

Much PAR that was already underway, be it in home countries or internationally, was faced with stark choices about whether and how to continue their work. For most researchers the initial focus was on technical access based on available internet and suitable bandwidth or mobile coverage. Project teams under pressure to remain on track sought to make quick decisions, often without time for consultation. Adapted strategies ranged from online platforms for formal communication by teams managing workshops and meetings, to more informal use of social media to keep people connected and "activated" through synchronous and asynchronous co-learning. Funder flexibility–which varied significantly–played an important role in enabling extensions or making funding available for digital software. For smaller, more localized projects, facilitators were able to be more agile, patching together solutions with mobile phones (Félix and Sanfiorenzo). Overall, teams of co-researchers were able to use online learning platforms and collaboration tools for collective reflection (Medina-García et al.).

Often the *most* marginalized have limited or no access to smartphones or requisite data, and indeed many in rural areas lack coverage. The heterogeneous impacts of COVID, depending on positionality, posed a significant challenge. At community-level, introducing new online platforms was found to be less successful (Auerbach, Muñoz, Affiah et al.; Manderscheid et al.), with higher levels of disengagement noted over time. However, informal modes of communication through common tools, such as WhatsApp, provided an important connector for sharing voice messages and images of activities, including connecting people and experiences through photovoice (McKinnon et al.). In Puerto Rico, virtual farm visits were hosted by participants as a novel way of sharing their learning and progress (Félix and Sanfiorenzo). In Cape Town co-researchers held a virtual writing retreat and used a platform to compile and co-analyse their data with the community-based co-research team (Paganini et al.). In Leuven, online collective brainstorming and discussions were conducted (Medina-García et al.), while in Tajikistan, small workshops were facilitated by Tajik scientists after receiving virtual training from their German colleagues (Spies et al.). Across projects, co-researchers experienced what Gailloux et al. called "fieldwork without the field": unequal technological savvy and access, diminished depth of research, inability to make lasting connections and building rapport virtually, challenges to creating trust and familiarity with participants in virtual spaces. While this raised concerns about inclusion and representation, online interactions also enabled capacities in empathy and dialogue that are essential to contribute effectively as agents of change (Félix and Sanfiorenzo; McKinnon et al.).

Changing relationships and knowledge co-production

Since projects had begun either before or during the onset of COVID, levels of relationship and trust were already established or under development (Auerbach, Muñoz, Affiah et al.; Manderscheid et al.). This variable was found to have a significant impact on how projects fared, and demonstrates the value of relationships in terms of how we, as "distant" researchers, position ourselves. In Cape Town, because the project rested on a pre-existing rooted network, it was able to reach out to and engage new participants, including urban farmers, fisherwomen, food actors and activists, and community kitchen chefs (Paganini et al.). In Leuven, existing multi-actor networks of citizens, students, experts, and academics were expanded despite the difficulties in meeting and mobilizing (Medina-García et al.).

In Asia-Pacific, the pandemic presented new spaces for negotiation and interdependence that enabled the transfer of ownership and leadership to local teams, with each researcher learning more about how to enact the kind of participatory research they aspired to—one based in reciprocity and trust, shared ownership, collaborative, and self-reflexive learning (McKinnon et al.). In East Africa, decentralizing responsibilities led to more motivation and ownership, especially among field research officers and other locally-based actors involved in the project. The decentering of the researchers and a shift of focus to the local citizen, made the research more participatory (Habermann et al.). In other places, hybridized approaches did not necessarily mean involving participants at all times and stages but they promoted frequent and open communication with participants to share power, discuss or mitigate risks, and build reciprocity and mutuality (Gailloux et al.).

Methodological innovations were also present, as in the Leuven Gymkhana treasure hunt advertised through social media (Medina-García et al.) inviting residents of the city to engage with its food strategy, and also in virtually connecting farmers across territories to create farmer-led action learning opportunities (Félix and Sanfiorenzo).

Reconfiguring power

The precarity of local co-researchers, often due to low levels of recognition and unequal remuneration by funders such as research councils, was accentuated by COVID. Where lock-downs may have been staggered or less stringent, some co-researchers were expected to undertake fieldwork, putting them at risk. As the virus and national responses to it changed, some country partners were able to adapt, resume some activities and meet outdoors (Manderscheid et al.). The level of formality of participating networks also had an impact. In Letchworth (UK) the network was driven by a formally constituted and salaried team, which could not be sustained under the UK's more stringent lock-downs, while in Tunisia, the relative informality of the networks coupled with greater freedom of movement provided for more creativity and fluidity to adapt to the needs of affected residents. In Leuven, Medina-García et al. established

an "editorial board" that sought to even out power dynamics amongst stakeholders. This fostered collaborative relationships involving mutual understanding, negotiation and co-creation. In their various case studies, Gailloux et al. also foregrounded caring, negotiating risk and culturally-appropriate conduct. As Habermann et al. put it, "letting go of controlling both narrative and implementation of the research" and the related shift of power is in fact a condition and way forward for research to remain relevant and impactful. Within and between research teams, COVID also had an impact on academic staff, creating divides between permanent and temporary, pointing to tenure implications. In their manifesto for reimagining institutional support for PAR, Auerbach, Muñoz, Walsh et al. explored what the university would need to do to support PAR and resilient communities, and considered ways to support transformative scholar activism with funding, flexibility, safety, infrastructure and prioritizing community.

Concluding remarks and outlook

In its various forms, PAR was found to produce knowledge that is emplaced, embedded and embodied. While COVID undoubtedly created obstacles for PAR the pandemic also galvanized new opportunities for inter-institutional partnerships, and diverse responses by universities and practitioners capable of enhancing participation and trust-building at different levels, as shared responsibilities led to greater equity within teams. Unsurprisingly, the experiences emphasized the need to rapidly transition to mobile or online platforms, and to also re-define the roles of research communities. As a result of COVID, and given future ethical constraints on travel in light of the climate crisis, the remote PAR exemplified in the papers of this Research Topic represents the future for place-based transdisciplinary research collaborations. One concern is that this may simply lead to offloading fieldwork without sharing risks and opportunities for co-learning and addressing inequalities when it comes to accessing digital spaces. This requires collaboratively thinking through the different roles of and attendant risks for local, national and international co-researchers, and identifying and strengthening opportunities to enhance the agency of co-researchers in the design and analysis of PAR.

Author contributions

GM led on this Research Topic collection. All authors contributed equally to the overall process of reviewing manuscripts and co-authorship. All authors contributed to the article and approved the submitted version.

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Conflict of interest

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Dialing up Critical Feminist Research as Lockdown Dialed us Down: How a Pandemic Sparked Community Food Dialogs in Cape Town, South Africa

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The COVID-19 pandemic and its control measures had a devastating impact on household food security in South Africa. The pandemic brought existing food injustice patterns, such as spatial inequality, intersectionality, and the causes of food poverty to the forefront, especially for women. It also galvanized momentum in the people's agenda for solidarity and stimulated community members' calls for an overhaul of the existing commercialized food system toward hyper-localized, community-led solutions such as food dialogs and community kitchens. First and foremost, that meant talking about hunger and addressing its root causes. This paper reports on a co-research process on household food security during the pandemic in four neighborhoods of the Cape Flats. This study found that household food insecurity and the roles women play in food systems are significantly shaped by intersectionality: the consequences of being women, Black or Persons of Color, residents of geographies of social and economic marginalization within the city, and historically excluded from higher education. In this paper, we provide reflections on the co-research process from the perspectives of co-researchers, the project coordinator, and the project funder by applying a critical feminist framework and by answering the question: How can critical feminist research steer community-led action? Community members from the Cape Flats and five post-graduate students from a Berlin-based institute conceptualized this study and it was implemented by community researchers and projects partners in 2020. The paper highlights important aspects of the methodology, particularly the joint contextualization and sense making of findings by community researchers who placed food insecurity results in the context of their lived experiences. Based on their discussions, the co-researchers created visions for post-COVID-19 food environments, one of which is discussed in this paper: destigmatization of hunger. Hunger was described by co-researchers as a problem hidden by individuals and silenced by communities.

Keywords: food security, transdisciplinary co-research, urban food systems, COVID-19 pandemic, critical feminist methodology, food dialogues, Cape Town

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INTRODUCTION

The COVID-19 pandemic and its lockdowns resulted in immediate economic shocks and a lasting aggravation of household food insecurity. South Africa was identified as a "hunger hotspot" as the first lockdown exacerbated hunger in vulnerable households (Oxfam, 2020, p. 1). A nation-wide survey found that "while some households have managed to recover from the initial devastating effects of the pandemic and hard lockdown, a large proportion of households remain economically extremely vulnerable" (Van der Berg et al., 2021, p. 5). The burden of food insecurity in South Africa is carried by Black women (Cock's, 2016). An intersectional lens is required to understand the role of women and food security which goes beyond questions on access and production and is situated in power struggles, invisibility of care work, and constraining relationships and discourses (Lewis, 2016).

This paper reflects on a 1-year post-graduate programme offered by the Center for Rural Development (SLE) at Humboldt University of Berlin which examined food security in marginalized communities in the Western Cape during the COVID-19 pandemic (see Paganini et al., 2021). Here, we share three perspectives on the study: the community members, the project coordinator, and the funder. At the same time, we show how critical feminist research steered community-led action.

The SLE course normally allows five post-graduates to conduct 6-month empirical field research in a country in the South; however, due to COVID-19 travel restrictions, planned projects were canceled and the SLE improvised and designed remote projects, relying on existing research partners to activate remote studies. While SLE was reconfiguring their post-graduate overseas programme component, one of their project partners, an urban farmer in Cape Town, was grappling with the market losses facing small-scale farmers and the growing resulting threats to food security, especially in the so-called "townships." She sought collaborative, community-driven research to quantify the effects of COVID-19 restrictions on food security to better position her community to advocate for change (see Buthelezi et al., 2020; Paganini et al., 2020). Her vision transpired as a co-research study[1] co-developed and conducted by community researchers (referred to as co-researchers) and an interdisciplinary team of SLE students who hold master's degrees in development studies, food security studies, natural resource management, geography, and political science. The team was accompanied by a team coordinator (the first author) and supported by an academic advisor and South African partners from civil society organizations. Their joint research generated qualitative and quantitative findings on the state of food security through a household survey, the development of an agency index, and a place-based perspective through photovoices and food environment maps. The study generated transformative impacts on the community level and inspired plans for a pilot community-driven, cross-sectoral platform in which hunger is destigmatized through care-guided conversations, food agency is progressively nurtured, and local food dialogs are formed. The current paper builds on the final report of the larger study described above (see Paganini et al., 2021) and contextualizes the study's co-research process, results, and recommendations using Donna Andrews' critical feminist framework (2020).

The present paper narrows in on a central finding identified by female co-researchers: the urgent need to destigmatize hunger. The shame of being food insecure is often felt, reinforced, and exemplified by women. In joint reflections, the authors were inspired by Hayes-Conray and Hayes-Conray and their work on critical feminist reflections on food and place (2008), Cock (2016) notion of the nexus of intersectionality and food insecurity, eco-feminist and activist Andrews (2020) framework for guiding socio-ecologically transformative research, and Lewis (2015) work on gender and feminism in food research, particularly in the Western Cape. Lewis' general critique of food security studies is that they often aim to respond to crises with statistics and "prioritize productivity, immediate results and short-term solutions, often ignoring the over-arching processes" (Lewis, 2015, p. 3). Lewis encourages feminist approaches in food security research to unearth root causes of broken systems and power struggles by shifting away from the notion of increasing food production and availability for the poor. She recognizes that marginalized voices are largely excluded in mainstream food security research and, like Freire (1970), encourages research that solicits marginalized voices, links hunger, and dignity, and actively responds to communities' self-identified food and hunger challenges as a way of knowledge creation and empowerment. It is from these perspectives that we argue that a critical exploration of food insecurity requires more than merely monitoring numbers.

Research Context: Place and Space

Cock's (2016, p. 122) asserts the South African food regime is "profoundly unjust" and ecologically unsustainable and that African working-class women bear the brunt of this reality. Women face hunger more often than men due to disparities in income, limited access to employment or means of production, and cultural practices that put them last or allow them smaller portions when food is in short supply (Oxfam, 2020). Due to the gendered division of labor, women are burdened with food and energy provisioning and the unpaid care work of the young, elderly, and sick (Cock's, 2016; Swanby, 2021). It is for these reasons that women often lead struggles to transform food systems (Andrews, 2020).

Our study was conducted in Cape Town, South Africa. The research sites are located in the Cape Flats, which are built on a low-lying, flat area east of the city center. This former military area and dumpsite was populated during the apartheid era with so-called "townships" where People of Color were forcibly relocated from the city center and economically displaced internal migrants from rural areas settled. The country's spatial planning separated people by race to make it easier for the apartheid government to control access to resources by race. Until today, the city's spatial design is characterized by racial segregation with Black and People of Color communities sequestered on the outskirts of the city.

[1]Co-research is an inclusive and radical approach to participatory action research. For more details on this approach, please see Methodology and Research Design.

This racially segregated spatial planning created an intersection between food security and location and persists in how food systems aregoverned (or not governed) while perpetually continuing to reproduce inequalities. Site-specific differences were noted in the four research sites and possibly attributed to the formality of the settlement community as well as employment availability for its residents. Khayelitsha, Gugulethu, and Mfuleni are historically Black communities and their occupants' lack of formal employment is a reflection of the quality of education and work opportunities afforded to Black people before 1994. Mitchell's Plain is a historically Colored neighborhood and, during apartheid years, its residents were afforded a different level of education and work opportunities. Mfuleni is a neighborhood with both formal settlements and informal settlements. Female residents of the neighborhood of Mitchell's Plain and Mfuleni are more likely to be formally employed and earn regular salaries than female residents living in the other research sites. Women living in the Black neighborhoods of Khayelitsha, Gugulethu, and Mfuleni are more likely to have temporary or casual jobs and thus a higher risk of food insecurity.

The four neighborhoods differ significantly, yet all areas are characterized by high unemployment. The highest level of unemployment was found in Khayelitsha, with 73% of respondents unemployed, followed by 66% in Gugulethu, 45% in Mitchell's Plain, and 38% in Mfuleni. Not surprisingly, these areas are also distressed by food insecurity. Ranking using the Food Insecurity Experience Scale (FIES) revealed 44% of households in these areas are food insecure, with woman-headed households more often severely food insecure (38%) than male-headed households (23%) and jointly-managed households[2] (15%). The correlation between unemployment and food insecurity is clear: 45% of respondents from Gugulethu are severely food insecure and 66% are unemployed, for example. Similarly, 36% of respondents in the Khayelitsha site are severely food insecure and 73% are unemployed. **Figure 1** provides further evidence of this.

[2]We interpret this to mean that jointly managed households are not headed by single parents and that having two potential income-producing adults in the household leads to a better financial situation for the household.

From Research to Community-Led Action

As co-researchers came to realize the severity of the state of food insecurity in their own communities through the study, they continuously reminded the project team in project meetings and feedback calls to create an environment in which decision makers and people with power talk with them, not about them and not without them. Their previous experience with research had exposed them to multiple rounds of data harvesting yet they had not experienced immediate impacts from the research activities. They critiqued other food security research projects for focusing on statistics and excluding their lived experiences and, thus, demanded that their voices be heard in the current study.

The network of co-researchers challenged its project partners to avoid power imbalances, for example, co-researchers and academically affiliated researchers or men and women, and to put mechanisms in place to identify, discuss, and counter those power imbalances. In a joint reading and writing retreat, we questioned the ontological basis of the hegemony that drives inequality and injustice in our food system and and the research paradigms of colonized educational institutions conducting work in countries in the South. The reification of the intellect and vilification of the body, emotion, and the material world by a rational ontology is key to a culture of domination, exploitation and imperialism (Shiva, 1994; McClintock, 1995; Merchant, 2006). New materialist feminist works by scholars such as Haraway (1988), Barad (2007), and Grosz (2010) show that biology and matter are shaped by multiple forces, but at the same time also have agency in forging social and political realities (Frost, 2011). Our research methodology therefore sought to take the subjective and the visceral into account. Indeed, when

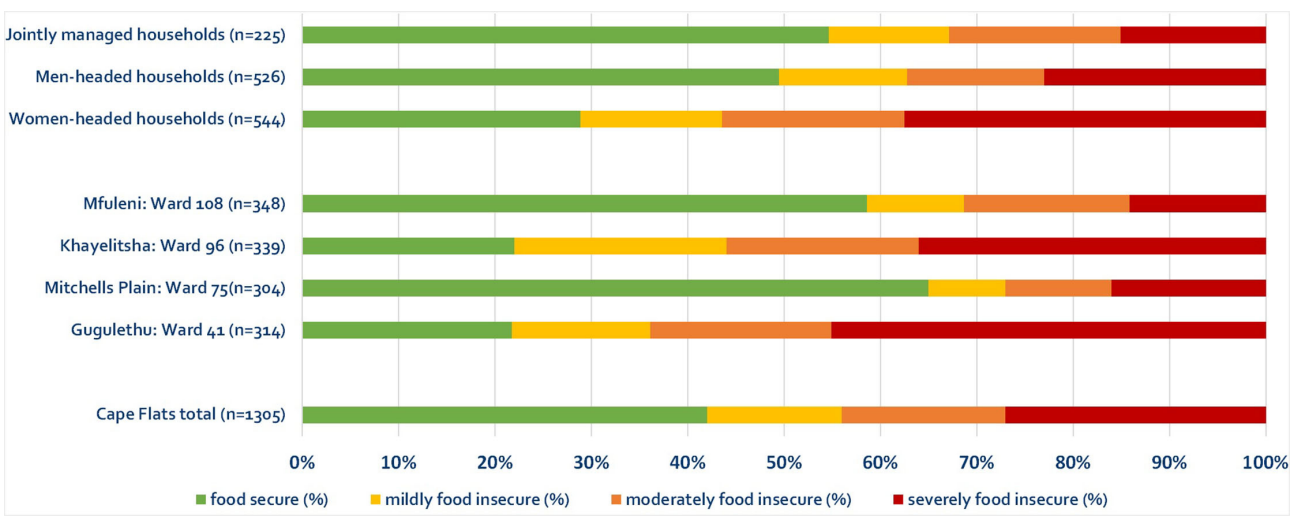

FIGURE 1 | Food Insecurity Experience Scale (FIES) rating of four communities in the Cape Flats in September 2020, by gender of household head and location.

co-researchers presented the findings in community feedback workshops, they were always at pains to point out that "there are human beings behind these numbers," human beings with unique stories, feelings, and motivations. We wanted to bring forth a relationship with micro- and macro-sociologies, allowing us to take political and economic insights from daily activities and focus on the production of the social world at the everyday event. We also drew from decolonial literature which emphasizes relationality, acknowledgment of non-human agency, and the particular and concrete as opposed to the abstract and universal (Tuck and McKenzie, 2015). Decolonial scholars note that the academic imperative to find universal truths through aggregating results and abstracting findings that can be generally applied effectively negates place-based and indigenous knowledge (Shiva, 1994).

A wish to address these issues and acknowledge the relational culture of the Cape Flats led us to the guiding question of this paper: How can critical feminist research enhance community-led action?

A CRITICAL FEMINIST RESEARCH FRAMEWORK

Feminist research is often qualitative research and applies methods such as in-depth interviews, participatory observations, contextualization, and reflections on the findings. It creates space for listening and sharing emotions.

To situate our research results, we used a critical feminist research framework developed by African eco-feminist scholar and activist, Andrews (2020), as a lens. Andrews' framework lays out a guide for research that aims for socio-ecological transformation. It is based on three main tenets, which we explore further in this section as related to our work. In her analysis, research for socio-ecological transformation should have (1) eco-feminist conceptions of earth democracy and earth justice at its heart; (2) awareness of the gaze and costs of solution-oriented research; and finally, (3) researcher recognition of positionality and ideology. These principles resonate powerfully with the experiences of women researchers on this project; we expand on this in Section Reflection on the process, providing reflections from different perspectives according to our roles in the process.

Eco-Feminist Conceptions of Earth Democracy and Earth Justice

The eco-feminist notion of earth democracy is a transformative paradigm that struggles against capitalist patriarchy and seeks to dismantle the hegemony that incentivizes exploitation, extraction, and control by the elite (Andrews et al., 2019). Women suffer multiple layers of oppression and violence while abundance and comfort is produced at the expenses of nature, women, and the working class (Merchant, 1989). Due to the unfair division of labor in the patriarchy, womens' invisible and unpaid reproductive work maintains and subsidizes the neoliberal food regime (Andrews, 2020). This requires us to move beyond violent economy and patriarchy toward respect for women and the Earth (Shiva, 2013).

"It is in the face of systemic violence—which is inherent in patriarchal capitalism and underpins the current ecological crisis—that women's individual and collective struggles for the right to food and nutrition are located" (Andrews et al., 2019, p. 7). Shiva (2005) lays out principles of earth democracy which include species' intrinsic value and interconnectedness; defense and promotion of species diversity; protection and reclamation of commons; protection of all ecosystems and the right to all basic needs and subsistence for all; localization; unity; and dignity, peace, and compassion for all life forms. The co-research methodology that we used acknowledges these structural and visceral issues that contextualize and inform food work. It creates spaces for these issues to emerge and unfolds learning processes for understanding the meaning of each issue's individual and collective role within the food system. For example, in our triangulation and findings feedback workshops, an eco-feminist approach enabled analysis and solutions to be strongly premised on the desire to strengthen and draw on community, family relations, and indigenous cultural practices. Here, co-researchers prepared a two-day workshop to present findings, guide community members through food and power systems maps, exhibit photovoices, and showcase music and poems related to food. While typical development themes of markets, livelihoods, and production methodologies emerged from this workshop as necessary areas of focus, there was a constant return to meeting the sustenance needs of people who are "falling between the cracks" in local communities and meeting those needs with dignity. There was however, no naivety in regard to understanding the many "lock-ins" (Frison, 2016) to our current food systems and the challenges implicit in imagining a radical transformation of existing normalities. For example, strong recommendations were to review related policies to assess how they privilege actors in the industrial food system and to advocate for enabling policy for small and micro food producers and informal traders.

The Gaze and Costs of Solution-Oriented Research

Solution-oriented research often creates one-size-fits-all, output-driven solutions based on technological fixes, replacing and renewing limited natural resources, and setting thresholds for harmful activities (Liboiron et al., 2018) such as pesticide maximum residue levels, fishing quotas, or greenhouse gas emmision caps. This approach seeks to control nature (Merchant, 1989) and extract general insights or truths that can be universally applied (Rosenow, 2019). The imperative of western scholarship to arrive at concrete recommendations through abstraction and generalization renders place-based and subjective knowledge invisible (Rosiek et al., 2019). (Ndlovu, 2014, p. 84) shows that indigenous knowledges have been rendered obsolete by the hegemony and contends that "the idea of indigenous ways of knowing, seeing and imagining the world has the potential of enabling another imagination of the world beyond the now defunct Western-centric one." Decolonial research should

disturb rather than settle, as this is indicative of acknowledging pluralities—the existence of many worlds that may never reach agreement (Rosenow, 2019). Through decolonial research methods, answers and questions are equally valued and the imperative to settle is resisted.

The subjective and the visceral are not easily accommodated in research methodologies that value generalization and abstraction. However, these subjectivities point to emancipatory and transformative pathways, giving access to lived experience, and the structures and networks that are shaped and shape subjective experience. Hayes-Conray and Hayes-Conray (2008) remind us that individual visceral feelings are entwined with the economic structures and systems of meaning-making in which we are embedded. Haraway (1988) contends that true objectivity does not exist in generalizations and abstractions, but rather in the acceptance of partial and subjective perspectives. She makes a strong case for "trusting the vantage point of the subjugated" (p. 584) by tapping into situated and embodied knowledges. These vantage points hold great transformative capacities because they can take us beyond the blind spots of the dominant perspective. Indeed, one of the most powerful ways forward in our research emerged from the identification of feelings of shame and indignity related to food insecurity as stated by one co-researcher:

> The hardest was using the space of reflection to put together strategies for solutions: sitting with all these community members in focus group workshops and reflecting on the results and how each individual relates to them. There was a theme of the shame of being poor: the feelings of personal failure as opposed to seeing poverty as a collective issue. Poverty should not isolate people.

This lead to inquiries into the structural, societal, and cultural forces that engender these feelings and solutions extending beyond the quick-fix, technological, and a-political recommendations typical of solution-oriented research.

Researcher Recognition of Positionality and Ideology

Andrews (2020) contends that we need to consider positionality, methodology, and accessibility of the research by asking ourselves what the political objective is. She provided three positions:

(a) Does the research emerge from a preconceived framework constructed in the North, e.g., imperatives to modernize or "develop" ? (Note that such imperatives have been recognized by most governments of the South)
(b) Is the research carried out alongside those who are affected?
(c) Does the research endeavor to bring to the fore the complexity of social-ecological relations?

From an eco-feminist point of view, an important political objective is to ask how we move past exploitative and extractivist systems that are "industrialized, formalized, regulated, extracted, waged, commodified and alienated" (Andrews, 2020, p. 15) to social systems based on reciprocity, care, and wellbeing for people and all living beings. It is important to consider research methodologies that are fit for this task; PAR and co-research methodologies acknowledge and draw on the expertise and vantage points of those affected and make a concerted effort to understand the research findings within discursive, historical, and structural contexts. Of great importance is that we, as researchers, continuously share and reflect on our work, positionality, and feelings amongst ourselves as well as with the larger activist-scholar community to gain reflection and introspection on our work. We conducted a 2-day reflection retreat with the core team of co-researchers to critically think about what the research has and has not achieved and which of our own ideologies and positions influenced the research. Relatedly, a desire emerged from the feedback session to bring co-researchers into the academic canon with the vision of being able to cite authors from local communities rather than exclusively more distant scholars.

An important guideline for socio-ecological transformation that we learned from Andrews (2020) is that research cannot be substituted for activism and civil society work in democratic society. Therefore, it was crucial for this group of co-researchers to reconnect with their communities and civil society organizations to share their findings and collect feedback. This contextualization of findings grounds research in actual community needs rather than the research questions posed by academics.

METHODOLOGY AND RESEARCH DESIGN

The methodology used to gather food security statistics was designed and adapted by a remote team of five post-graduate students steered by an advising researcher in Cape Town and a coordinator in Berlin. However, the study is grounded in co-research, an inclusive and radical approach to participatory action research. In co-research, the main actors (community members) are involved in planning, coordinating, and implementing the methods while assuring quality through constant triangulation and intense contextualization of the findings. The joint sense-making of the findings is "a key component of individual agency and collective adaptive capacity" (Vanderlinden et al., 2020, p. 2). The research process was informed by ongoing and frequent interactions and aimed at developing long-term visions and debates on the transformation of food systems. Building and owning these visions is slow work based on iterative learning processes to ground communities' understanding of root causes of vulnerability before forging forward. Co-researchers were urban farmers from Cape Town, fisherwomen, and other food actors, such as food activists and community kitchen chefs, who drove this participatory research despite and because of the COVID-19 pandemic.

A quantitative household survey was conducted in four research sites in the Cape Flats of Cape Town to generate a representative picture of food security in the communities, coping strategies employed during the pandemic, perceived agency, and power to instigate change in their food system. With a total sample size of 1,824 households, the survey is statistically representative with a confidence level of 95%. Data collection by co-researchers was supported by enumerators and the team used the KoBoToolbox. Interviews were conducted in person or over

the phone or digitally by the respondents themselves, making use of social media groups. To measure food security, we applied the FIES (Food Insecurity Experience Scale) tool developed by the FAO's Voices of the Hungry Project. This is a metric, experience-based scale that ranks food security status in four categories: food secure, mildly food insecure, moderately food insecure, and severely food insecure.

This paper focuses primarily on the insights of individual team members who looked back on the project and drew lessons from the critical feminist framework. A central result is that dynamics emerged in the research process that could not have been planned in advance in the research design. The easing of COVID-19 restrictions in the spring of 2021 allowed 3 months to flush out qualitative aspects of the research through in-person workshops, reflection discussions, and less conventional methods which provided space for creativity, abstraction, and emotions: sharing poems and music, dancing and yoga to shake off feelings that emerge when talking about hunger, photovoices, results dissemination in communities, and joint production of a podcast.[3] The contextualization and the profound focus on contextualization framed the quantitative results and gave weight to the co-researchers' insight that they are part of the food insecurity numbers.

REFLECTION ON THE PROCESS

This research was a multi-authored work; it speaks with many voices and mirrors the unique working and writing styles, passions, and learnings of each contributor. In the following sections, different team members speak about their experiences and observations with the research methodology and findings: the co-researchers, the study coordinator, and one of the project partners and funder. The following sub-sections are the original writings of each team member.

The Co-researchers' Perspective

Being part of a food-insecure community makes the co-researchers' perspective intrinsic when formulating thinking around food security research, even though their lived experience and often-invisible daily coping and survival strategies don't usually make it into the statistics and academic papers. Food security is usually explained by data-driven entities who cannot approximate the reality and daily emotions of a person who experiences food insecurity. The co-researchers' unique positioning as fellow community members allowed them to get the stories behind the numbers.

Researching the effects of COVID-19 on food security and agency in South Africa allowed co-researchers to learn and ask significant questions and tease out answers to the "whys?" Asking questions such as "How many meals did you have today?" or "How often did members of your household experience hunger this week?" allowed us to talk and come upon answers around attitudes toward food insecurity that we, as fellow community members, have internalized but never questioned. In these conversations, we repetitively sensed and observed shame and isolation alongside poverty. People spoke of the shame of having to ask for food; this shame was connected to lack of money and employment. While the research provided the realization that food insecurity is a collective and societal problem, individuals saw their hunger as a personal, shameful issue.

While the issue of shame rocked individual respondents, the co-researchers grappled with anger as they discovered the injustices their marginalized neighbors and neighboring communities faced. This became particularly apparent when discussing the indignity of accessing feeding schemes and so-called "soup kitchens" during times of adversity during the pandemic. Community members expressed difficulties stepping out of one's house to stand in line for food in the public view. A more dignified approach is to understand those kitchens as community places, not merely as soup kitchens where people feel stigmatized as too poor (or lazy) to look after themselves. Through the data analysis, the co-researchers came to see that hunger dominated the lives of the majority of their neighbors and community members and also the lives of members of surrounding marginalized communities. They were not alone. Their problems were not created by themselves as individuals, but handed down to them as victims of historical and structural oppression. Joined in solidarity, their sense of shame dissolved away and was replaced by anger.

Women, in particular, are taught that it is not acceptable to feel and express anger, yet many reported feeling angry about a system that excludes community members from both decision making processes in food systems and knowledge systems classically determined by Western cultures and researchers who rarely involve community voices in their work. Is it location that describes who is part of the majority world but not the majority of power? Or is it knowledge which was, in our case, not accessible for many of us because of our skin color? There was a survey question on education level which continuously elicited a tense response as respondents revealed how little education they had received under the post-apartheid "Bantu" education system. This system afforded People of Color low-quality education that limited many to informal work, burdened them with social and economic exclusion, and encumbered them with shame. Academia itself recognizes intellectual contribution into its space only to its own set standards. You need to be academically affiliated with a post-secondary institution to be published and you need to be able to express your thinking in one of a narrow set of languages. As the drivers and contributors to an academic study, we noted the power of language to exclude many from academia and growth. Cape Town's food environment has an absurd admiration for academics who forge strategic collaborations for us. Although we envision a time when academics do not talk about us without us, we still tend to send the White professor from our team (who works at a university in our city that we don't have access to) to speak on our behalf rather than empowering ourselves to speak with our own voices.

The skill sharing and collaborative learning process used in this study gave us a sense of belonging and unity in communal problem solving. Through this work, a bridge of learning was built between a group of co-researchers and a group of advocacy partners and academics who are dedicated to this slow

[3]https://soundcloud.com/user-374323030/uphakantoni-first-episode.

work. Co-research requires community researchers to transcend unequal power and bring voices into discussions. Co-research helped us understand the colonial educational system and how it has excluded us. Many "poor" and "hungry" people who live in the Cape Flats don't know what many researchers have discovered, written, and recommended for their "poor" and "hungry" research subjects.

Being able to contribute to the analysis of this research and co-design the next research phases made us aware of how research design shapes narratives. As inclusive as this co-research is, there are still boundaries that we can't yet cross. We can't apply for our own grants and we continue to depend on the university affiliation of (foreign) researchers for publishing and project work.

The Coordinator's Perspective

In "normal" years, the learning and training component of SLE's post-graduate studies is conducted in-person overseas; in 2020, COVID-19 travel restrictions forced us to stay at home and encouraged us to test and adapt new remote methods. The research team (co-researchers, enumerators, and remotely working post-graduate students) collected large data sets and learned (and accepted) that the route we take in field research should not always entail a flight path. With a project team on two different continents, questions emerged: How do we hold partner meetings? How do we create a safe space for those who aren't used to digital tools? How can the Berlin students map food environments without being physically present? How can we build connections to people and spaces in unfamiliar contexts? How can our project design meet the needs of both students (who wish to fulfill graduation requirements) and community partners (who have more diverse and urgent survival needs) so that it is meaningful for them beyond their engagement with each other? Here, two aspects were crucial: to ensure safe and secure field research for the enumerators and co-researchers during the pandemic and to ensure appropriate supervision and support for the co-researchers who conducted interviews on a highly sensitive topic with so many interlocking layers of pain within the contested and politicized space of their own neighborhoods.

In the process of collaboratively discovering answers to these questions, we rooted remote research strategies in a mutual agreement on ethics and grounded those in feminist research approaches which actively sought to remove power imbalances between researchers and "the researched." This was especially important as the involved co-researchers struggle personally with not being recognized as salient opinion holders in the system. The power question should not be answered by saying, "I am doing my research under an eco-feminism paradigm." That is too naïve, too simplistic, and disrespectful of those team members who are not part of an academic institution that affords participants access to funding and further research opportunities and who are, hence, dependent on those affiliated with research institutions. Only through constant reflection, checking privileges, forward movement, pauses, and adaptation did an adaptive process unfold an adaptive process that enabled trust. However, it is important not to put co-research on a pedestal as a silver bullet alternative to conventional research. These processes require time, solid relationships, and unfoundering commitment to a deep dive into the messiness of human relationships.

Often, these components don't fit into the ever-faster world of academia. Indeed, the short-term nature of the the SLE programme meant the important phase of contextualizing the findings happened after the Berlin-based students left the programme and missed an incredible, unique opportunity to observe how research transformed into community-led action. Simultaneously, the co-researchers stated they would not have delved into and shared personal experiences during results contextualization in the presence of "outsiders" around them. Here, co-researchers constantly spoke about creating safe spaces and they understood those spaces as places which are not associated with conventional knowledge and power systems such as university buildings or Zoom calls. They felt more comfortable holding in-depth conversations in Mama Hazel's kitchen using their own cultural norms to discuss sensitive topics; very often, questions and answers were not related to their own personal experiences, but raised as personal abstractions, hypothetical situations, or stories from their sisters, mothers, and grandmothers.

The results contextualization was carefully guided by the co-researchers who invited community members to a 2-day community food dialog to digest the results and co-develop visions for future action. Understanding the results as a research team was an important part of the co-research approach. To this end, three visions for reshaping post-COVID-19 food systems were written up by co-researchers based on their understanding of the findings. The iterative process to understand research findings on their lived experience gave depth and perspective to the co-researchers' data (as per Maguire, 2001). The following is a summary of the vision "Destigmatise hunger and increase individual agency by understanding systemic causes of food security" and discussion as per Andrew's framework originally presented in Paganini et al. (2021, p. 126–128):

> *We learned about deep struggles to put food on the table, heart-breaking stories of women who give their bodies for food, and the levels of (silent) violence people face in their searches for food. Sharing these experiences was perceived as a painful process for co-researchers, but powerful in the same way, leading to a few "a ha!" moments during contextualization sessions and the consolidation of our common theory of change. A first "a ha!" amongst enumerators, co-researchers, and the study team was that hunger is not an issue created by individuals, but societies; yet individuals (both male and female) carry the burden of guilt and shame associated with hunger. This is a profound injustice, given that their situations, when dealt with individually under a cloud of shame and secrecy, are very much uncontrollable and unsolvable.*
>
> *The co-researchers came to understand that food insecurity and household hunger is systemic rather a result of personal incapability. While participants focused their energies on coping strategies which addressed their personal capacity to produce food (planting food, selling food, or making use of marine resources), these solutions do not address the systemic nature of the problem. Co-researchers who had been involved in years of research on food justice had a greater understanding of systemic issues and encouraged community dialogue and advocacy work to overcome shame and stigma and to address food insecurity through societal*

change. This requires us to think about how to change a deeply entrenched narrative, but also to think about the words we use. This is echoed in the communities' strong recommendation that soup kitchens be renamed community kitchens to shift the welfare narrative and allow communities to take control of the food in these kitchens for building healthy and vibrant local economies. The power to label things is a political question and something we should look at in our research practice: who is naming things?

This process of putting thoughts onto paper created a great sense of ownership; in the end, it is the community who has the power to leverage visions into action. In that process, it was compulsory to acknowledge local wisdom and observational, traditional, and indigenous knowledge as of equal importance to what we learn at school and university and not downgrade it as life experience.

We learned digital and remote research cannot be implemented as a spontaneous and fast-track form of PAR and that contextualizing findings must be performed jointly to bring ownership to the communities and, therefore, elongate the project duration and amplify the scalability of the project and its recommendations. It is important to note that this study would not have been possible without the co-researchers, but it would also not have been possible without five team members working remotely from Berlin who, although they had no personal connection and had never been to Cape Town, carried out the project with great ambition and creativity. Their main tasks were to develop and steer the household food security study, conduct key informant (expert) interviews, organize remote mapping, design factsheets, and write up the results.

It is nevertheless important to constantly question the process and one's own bias and interest and internalize introspection. The important thing here is that White (or privileged) researchers do not perceive that it is enough to generously make space and give room to the voices of community members in workshops or virtual spaces. Rather, we should openly contemplate our own power, acknowledge the power of academia and the colonial structures that determine our research institutions' and donors' processes, and consider the feelings (intimidation) of participating co-researchers who have historically been excluded from academia. Several times, co-researchers reminded us that, as academics, we are part of an oppressive system; therefore, we must weigh up how we organize ourselves; who coordinates the team; who speaks for whom, when, and how; and which voices are elevated.

This adaptive approach to doing community research allowed us to involve more and more people in dialogs to co-develop their theories of change as articulated by Vanderlinden et al.'s co-research work that states, "Along the way, we reflected, and are still reflecting, on a world that changes, and on the ways we and our partners changed along the way" (2020, p. 3).

A Funder's Perspective

Funding guidelines and bureaucratic instruments in the international cooperation field often narrow on timebound, measurable outcomes, and reporting requirements. Funds allocated for human resources are frowned upon and treated with suspicion, with a preference for supporting "project costs" such as printing, travel, or equipment. Yet, investing in open-ended processes, particularly those seeking to foster women's abilities to assert their lived experience as a valid form of knowledge, is key to decolonial and feminist work. Both a rethinking of "which way of knowing and what kind of knowledge is most helpful at a time that cries out for affirmation of life" (Salleh, 2017, as cited in Walters and von Kotze, 2021, p. 49), as well as a change in who is recognized as "knowing" is necessary if one is to begin to transform deeply embedded and overlapping systems of apartheid, colonial, patriarchal, and economically extractive relations.

Working in this way on questions of food justice could be a particularly powerful intervention. The structure of food systems is at the heart of commodification and the exploitation of both labor (paid and unpaid) as well as ecosystems. Simultaneously, food is at the heart of community relations, family, and cultural identities.

Launched at the height of the COVID-19 crisis, a period that forced a reckoning with the inequitable distribution of resilience capacities in South Africa, this food justice co-research provided an open-ended process for reflection and knowledge and network building focused on food injustice. Initially, however, the project was not framed in this way. Originally, according to the project documentation produced in partnership with the Heinrich Boell Foundation[4] Cape Town office (HBF CT), the study would ambitiously seek to answer the following questions:

1. *How has COVID-19 impacted the state of food and nutrition security in Cape Flats households?*
2. *What coping strategies did households use to survive the negative impacts of COVID-19 on their food security?*
3. *How does the community imagine just and resilient post-COVID-19 community food systems? What opportunities exist for a more just food system?*
4. *Where are smallscale food producers and processors based?*
5. *What does this information suggest with regard to municipal and provincial policy interventions?*
6. *What options exist both within and outside the state to support smallscale producers and processors?*

While the research explored these questions, its real insights and gains had to do with the act of opening up conversations in Cape Town's marginalized neighborhoods to talk about hunger and problematize its stigmatization. At the heart of this was the empowerment of a group of (primarily) female co-researchers, many of whom had also been food producers, some of whom had not engaged in systematically questioning the food system or its governance, and some of whom had previously cooperated in co-research on food justice. While seemingly minor, this outcome provides a powerful basis for the collective rethinking of food as a commodity and a private problem as well as a foundation

[4]The Heinrich Boell Foundation is the political foundation affiliated with Alliance 90/The Greens. Its work in the global south is primarily funded by the German Federal Ministry for Economic Cooperation and Development (BMZ). one of the project's funding and advocacy partners.

for building localized food system governance structures aimed at justice.

Why did HBF CT recognize the gains of opening conversations as opposed to delivering neatly packaged solutions? In its work to support activism for ecological, social, and economic justice in the region over the past 20 years, HBF CT gained the institutional knowledge that supporting the work of individual activists and loose networks is as important as supporting "blue chip" NGOs. For all its brilliance, South African civil society's roots remain shallow (Friedman and McKaiser, 2009), inadequately representative of or driven by the country's economically marginalized majority, and reflective of the deep divides across class, race, and geography that were formed by apartheid and colonialism. Enabling the development of political agendas and work from "the margins" requires recognition that not all actors can manage donors' bureaucratic burdens.

This has meant building systems and practices that enable partners to work with flexibility, namely valuing grassroots work, and recognizing the challenges faced by grassroots activists. This recognition and appreciation is something that has been built across all parts of the organization (programmatic, administrative, and finance). It is enabled by a leadership that values the knowledge and experience of local staff and trusts them to work independently via their own priorities. While the research was tightly framed, the HBF allowed its "deliverables" and values to shift in recognition of the importance of grassroots activism.

It is not unusual for civil society work, even that dedicated to decolonial and feminist transformations, to itself wrestle with problematic power relations and this project was no different. Although the project team was dominated by women, it was neither simple to assert the legitimacy of a feminist lens nor bypass deeply etched markers of status and power including gender, age, and professional status. These struggles played out between the students and the co-researchers and, once the students were gone, between the co-researcher group itself, as well as with the academics accompanying it. The most common expression was an emphasis on White men with professional status as both interlocutors and audience. While these individuals no doubt are strategically positioned and hold power that must be engaged, it was clear that engaging them without falling into the performance and reproduction of existing hierarchies required careful and strategic thinking. While the coordinator acted as a buffer between donor interests and the research team, these interests, as expected, influenced the process and its outcomes. The strategy was to make donor input transparent and subject it to collectivized processes.

DISCUSSION

In this co-research, participating communities did not focus on results related to food security statistics, but explored the issues at the heart of those statistics that are found inside the homes. Donna Andrews' paradigm (2020) encourages rooting eco-feminist work in the South in concepts developed in the South, this research gained depth and meaning through the contextualization in a large community workshop.

Talking Food in Community Kitchens

In a joint sense-making process, co-researchers explained results to their wider communities, shared statistical findings (noting that the numbers represent actual human beings), and added their stories to the findings. Women co-researchers set a tone for a more empathetic view of the results and generated a greater understanding that being hungry and economically disadvanted is not a consequence of individual failure, but rather the consequence of traditional marginalization, oppression, and racial discrimination. Two writings by Sanelisiwe Nyaba illustrate her feelings about being poor and her inner conflict in her search for invisibility whilst simultaneously grasping for identity:

> ***I guess then I am poor*** "Hide your poverty child! They must not see it written on your body the smell of it will water their eyes they may sneeze you out all of you and then they will cover their noses to erase the sight of you.
>
> Well, nobody wants to be forgotten."
>
> *...I grew up in informal settlements. Struggle engulfed my own life and that of those around me. I do not remember feeling poor until I entered school and break time became awkward because I seemed to always lag behind on the way to the tuck shop*[5]*. The idea of poverty having to be hidden comes from this experience; no one wanted to know whether you were poor or struggling, the same story became boring. So you did not speak of it until serious inquiries were made: that I did not come to school because I did not have money for transport, that I am late because I spent the first few hours of my morning knocking on neighbors' doors to borrow transport money. At least then you have an identity: the student that stays absent or that is always late or that does not care.*

Looking at the individual and collective experience of women behind the findings in the context of a capitalistic and patriarchal food system, the intersection between gender and food transpires, evoking a multitude of well-documented, nearly universal gendered norms which place women at a disadvantage in attaining food sovereignty (Cock's, 2016; Andrews et al., 2019). Land rights and tenure oriented to male ownership impact women's access to food, as does women's heavy responsibilities in unseen care work. Women also face unique safety concerns in accessing food. For example, during the period of politically motivated violence, looting, and civil unrest in the days preceeding former president Zuma's arrest in 2021, many women were unable to travel to work as taxis were targeted and many food businesses, including community kitchens, were temporarily closed. For women, living in an environment shaped by brutal violence limits their financial, mental, and physical wellbeing. The pandemic created a necessity for many women to initiate and operate solidarity initiatives to support themselves, their social capital, neighbors, communities, and extended families.

[5]A small, independently operated convenience store located on school property which sells prepackaged foods and snack items, primarily confectionaries.

We contemplated an ideal conversation space and found ourselves in a food dialog in a community kitchen, a place associated with women's stories, discussions, and mutual understanding. Outside kitchens, personal stories are rarely shared and even denied. Destigmatizing hunger and overcoming the compulsion to internalize lack of food as personal failure is an arduous challenge within a culture driven by pride. One co-researcher stated that "culture has put us in the kitchen and culture has muted us." Women's self-localizations into these hidden spaces perpetuate shame and pain. However, claiming spaces in their own community and in governance processes to express their voices requires a safety net for women and active addressing of structural problems. Rethinking community kitchens is a central solution developed by community members who argue that these spaces should not be reduced to feeding places but rather to nourishing spaces fostering solidarity.

Women's ability to be active and mobilise is rooted in a history of deep-seated exclusion from economic activity, such as the migrant labor system (Vosloo, 2020) which left women at the helm of their homesteads and co-reliant on other women whose husbands were engaged in migrant labor. The present situation is reminiscent of these times as women continue to lead and significantly contribute to society without due credit. The "personal is political" paradigm described by Hanisch (1970) motivated the co-research community to hone the next research phase on methods of destigmatizing food security. Women co-researchers sensed urgency in unpacking the shame around food insecurity and food relief by using stories to share, open, and learn to accept (Hemmings, 2011). One co-researcher phrased this as:

> I think being Black puts one in a complicated position where this question of "the personal is political" is concerned. At one point, you're systematically disadvantaged from generations of racial discrimination. On the other, you're a young woman with potential that wants to pursue her dreams. For years, for example, you're unemployed and have trouble putting food on the table. Accepting that you're systematically disadvantaged and explaining your position from this standpoint is only reassuring for so long. Accepting is scary because you risk dying with your dreams, like many others you've seen before. It's hard to accept that. The shame, the fear, the guilt is heavy to carry... There is a bigger fear of letting it go (besides that the insecurity is ongoing) because it means giving up. It means not fighting. I think a large part of Black resilience comes from this pain. Not quite something to be admired if we look at it like this.

Promoting Critical Feminism in Food Research

Andrews (2020) asks how to bring to the fore the complexity of socio-ecological relations, reflect on our positions in this co-research collaboration, and consider knowledge co-creation in food research. Feminist research actively seeks to remove power and imbalances (Lewis, 2015). A pragmatic step to doing this is to make the power and importance of relationality visible by noting which relationships are strong, difficult, or impactful. The research that is most often deployed creates knowledge that is not connected to the realities of localities or inclusive of political and ideological agendas and therefore not able to bring about meaningful change. Critical feminist approaches to food studies have the potential to transcend and challenge dominant forms of scholarship and research on food security (Lewis, 2015).

This desire for equity and our commitment to a feminist, post-colonial research approach is important to us, yet as a mixed-race team, we struggled with it. The more we reflect, the more we struggle. When asked if authors considered themselves feminists, White authors replied positively, yet Black authors answered negatively, reflecting their understanding that feminism was associated with man-hating and trouble-making women. While seeking to find a common language, the concept of feminism was understood by us as strongly linked to seeking social justice, particularly for those oppressed by gender, race, class, and knowledge and information injustice.

Promoting critical feminist research requires a co-developed research design which allows for collective analysis of findings. It requires safe spaces for analysis that are not undermined by unequal power relations resulting from constructs around educational status, yet give credence to anecdotal information, creative expression, and cultural knowledge. Digesting the findings required physical activity (stretching, dancing, laughing) in order to let the findings arrive.

A podcast produced by two co-researchers explains, "It all started with five women on a trip to Scarborough: five women with different lived experiences, but all connected through this research" (Nyaba et al., 2021). This trip aimed at dismantling what we mean by feminism. Contemporary feminism was significantly impacted by the outbreak of COVID-19. Its devastating impact on women, who carried the burden of the pandemic, forced a step back into the private and virtual. Duncan and Claeys (2020) reflected that "… [COVID-19] is a profound and unprecedented global crisis that is exacerbating and leveraging preexistent systemic forms of patriarchal inequalities, oppressions, racism, colonialism, violence and discrimination that cannot be tolerated" (Duncan and Claeys, 2020, p. 6). In the group of co-researchers, Black women were at the forefront of community mobilization, local leadership, and grassroots activism responding to the increasing number of food-insecure households. Interventions were orchestrated mainly by women who advocated for more local food dialogs in their communities and argued with (Chilisa (2017), p. 825): "The unequal power relations between indigenous and western academic knowledge are the greatest threat to any form of collaborative research that seek to address Africa's sustainability challenges."

CONCLUSION

After more than a year of virtual conversations, online research and remote work, it is crucial to think about information injustice and the digital divide. Given that virtuality, access to social media and the skills to use it for campaigning is a privilege that may help link the fourth wave of feminism occurring online with real-world politics. We discovered that working across two continents, staying at home due to curfews, and coping with

the pandemic meant that much of our work involved digital communication and maneuvering in virtual spaces. While fast wifi is the norm for part of the writing team, access to virtual communication and information is expensive and far from a given for the majority of the wider research team.

This paper reports on different experiences from a short-term study. Central results were the gained understanding that food security research has to go beyond statistics and that practical work must destigmatize lack of food from a personal problem and view it as a structural issue caused by inequitable patriarchal and colonial systems. This paper also highlights experiences in collaborative research that led to action. Promoting critical feminist approaches can advance communities' ownership of research findings and co-developed solutions, while adding depth to academic work. Using critical feminist research approaches is, therefore, a range of qualitative methods aimed at generating unexpected findings and translating lived experience into scientific language. It suggests knowledge systems have to be decolonialized, socially inclusive, and provide a space for reflection on power and powerlessness and how this determines our understanding of food.

DATA AVAILABILITY STATEMENT

Publicly available datasets were analyzed in this study. This data can be found here: https://edoc.hu-berlin.de/bitstream/handle/18452/23545/SLE285_Agency_in_South_Africas_food_systems.pdf?sequence=1.

AUTHOR CONTRIBUTIONS

NP: study coordinator, introduction, methodology, and discussion. HS: theoretical framework. SN, NB, and KB-Z: perspectives on research findings. NB and SN: author of co-researcher perspective. NB and KB: coordination of field research and in-depth phase. KB-Z: co-author and commenter on the study and publication, and funder. All authors contributed to the article and approved the submitted version.

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Adapting a Participatory and Ecosystem-Based Assessment Impacted by the Pandemic: Lessons Learned With Farmers in Tajikistan

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The paper presents a systemic and participatory assessment approach and scrutinizes how methodological changes necessitated during the Covid-19 pandemic implicated the process and its outcomes. The approach was applied in rural Tajikistan to evaluate changes effected by a development project that promoted the enhancement of biodiversity and ecosystem services in agrarian landscapes. The central building block of the assessment consisted of participatory workshops in 2018 and 2020 with farmers and other stakeholders to develop a systemic knowledge map and to evaluate the promoted strategies based on local expertise. The methodological basis was MARISCO (adaptive MAnagement of vulnerability and RISk at COnservation sites), a holistic and participatory approach to ecosystem-based assessment and management that requires well-trained facilitators. While the activities in 2018 could be implemented as planned, major changes in the work plan were necessary in 2020 due to severe travel restrictions and social distancing rules. Conducting virtual workshops was not possible, as it would have excluded key stakeholders from the process. Instead of conducting a comprehensive assessment workshop guided by two German MARISCO facilitators as originally planned, a series of short and small workshops could be realized. These workshops were facilitated by Tajik scientists after receiving virtual training from their German colleagues. Although it was possible to bring the assessment to a satisfactory conclusion, the methodological changes revealed significant drawbacks. Radical simplifications of the methods were necessary that led to reduced depth of the assessment and missed learning opportunities for participants. Limited experience in workshop guidance by the new facilitators posed challenges to the participatory process and the quality of its outcomes. While the adapted method created training effects that would otherwise have been missed, it also put additional pressure on the capacities of local partners. Our experience during the pandemic offers valuable lessons learned for future applications of systemic-participatory approaches. Whereas, a complete shift

to remote applications is problematic, there is a need to put greater emphasis on capacitating local partners. Methodological trade-offs are necessary for partially remote working processes, but principles of participation and systemic thinking should not be compromised.

Keywords: ecosystem-based sustainable development, MARISCO, participatory methods, biodiversity and ecosystem service assessment, sustainable agriculture, Tajikistan

INTRODUCTION

Given the increasingly severe consequences of resource overuse and impacts of global climate change, there is an urgent need for a shift toward more sustainable farming systems that conserve and enhance ecosystem services while being resilient to emerging threats (Gliessman, 2014; Gerten et al., 2020). However, identifying appropriate strategies is no easy task, as agroecosystems are always embedded in complex social-ecological settings that need to be thoroughly understood before making decisions that might turn out to be detrimental to their purpose. Even worse, well-intended, but poorly contextualized project interventions can create unintended negative consequences such as rebound effects or the marginalization of farming communities that do not have a say in regional decision-making (Padoch and Sunderland, 2013; McDonagh, 2015; Rasmussen et al., 2018; see, for instance, the critical discussion on "sustainable intensification"). Thus, the design, implementation, and assessment of strategies for sustainable farming requires a holistic, systemic perspective on the one hand, and a participatory approach that takes local perspectives and concerns seriously on the other. Participatory processes are needed not only to foster inclusivity and democratic decision-making, but also to benefit in very practical terms: often, the resource users themselves have a good knowledge of local agro-ecosystems and related stresses and threats and have developed practices of dealing with them (Berkes et al., 2000; Jiao et al., 2012). Thus, drawing on local knowledge is important as there are no blueprint solutions for sustainable agriculture, and adapted management strategies must take into account the specifics of the cropping system, the farm-specific management practices, and the socioeconomic conditions (Bloch et al., 2016).

Implementing such approaches on the ground faces manifold challenges, several of which have been widely discussed in the literature: for instance, the persistence of linear thinking in a complex world among decision-makers across sectors (Bratianu and Vasilache, 2010; Groves and Vance, 2015; Zweibelson, 2016), vested interests and unequal power relations between involved stakeholders (Larson and Soto, 2008; Sesan, 2014), and the ambiguous role of the facilitators or "participatory workers" in shaping the outcome of participatory processes (Kothari, 2001; Wakeford, 2017). In 2020, the global Covid-19 pandemic has added a new level: social distancing, lockdowns, severe travel interruptions, and shifts to virtual working modes constitute entirely new challenges to conventional participatory methods that heavily rely on face-to-face interaction and physical gatherings (see e.g., Hall et al., 2021; Köpsel et al., 2021). The implications for the outcome of these processes are potentially severe, and they further complicate already existing perils of participatory approaches.

Based on our experiences from a recent assessment mission on the social-ecological impacts of sustainable farming practices in two mountain districts of rural Tajikistan, this paper discusses how methodological changes necessitated by the Covid-19 pandemic implicated the participatory process and its outcomes. The aim of the mission was to conduct an impact assessment of a development project on the promotion of biodiversity and ecosystem-enhancing land-use approaches. Based on the MARISCO (adaptive MAnagement of vulnerability and RISk at COnservation sites) method, we embraced an approach that is both systemic and participatory. "Systemic" means that the analysis acknowledges that any situation is the result of the interaction of complex systems, where e.g., feedback loops, synergistic effects, and non-linear change necessarily characterize changes of the systems implying an inherent indeterminacy and unpredictability. Therefore, systemic analyses shall somehow reflect the complexity of consequences, drivers, and underlying factors of change. The methodological building block consisted of two comprehensive stakeholder workshops in 2018 and 2020 with farmers, NGO representatives, and Tajik scientists, with the latter assisting as co-facilitators of the process. In 2020, however, the pandemic forced us to overhaul our approach and to employ a partially remote working approach that heavily relied on the capacities of the Tajik scientists: after receiving virtual methodological training, the co-facilitators became facilitators of a series of short and simplified workshops with only a limited number of participants. These methodological changes compromised the assessment in a number of ways, affecting both the participatory process itself as well as its outcome. Among others, necessary reductions in methodological steps revealed a number of drawbacks, such as limited depth and significant compromises to the systemic approach. Moreover, the adopted assessment design also led to reduced traceability of group dynamics during the workshops, while at the same time putting additional pressure on the Tajik scientists who had little experience with participatory processes.

In this paper, we aim to provide a more detailed evaluation and reflection of these implications for our systemic and participatory assessment approach. In doing so, we address the following questions: How can MARISCO or other systemic-participatory assessment approaches be adapted to a (partial) remote working context without compromising their systemic approach? In what way does our methodological adaptation to "decentralize" participatory workshops and delegate their implementation to

less experienced co-facilitators risk jeopardizing key participatory principles? Finally, what are the lessons learned for future (adapted) applications of MARISCO and similar approaches through remote working processes? To answer these questions, we draw primarily on our personal experience during and reflections after the process. Our inquiry is guided by (a) our insights from past MARISCO experiences, (b) the principles and concepts on which this method is founded, and (c) theoretical and practical insights from participatory (action) research documented in literature.

In the following section, we provide a brief introduction of the project setting in rural Tajikistan, before presenting the MARISCO method in section the MARISCO Method. Section Envisioning and Implementing the Participatory Process then describes our originally envisioned assessment approach and the adaptations to the methodology that we applied during the Covid-19 pandemic to bring the project to a meaningful conclusion. In section Effects of the Methodological Changes on the Process and Its Outcome, we present and discuss in detail the consequences of these changes for the outcomes of the assessment, the participants, and the new facilitators, before providing an outlook for future applications and conclusions in section Conclusion.

PROJECT CONTEXT AND SETTING

Our assessment was part of a consultancy for the project "Biodiversity and Ecosystem Services in Agrarian Landscapes" (ICI-Biodiv) implemented by the "Gesellschaft für Internationale Zusammenarbeit" (GIZ) as part of the German International Climate Initiative (ICI) in selected regions of Tajikistan, India, and Kenya. The project aimed to strengthen the capacities of land users and their organizations, technical experts, and decision-makers in civil society and public institutions to conserve and promote biodiversity and ecosystem services in agrarian landscapes. As part of the project activities implemented in Tajikistan in 2017–2020, a variety of "land-use approaches" and techniques to enhance ecosystem services and (agro-)biodiversity were piloted by 38 selected farmers in the two mountain districts of Ayni and Rasht. As implementing partner of GIZ in Tajikistan, German Agro Action (Deutsche Welthungerhilfe e.V.) was responsible for promoting and facilitating these land-use approaches through technical and material support, workshops, and farmer field schools, among others.

To evaluate the effects of the implemented land-use approaches on biodiversity and ecosystem services, GIZ contracted the Leibnitz Center for Agricultural Landscape Research (ZALF) and the Center for Econics and Ecosystem Management to design and implement ex-ante (in 2018) and ex-post (in 2020) assessments in the project areas in Tajikistan and India (Mizoram). Our methodological approach was similar in both countries, but due to major difficulties in the collaboration with the local partner organization in 2019, in addition to the Covid-19 pandemic in 2020, only a fraction of the planned activities for the ex-post assessment could be realized in India. Therefore, this paper focuses only on the activities in Tajikistan, where it was possible to bring the assessment to a satisfying conclusion.

The methodological approach, described in more detail below, was developed by the four German authors of this paper. The authors AS and MS were responsible for workshop design and implementation, with logistical support in Tajikistan provided by German Agro Action. As described in more detail below, the participatory processes were co-facilitated by a team of four agricultural scientists from Tajikistan, who were contracted separately by German Agro Action and co-authored this paper (authors SK, BB, KZ, and SJ). In addition to the ex-ante and ex-post assessments, the objectives of the mission also included capacity building on the side of the Tajik partners through training, supervising, and monitoring by the German researchers.

Five villages with their respective watersheds were selected by GIZ and German Agro Action for project implementation, three in Ayni District (Sughd Province), and two in Rasht District (Districts of Republican Subordination). Both districts are characterized by a mountainous landscape with elevations ranging from about 1,300 to 2,100 m asl. The climate is continental, with relatively dry conditions in the valley bottoms and an increase in precipitation with elevation. Most farmland is irrigated through a network of water channels fed by glacial and snow meltwater streams, but rain-fed agriculture is also practiced on parts of the village cropland. The vast majority of farmers are smallholders: Based on data on Ayni district from 2008, Mandler (2013) finds that 17.4% of households/families do not hold any agricultural land, 68.9% have landholdings of up to 0.5 ha, and only 12.4% hold more than 0.5 ha. The pilot farmers of the project in Ayni have median landholdings of 0.25 ha (own calculations based on project data), thus reflecting the local structures reasonably well—with a possible bias toward slightly more well-off farmers. No reliable statistics on farm structures in Rasht District are available, but average landholdings are generally larger there. Pilot farmers in Rasht have median landholdings of 1.12 ha (own calculations based on project data). Among others as a result of these small landholdings, agriculture is barely sufficient to make a living, and most farming households rely on off-farm income to sustain their livelihood. In particular, remittances sent by household or family members who migrated abroad for work (mainly Russia), play a crucial role. Poverty rates are high in Tajikistan, and the country's economy heavily depends on remittances (Mandler, 2016; Murodova, 2018).

Until the dissolution of the Soviet Union in 1991, agriculture in Tajikistan was organized in collective-owned (*kolkhoz*) and state-owned (*sovkhoz*) farms. While some collective farms still exist, most of them have been converted into small-scale family (*dekhon*) farms through a series of land reforms since the 1990s. Still, all farmland in Tajikistan belongs to the state, and farmers are granted inheritable tenure rights through land certificates (Mandler, 2015, 2016). In Ayni and Rasht, farmers produce various crops including wheat, potatoes, fodder crops, tree fruits, and nuts, as well as a broad variety of vegetables both for household consumption and domestic markets. Most households own some livestock, making use of mountain pastures in summer. More generally, local farming systems must be regarded as embedded in complex mountain ecosystems of pastures,

forests, bushlands, glaciers, and riverside ecosystems, among others, that affect and are affected by agricultural practices in various ways.

Current farming systems in Ayni and Rasht are subject to a number of stresses and threats that were also identified by farmers during our MARISCO assessment, including soil degradation, low productivity of land, water scarcity, decay of and limited access to agricultural infrastructure, pest outbreaks, and uncontrolled livestock grazing, among others. The ICI-Biodiv project aimed to address these stresses and threats and to contribute to sustainable livelihood improvement of farmers through the promotion of a number of ecosystem-enhancing and biodiversity-enhancing land use "techniques" tailored to major agroecosystems found in the villages: irrigated and rainfed cropland, orchards, kitchen gardens, and to a lesser extent small-scale forest plots for which some farmers are being granted temporary use rights by the forestry department. Among others, the promoted techniques included intercropping, crop diversification, fencing, integrated pest management, and erosion control measures. These and other techniques were implemented by the 38 pilot farmers with support by the ICI-Biodiv project and promoted in the villages through farmer field schools and other activities. All of these project measures were designed by the project in consultation with local partner NGOs in Ayni and Rasht, and implementation had already begun prior to our engagement. Our task as consultants, in turn, was to implement a systemic assessment of the applicability and impacts of these interventions on local social-ecological systems, with a particular focus on their effect on (agro-) biodiversity and related ecosystem services. To do so, we designed and applied a participatory assessment approach that puts the perspectives, knowledge, and expertise of the farmers into the center.

THE MARISCO METHOD

The methodological basis of our assessment approach was MARISCO, a method designed to systematically assess the vulnerability of ecosystems—including agroecosystems—or landscapes subjected to human influence and to plan for adaptive management strategies aimed at reducing threats and stresses to these systems (Ibisch and Hobson, 2014). The approach is people-centered and ecosystem-based (Schick et al., 2018), with people considered as part of, not external to ecosystems. The perspectives and knowledge of resource users are therefore regarded as indispensable for thorough situation analysis and for developing sustainable management strategies. Originally derived from the Conservation Measures Partnership's Open Standards for the Practice of Conservation (Conservation Measures Partnership, 2013), its step-by-step procedure for participatory processes encourages participants to regard themselves as "citizen scientists" and to analyze human-induced threats and impacts on ecosystems from an integrated, ecological perspective. There exist a variety of participatory and systemic approaches for the analysis and management of ecosystems (Eelderink et al., 2020), and the benefits and challenges are well-documented in literature (Irvin and Stansbury, 2004; Reed, 2008). MARISCO differs from most approaches by placing greater emphasis on ecosystem functionality, system dynamics, change and future risks, with a particular focus on the effects and problems relating to climate change and by strictly following the ecosystem based approach (Secretariat of the Convention on Biological Diversity, 2004; Salvaterra et al., 2016; Schick et al., 2017). While methodologically distinct, MARISCO also shares strong similarities with approaches found in the field of agroecology—in particular, its holistic perspective and emphasis on knowledge co-production (see e.g., Méndez et al., 2013; Audouin et al., 2019; Anderson et al., 2021). By facilitating iterative processes of collective learning, MARISCO also integrates principles found in participatory action research (Bloch et al., 2016). MARISCO has been applied in various projects worldwide,[1] mainly as a participatory assessment and planning tool in the wider field of ecosystem conservation. The MARISCO method is founded on democratic principles and aims to empower people from all backgrounds who have a vested interest in the living environment around them to influence decision-making during planning and management of the living landscape. Through the varying setups of the working process, the method facilitates the co-production of knowledge, since participants, as well as facilitators, are provided with various opportunities to present their knowledge and to learn from others.

As outlined in detail in the MARISCO guidebook (Ibisch and Hobson, 2014) the method follows a stepwise process that can be adapted to individual project needs and is typically applied in a series of at least two participatory workshops (**Figure 1**).

The first part of the method is dedicated to systemic knowledge mapping and problem analysis of the project site by the involved stakeholders during a first workshop of at least 2 days. Using a method of systematic analysis and documentation with visualization tools, the perceptions, assumptions, and knowledge of the participants related to biodiversity, threats, and drivers of change are collected, ordered, and represented in the form of a so-called systemic knowledge map—a systemic situation model indicating cause-effect relationships (**Figure 2**). Usually visualized with custom-made moderation cards on a large wall display, the model consists of a varying number of interacting elements belonging to seven different categories: ecosystems and components, ecosystem services, aspects of human well-being and key ecological attributes as well as stresses, threats (drivers of stress), and so-called contributing factors. The elements of the systemic knowledge map are identified by the participants during open discussions. During a series of subsequent steps, the participants also evaluate the stresses, threats, and contributing factors according to a set of rating criteria on their states of criticality, dynamics, and levels of knowledge and manageability (see Ibisch and Hobson, 2014, 100 for a detailed description of the rating criteria).

After the first workshop usually follows an interim phase of consistency and plausibility checks, preliminary evaluation, and model digitization by the workshop facilitators. The next MARISCO phase is then dedicated to identifying, evaluating,

[1] See www.marisco.training

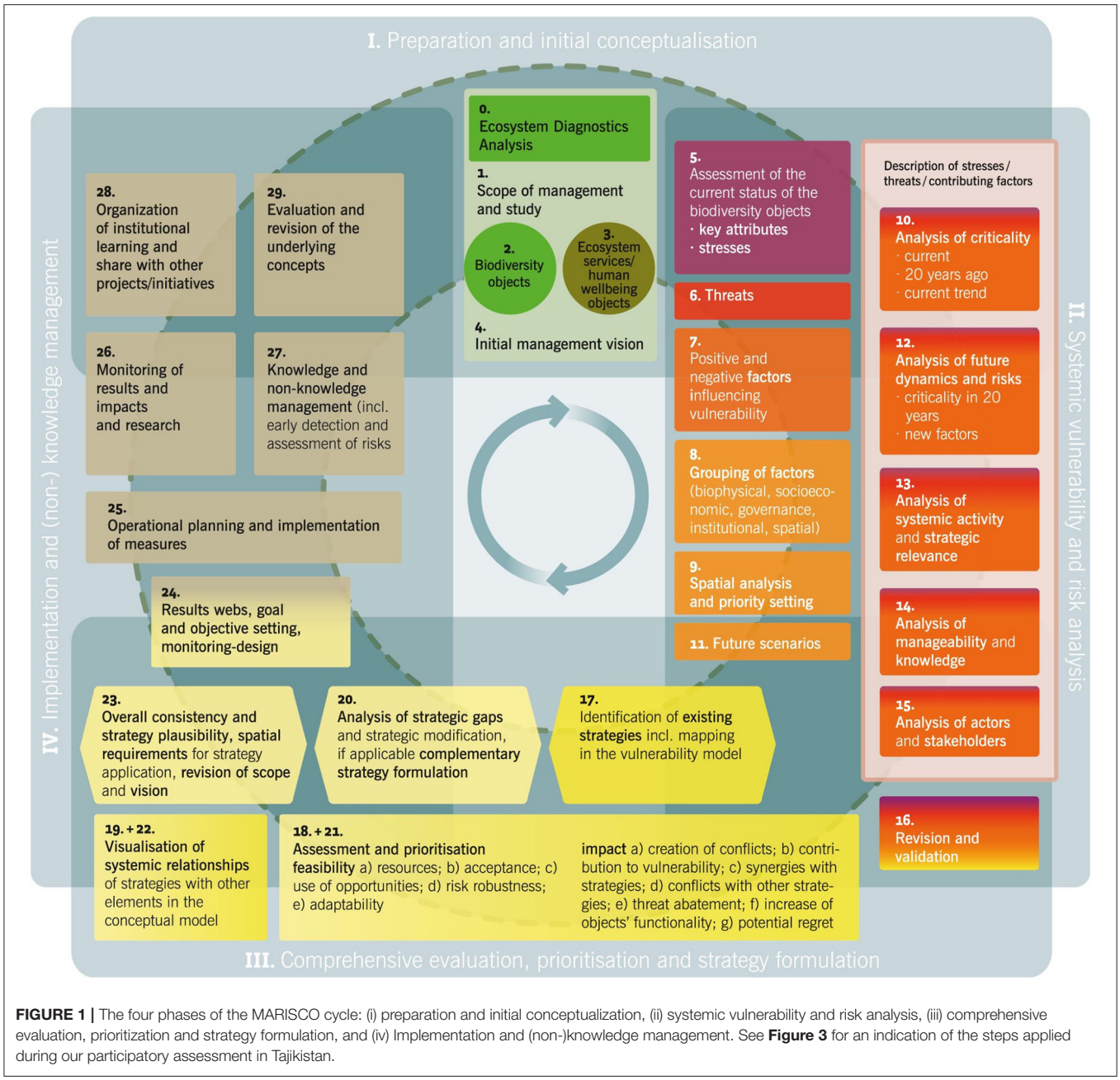

FIGURE 1 | The four phases of the MARISCO cycle: (i) preparation and initial conceptualization, (ii) systemic vulnerability and risk analysis, (iii) comprehensive evaluation, prioritization and strategy formulation, and (iv) Implementation and (non-)knowledge management. See **Figure 3** for an indication of the steps applied during our participatory assessment in Tajikistan.

and prioritizing strategies to address the identified problems on the basis of a second participatory workshop. The workshop starts with a revision of the systemic knowledge map and the outcomes of the problem analysis and rating. This is followed by several steps related to situating and evaluating existing problem-solving strategies of governmental and non-governmental actors, identifying gaps, and developing complementary or alternative strategies as well as systematically assessing their anticipated outcome based on cause-effect mapping and rating exercises (see also Schick et al., 2018).

In our assessment mission in Tajikistan, we applied MARISCO as an evaluation method that primarily relies on participatory methods of systemic knowledge mapping and analysis, but also integrates "hard data" collected through conventional scientific methods.

ENVISIONING AND IMPLEMENTING THE PARTICIPATORY PROCESS

Assessment Design and Implementation Before the Pandemic

The envisioned process of our systemic-participatory assessment of the social-ecological impacts of the project interventions in

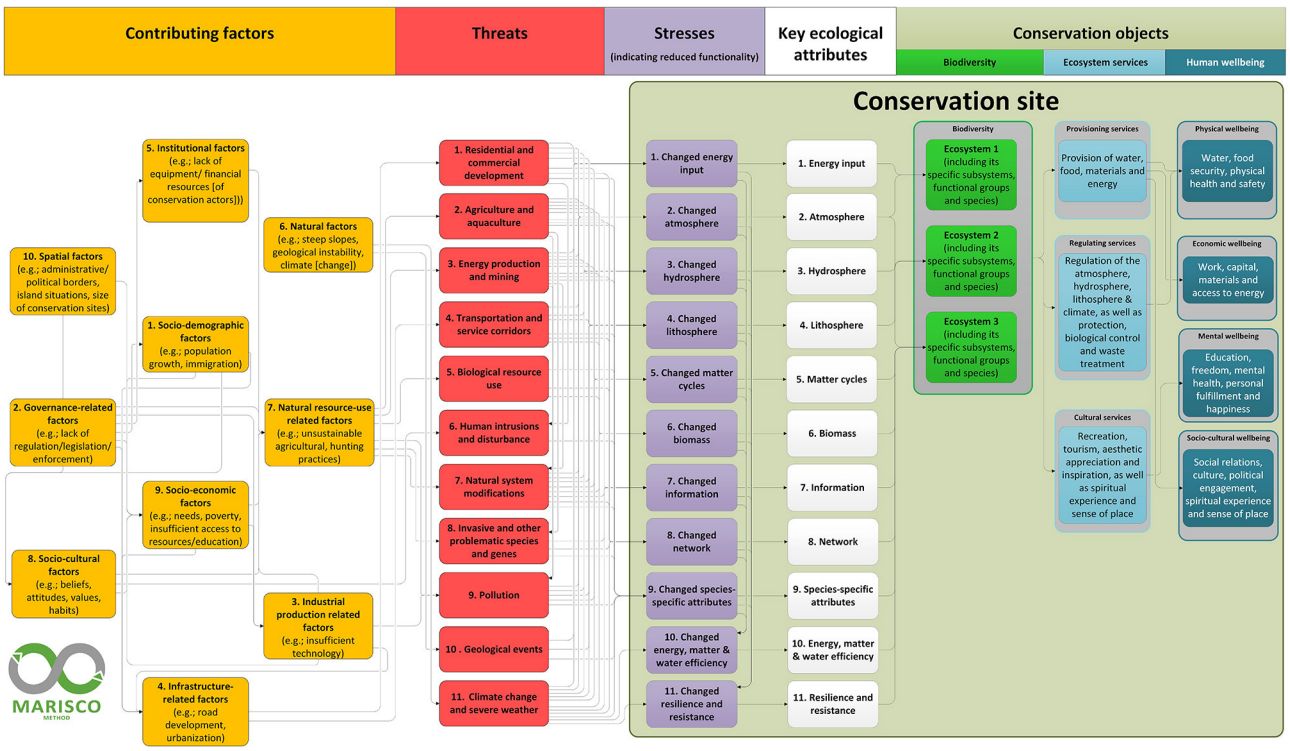

FIGURE 2 | A generic systemic knowledge map describing a hypothetical conservation site by means of eight distinct categories: contributing factors, threats, stresses, key ecological attributes, biodiversity objects, ecosystem services, and human well-being, as well as strategies.

rural Tajikistan consisted of two interrelated pillars: a series of participatory workshops, and empirical fieldwork. While the focus of this paper is on the first pillar, both are closely related: the research design for the fieldwork was part of the participatory process and the outcomes of both pillars would have been combined during a final workshop with the participation of all involved parties, contributing to a holistic assessment as the ultimate output of the mission (**Figure 3**).

At the beginning of the assessment in 2018, a team of Tajik scientists were selected by GIZ and German Agro Action, in consultation with the German researchers, through a public tender process. Their tasks were to take a hybrid role as participants (contributing with their expert knowledge) and co-facilitators of the participatory workshops, to co-design the assessment approach, and to conduct the empirical fieldwork. All four scientists were members of a research institute of the Tajik Academy of Agricultural Sciences that was selected based on their proposal, though the affiliation of some of them changed in the course of the project. Besides the quality of the proposal, the scientific qualification of the team members to conduct the empirical fieldwork were important selection criteria, rather than their level of experience with participatory processes. During the first workshop held on June 4–5, 2018, a total of about 25 participants—the Tajik scientists, 17 pilot farmers from both districts, two members of local agricultural administrations and two local NGO members—conducted a systemic analysis of the complex social-ecological systems of the study sites under the guidance of AS and MS. During this 2-day workshop held in the capital city Dushanbe, the participants defined the scope of the analysis and described and assessed the complex systems according to a given set of element categories using the MARISCO methodology. At the beginning, the facilitators gave a short explanation of the task ahead, as well as a definition of the specific element category (e.g., ecosystem services, ecosystems, and threats) addressed during each step. The participants identified the elements during open discussions and documented them on moderation cards. The task was considered completed once no new elements could be identified by the participants. The cards were then pinned to the wall and, if necessary, restructured by the facilitators to increase the logical flow, before the participants systematically evaluated the identified stresses, threats, and contributing factors. The outcome was a systemic knowledge map depicting the knowledge of the participants of the social-ecological systems and the problems they face. In total, the participants identified 16 elements of human well-being, 16 ecosystem services, 25 ecosystems and components, 16 key ecological attributes, 17 stresses, 31 threats and 87 contributing factors. In addition they made 810 evaluations for the rated elements. The highest ranked stresses were eroded soils, shortage of water and melting glaciers. Among the threats land degradation, pests and diseases were ranked the highest, while increasing number of livestock, corruption and global warming were identified as the most important contributing factors.

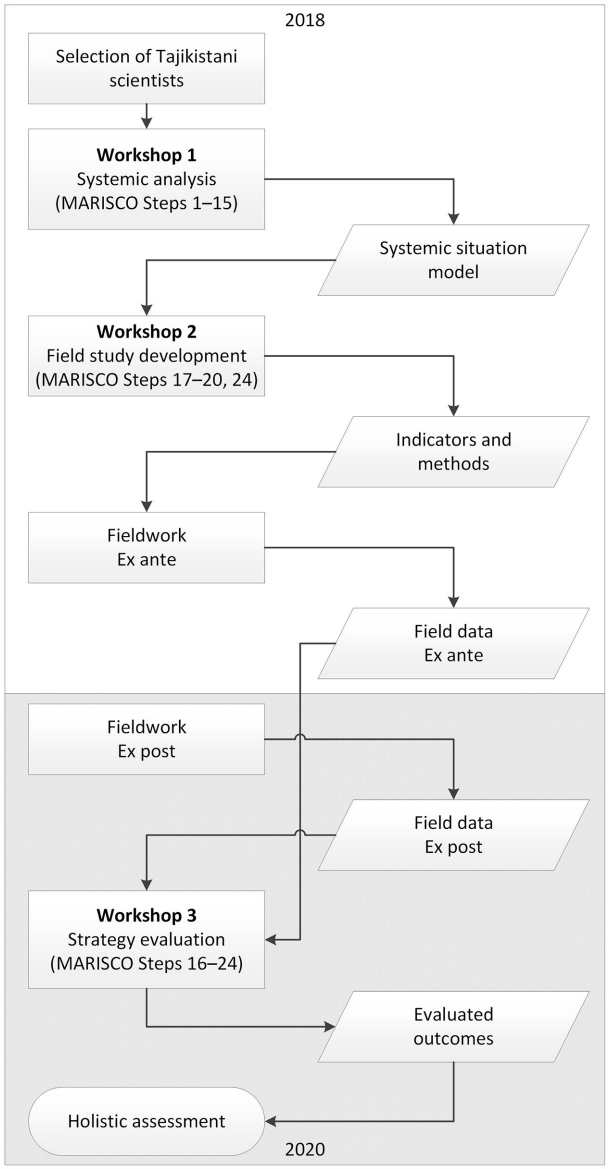

FIGURE 3 | Envisioned work process of the participatory approach. The following MARISCO steps were performed during the respective workshops: workshop 1–steps 1 to 15; Workshop 2–steps 17 to 20 and 24 (tentatively). According to the original work plan, the participants would have executed MARISCO steps 16 to 24 during Workshop 3. Instead, they only performed step 18.

The systemic knowledge map formed the basis for the design of the ex-ante assessment that was jointly developed on June 6 during a smaller non-participatory workshop by the four Tajik scientists, the German researchers, and two project staff members from German Agro Action. Using moderation cards designed for this task, the management strategies or "techniques" implemented by German Agro Action were preliminarily inserted into the systemic knowledge map to examine their postulated cause-effect relationships in addressing the identified stresses and threats. Based on this mapping exercise and under consideration of feasibility and available resources, we selected the strategies that should be evaluated through fieldwork, identified the agroecosystems for data collection, defined indicators, and specified the scientific methods for their measurement. Furthermore, a detailed work plan was developed for the implementation of the assessment in the selected agroecosystems by the Tajik scientists. All decisions were made by consensus. The fieldwork of the ex-ante assessment was executed between June and August of 2018 by the Tajik scientists and included measurements of plant biomass, plant diversity, soil samples on pilot and reference plots, as well as a survey with about 50 farmers (both pilot and non-pilot farmers) focusing on land-use practices, agricultural inputs and outputs, and socioeconomic data on the farmers' households and livelihoods. The data generated during the ex-ante assessment was partially processed and analyzed by the Tajik scientists, before being forwarded to the German researchers for completion. The findings were presented to the project staff in the form of a report. The process was accompanied by training of the Tajik scientists in the methodological steps by AS and MS, who also guided and supervised the overall process.

The original process foresaw that the fieldwork of the ex-post assessment would be executed 2 years later during the same season (June–August 2020), applying the same methods for data collection. The findings of the fieldwork would have been presented by the Tajik scientists during a comprehensive strategy evaluation workshop with the participants of the first participatory workshop and additional decision-makers from agricultural administrations and NGOs. During the workshop, the participants would have jointly evaluated the effectiveness of the management strategies to induce positive changes within the complex social-ecological systems, completing the theoretical and empirical findings of the assessment. For this purpose, the participants would have revised the systemic knowledge map to prove its consistency and to make modifications, if needed. By revising the evaluations of the various descriptors of the model elements, the participants would have had the opportunity to improve their understanding of how the drivers of stresses to the social-ecological systems and their dynamics can be addressed. It would have also set the stage for the evaluation of the different management strategies or "techniques" that have been implemented and promoted by the project. For this purpose, the existing strategies would have been mapped by the participants into the systemic knowledge map next to the elements that they address. The participants then would have linked the strategies with arrows to the specific elements, which has been shown to encourage participants to reflect on their assumptions about the effectiveness of the strategies, to identify potential blind spots, and to reduce avoidable risks. This process usually also reveals underlying factors, threats, and stresses of high strategic relevance that are not addressed by existing strategies. Moreover, the participants would have had the opportunity to propose modifications to the existing strategies and to develop complementary or alternative strategies to address the identified problems. In addition, the participants would have dedicated time to develop recommendations to improve the effectiveness of

management strategies in order to move toward more sustainable agricultural practices. The results of the additional MARISCO steps would have allowed for an in-depth and comprehensive analysis during the holistic assessment at the end of the mission in November 2020 as a basis for policy suggestions and potential follow-up projects in Tajikistan.

Adaptations Due to the Covid-19 Pandemic

While the activities in 2018 were implemented as planned, major changes in the work plan were necessary for the ex-post assessment in 2020 during the Covid-19 pandemic. The fieldwork of the ex-post study started in June 2020, but some components, such as the farmer surveys, were delayed by several weeks due to travel restrictions within the country. However, the final evaluation had to be adjusted more fundamentally.

When it became clear in mid-2020 that the participatory approach could not be realized as planned due to the severe work restrictions resulting from the Covid-19 pandemic, we discussed various options to bring our assignment to a satisfying conclusion. Due to funding reasons and other external factors, the mission could not be extended beyond November 2020, but for the facilitators AS and MS, it was not possible to travel to Tajikistan at all. A virtual workshop was out of the question, as it would have meant to exclude most of the farmers who participated in the first workshop due to their lack of access to reliable internet connection and required technical equipment. Asking the farmers to travel to Dushanbe for an online or hybrid workshop was considered unethical given the travel risks during a ravaging pandemic.

Moreover, conducting workshops virtually presents inevitable barriers to experiencing fully-fledged, in-person interactions and exchanges with other participants. In face-to-face interactions, people communicate through conscious or unconscious paralanguage, which includes facial expressions, body language, pitch, volume, and speech intonation (Clubb, 2007; Mwambari et al., 2021). Although video conferencing technologies are increasingly available for a broader audience (e.g., Zoom, Google meet), a lack of necessary knowledge among less privileged stakeholders to successfully use these technologies (see also Salma and Giri, 2021), partial loss of paralanguage, and absence of other benefits of physical presence remain major challenges of working in online settings. Workshops specifically suffer from these problems, as they typically provide a forum for networking, information exchange, and intensive group-based collaboration (Becerra et al., 2021). These interactions are strongly limited during virtual meetings. While it is possible to create virtual breakout groups, technical limitations often do not allow for lively discussions among all participants. The MARISCO method, in particular, is designed for broad participation where several participants contribute their knowledge simultaneously. This is usually done by using moderation cards that are collected and ordered by the facilitators or directly mapped by the participants into the systemic knowledge map. There are software applications available that provide similar functions (e.g., Miro, MURAL, Padlet), yet they require additional skills in order to be able to participate. Furthermore, such applications require good computer equipment and a particularly stable and fast internet connection. In Tajikistan, as in many other countries of the Global South (Armbrecht, 2016; Adam and Minges, 2018; Bahia and Suardi, 2019), access to the latter is expensive and severely limited, and remains a challenge even in the capital city Dushanbe.

For MARISCO, there are other factors as well that limit its applicability in virtual working modes: the physical experience of jointly developing and evaluating a complex knowledge map on a large wall display is an important motivating factor in the participatory process that reinforces a sense of ownership. In particular, to see one's ideas in one's own handwriting being part of the jointly developed systemic knowledge map usually increases the identification of the participants with the outcomes of the process.

Thus, after several consultations with German Agro Action and the project lead GIZ, the facilitators AS and MS proposed an alternative plan: Instead of one big centralized workshop facilitated by the German researchers with participants from all five watersheds, small decentralized workshops with identical programs were to be conducted by the Tajik scientists individually in each watershed. The new plan was approved by GIZ and German Agro Action, as well as the Tajik scientists, who had been in close contact with German Agro Action and agreed to take over the new tasks. There was consensus among all partners that this was the most appropriate solution given the seriousness of the Covid-19 pandemic. However, as changes in social distancing rules due to the dynamic pandemic situation could change anytime, it was uncertain until their implementation whether the workshops could be held. In case of cancellation, the only option left would have been to conduct phone interviews with the farmers, which would have drastically reduced the depth of the assessment further.

While the decentralized approach allowed for at least a minimum of physical interaction during the workshops, it also caused time constraints. Originally, the centralized workshop was planned to have a duration of 3 days, which would have provided the participants with ∼18 to 22 h to work on the diverse topics. Due to these modifications, the workshop duration had to be reduced drastically, resulting in a significant reduction of the available working hours. To cope with the time constraints and to enable the Tajik scientists to implement the participatory workshops, it was necessary to revise and radically simplify the methodological steps. Important steps of the MARISCO method, such as the revision of the systemic knowledge map (step 16 in **Figure 1**), the strategic gap analysis (step 20), the design and evaluation of complementary strategies (steps 20–22), as well as the development of results webs for the identified strategies (step 24) had to be omitted in the workshops. Basically, only step 18 of the MARISCO-cycle—the evaluation and prioritization of existing strategies through systematic rating exercises—could be implemented.

A "training for trainers" was conducted during a virtual working session with the help of a professional interpreter. The Tajik scientists were trained in the basics of organizing and facilitating participatory strategy evaluation workshops. This included information regarding the logistics necessary for the implementation of the workshops, as well as information about

the different techniques that can be used to steer the participatory process. The theoretical background of the methodology was not addressed during this capacitation.

The Tajik scientists then traveled to the villages and executed the participatory workshops, which were held on October 23 and 24 in Rasht and from October 28 to 30 in Ayni. They were partially accompanied by two project staff members from German Agro Action, who provided logistical support and took part as passive observers to monitor the workshop progress. After completion, the Tajik scientists sent the results to the German researchers for processing and analysis and prepared reports. Through these changes, it was possible to conclude the assessment despite the travel and work restrictions. However, the process and its outcomes were affected in various ways, as discussed in the following.

EFFECTS OF THE METHODOLOGICAL CHANGES ON THE PROCESS AND ITS OUTCOME

This section addresses the first two research questions raised in the introduction, scrutinizing how the methodological adaptations (a) possibly compromised our systemic approach, and (b) implicated the participatory process as well its underlying principles and outcomes. To do so, we draw primarily on our experiences and reflections during and after implementation, relating them to previous MARISCO experiences and to theoretical and practical insights from relevant literature. Of the four German authors, two (AS and PI) have facilitated dozens of MARISCO workshops in various regional and cultural contexts prior to this project, and two can draw on prior experience as facilitators of other participatory approaches (MS and RB). For the four Tajik authors, the participatory workshop approach described in this paper was their first experience of this kind, but they can draw on their first-hand experience from both the comprehensive MARISCO workshop in 2018 and the decentralized workshops in 2020. During the writing phase, we shared and discussed our experiences and reflections with each other during virtual meetings and email conversations, and made sure that the perspectives of all co-authors are reflected in our inquiry. In addition to personal reflections, other important sources informing this paper were meeting minutes and email conversions with project partners, internal workshop documents, and project reports from 2020 that were thoroughly reviewed before and while writing this paper.

We found that the methodological changes to cope with the pandemic situation affected the participatory evaluation process and its outcomes in two ways: first, through the methodological simplifications that were necessary for the new workshop design, and second, through the new facilitation roles and responsibilities within our team. These two aspects will be examined in sections Simplification of the MARISCO Approach and Effects of the new Facilitation Roles on the Participatory Process. Apart from our main objective of conducting a systemic and participatory project assessment, the changes in our approach also had important implications in terms of learning effects among the involved stakeholders and the newly-trained facilitators, which we discuss in more detail in sections Reduced Opportunities for (Horizontal) Learning Among Participants and Challenges and Learning Opportunities for Local Partners.

Simplification of the MARISCO Approach

In order to adapt the strategy evaluation workshops to the new circumstances and to enable the Tajik scientists to take over this task, the methodological steps had to be significantly curtailed. Yet, this compromised both the systemic aspects and depth of the analysis, and, potentially, led to a reduction in systemic comprehension by the participants.

The main reason for these reductions was the necessity to adjust the planned work steps to the new time budget. Time-consuming steps, in particular the revision of the systemic knowledge map, the mapping of strategies into the model and visualization of their systemic relationships, and the development of more systematic "results webs" had to be omitted. Yet, these steps are vital for participants to deepen their comprehension of the complexity of the given social-ecological systems and of the effects of project interventions. It cannot be determined exactly to what degree the omission of these steps affected the participants' further contributions to the assessment, but previous MARISCO experiences have demonstrated their significance. First, the revision of the model and particularly of the rating results of stresses, threats, and contributing factors at the beginning of the strategy evaluation workshop allows the participants to revise their previous work and to prioritize existing problems. Assisted by visual material prepared by the facilitators prior to the workshop (large posters displaying the digitized model and color-coded tables with the rating results), this exercise serves as an important entry point into the evaluation of strategies. Second, the tasks of mapping strategies into the model, visualizing their systemic relationships, and developing results webs often trigger valuable ideas and awareness of feedback loops and non-linear change that might otherwise have been missed. This was the case, for instance, in participatory ecosystem-based assessments conducted in northern Namibia with inhabitants of a protected area network. Guided by the MARISCO method, the participants identified a negative feedback loop resulting from the interaction of climate change impacts, hunger, poverty, high population density, and demand for land, which ultimately led to the degradation of the local ecosystems (Schick et al., 2018). The exercise of drawing results webs for individual strategies is particularly helpful in this regard: the threats and contributing factors likely to be influenced by the selected strategy are translated into assumed outcomes, which are then visualized in the form of detailed cause-effect relationships based on the connections predefined by the systemic knowledge map.

These methods of visualizing the systemic effects of strategies are particularly useful for two more steps that also had to be omitted, yet with different effects on the assessment: the strategic gap analysis and the development of complementary strategies. The gap analysis enables the participants to identify blind spots within the existing strategic portfolio, which have the potential to reduce the effectiveness of the strategies if their negative effects on the complex social-ecological system remain

unabated. The development of complementary strategies invites the participants to contribute their specific local knowledge and to unfold their creative potential, which has often been found to produce new information (Kloprogge and Van Der Sluijs, 2006) and to generate previously unconsidered and better-assessed solutions (Reed, 2008; Newig and Fritsch, 2009; Schick et al., 2017). Hence, it is a significant loss for the process that these steps could not be implemented.

Effects of the New Facilitation Roles on the Participatory Process

It has been argued that the quality of the outcomes of participatory processes is strongly dependent on the quality of the process that leads to it (Reed, 2008; Reed and Abernethy, 2018). Chess and Purcell (1999) evaluated the extent to which process and outcome goals were achieved through a range of participatory methods. They found that the success was not influenced by the choice of method, but by the way that communication and group dynamics were handled by facilitators as well as by the clarity of set goals and the quality of planning. Their findings highlight the importance of the facilitators for participatory processes. In order to enable the participants to express their full potential, facilitators have to be flexible enough to guide and adapt the process to the different and changing circumstances. Thus, it is possible that the replacement of experienced facilitators with beginners might have attenuated the quality of outcomes of the participatory evaluations.

The training sessions for the new facilitators had to be accommodated within the already-stretched time budget of the Tajik scientists, who had other professional obligations as well. Past training of MARISCO facilitators has shown that new facilitators will need at least 4 days of training in order to be able to steer a participatory assessment (yet, the supervision of the first applications of the method is strongly advised). In order to leave enough time for the completion of their existing assignments, we had to reduce the training to a virtual workshop of half a day. This time was merely enough to convey the necessary knowledge to plan and organize the workshops and to cover a minimum number of methodological details. However, it did not provide sufficient time for a thorough instruction in the underlying concepts and theoretical background of the methodology, hence the Tajik scientists had to rely solely on their personal experience to address the systemic relationships and complexities during the workshops. Nor was there sufficient time to teach the new facilitators all the necessary skills and techniques to successfully conduct the workshops.

Skills, such as the capability to maintain positive group dynamics, to handle dominating individuals, to encourage participants to question assumptions, and to re-evaluate entrenched positions are difficult to learn and tend to be developed through years of experience, intuition and empathy (Richards et al., 2007). Not only managing group dynamics in a manner that is sensitive to power relations, but also monitoring and recording them for subsequent interpretation of the process outcomes is crucial in this regard, but was limited in its depth due to a number of factors. The new facilitators were already burdened with many new and unfamiliar methodological tasks during the workshops and their time resources only allowed for rather brief reports on the workshop processes that served as the basis for AS and MS to analyze and interpret the results. Overall, however, handling group dynamics did work well, only in one of the five workshops it was difficult to make everyone's voice heard, as one dominant farmer, who was also the village *rais* (local leader), constantly attempted to force his opinion upon others. To monitor and analyze the effects of such dynamics on the different methodological steps in more detail, communication is key. Here, language gaps were a significant barrier: while the German scientists had no knowledge of Tajik and only one of them basic Russian skills, only one of their Tajik colleagues could communicate in English. Hence, throughout the assessment mission, deeper discussions were only possible with the help of interpreters. For the first MARISCO workshop in 2018 and the virtual training in 2020, a professional interpreter was hired—but during most of the working process, local project staff from German Agro Action took over this task. However, especially toward the end of the project in 2020, their availability was often limited. Generally, we find that the challenges of virtual meetings become significantly more severe when working with interpreters, as non-verbal communication is particularly important in this context and translating back and forth is more time-consuming, especially when audio latency is high due to slow internet connections.

The quality and delivery of the workshops were somewhat heterogeneous, because the Tajik scientists first had to familiarize themselves with the methodological steps. A particular challenge during the first workshops was to introduce the next tasks, for example, to explain the rating criteria for the evaluation of the identified strategies. In addition to the virtual training, their experiences and observations during the first MARISCO workshop in 2018 helped, but the greatest training effect was provided by the actual implementation itself. Thus, the tasks became easier and implementation more efficient with every workshop, which was reflected in the overall duration. While the first workshop had a duration of 8 h, the last workshop took only 4.5 h until completion, as the facilitators knew well by then what questions to ask, how to explain the tasks, and how to moderate the discussions in an effective manner. Nevertheless, the evaluation results of the five local workshops were generally consistent and existing differences between strategy evaluation outcomes from the different villages could usually be explained by local circumstances, such as the steepness of slopes or access to water, just to name a few.

Apart from these challenges, the change in workshop facilitators likely also created benefits for the evaluation process. As Reed and Abernethy (2018) point out, not only strong operational skills are crucial for successful workshop facilitation, but also the ability to bridge cultural and language differences. Thus, the fact that the new facilitators belong to the same country and ethnic group and speak the same mother tongue as the participants led to a reduction in communication gaps between farmers and facilitators. Possibly, this enabled a more straightforward, genuine, and critical discussion of the project interventions, their benefits, and problems as compared to a

workshop facilitated by German researchers who appear to be closely affiliated with international development organizations. Nevertheless, differences in positionality between the Tajik scientists and local farmers could play a role as well, possibly leading to other forms of bias in the outcomes: for instance, farmers might keep certain ideas for themselves, if they fear that their viewpoints and knowledge are deprecated by the respectable scientists guiding them through the workshop (Mistry et al., 2015). To avoid such situations, experience and training in participatory approaches are required—as well as a prior engagement by facilitators with questions of positionality and reflexivity (see e.g., Cook et al., 2005; Caretta, 2015; Pimbert and Barry, 2021), which is not typically part of natural science training in Tajikistan and elsewhere.

Overall, the role of facilitators is too multifaceted to give a definite answer on the degree to which the new responsibilities influenced the workshop process and outcome, as we lack a baseline for comparison. According to the Tajik scientists, the quality of their workshop results may have been only been 70 percent of what AS and MS would have achieved if they conducted the workshops, the reason being the higher experience of the latter with the MARISCO method and with facilitating participatory workshops. The degree of trust and honesty of farmers toward the facilitators, however, would have been either similar or lower toward AS and MS due to their very different cultural background.

Reduced Opportunities for (Horizontal) Learning Among Participants

There are other factors as well that possibly influenced the outcomes of the process, in particular regarding learning effects. As previously mentioned, the original process foresaw a centralized strategy evaluation workshop with participants from all five watersheds. One of the advantages of such a setup is that it provides a space for cooperation with and horizontal learning from participants from other villages. Since the workshops had to be executed individually for each watershed, these interactions were not possible. This presents a major disadvantage, since participants in previous MARISCO workshops greatly valued opportunities to report on their workshop achievements and to review and discuss the results of the other group while working through the methodological steps (Schick et al., 2018). There are many examples of the benefits of horizontal learning in literature (e.g., Patel and Mitlin, 2002). Tschirhart et al. (2016), for instance, demonstrate in case studies from northern South America how indigenous community members were significantly more receptive to solutions emerging from, and communicated by, other indigenous peoples, and that this approach was a significant motivating force for encouraging change in their own community. Likewise, the agroecology literature is rich in examples of how horizontal learning processes between farmers across territories have been instrumental for developing and spreading problem-solving strategies that are adapted to local contexts, while also supporting the autonomy and independence of farming communities (Anderson et al., 2020, p. 4, 2021, p. 69–76). In addition, the lack of direct exchange between farmers from different villages during the workshops probably affected the outcome as well, as the new facilitators observed: When comparing the first MARISCO workshop in 2018 with the decentralized workshops in 2020, in 2018 group processes were more dynamic and discussions more controversial due to the different visions that come together during a large workshop, which led to more complex and holistic results.

Generally, during the workshops in 2020 the participating farmers were less concerned about Covid-19 risks and hygiene precautions than the facilitators. Many of them would have been willing to travel to Dushanbe for a centralized workshop, as the first wave of the pandemic appeared to have passed and they would have appreciated this opportunity to exchange experiences and ideas with other farmers, besides personal benefits such as the opportunity to visit family members. However, they understood the reasons why this was not possible, accepted the local workshop format, and cooperated well with the new facilitators.

Besides horizontal learning, the decentralized workshop design implies another missed opportunity. As social distancing rules demanded the limitation of workshops to a handful of participants (apart from the facilitators), we decided to invite only farmers, as their knowledge and viewpoints were of priority for the prime objective of our mission—the evaluation of the strategies promoted by German Agro Action. However, this meant that other stakeholders, in particular decision-makers from local authorities and NGOs did not participate. This presents a clear disadvantage of our adapted approach, as the inclusion of decision-makers, even if it complicates group dynamics and power relations in the participatory process, is vital for the implementation of its outcome. While much of the literature on participatory methods has rightfully highlighted the need to include marginalized groups, low representation or exclusion of more powerful stakeholders and decision-makers can also undermine the process (Oteros-Rozas et al., 2015). First, decision-makers may oppose or not be very supportive of strategies and policy suggestions developed in processes from which they feel excluded (Blaikie, 2006). Second, inclusive stakeholder dialogues as envisioned in our comprehensive workshop can have a valuable learning effect among decision-makers, who are often not familiar with systemic approaches on the one hand, and with the viewpoints of local resource users on the other (Stevenson, 2012, p. 12). The omission of the MARISCO steps outlined in section Simplification of the MARISCO Approach deprived both the participants, as well as the Tajik scientists, of the opportunity to familiarize themselves with the systemic approach of the assessment and to see it implemented in a practical case in a familiar study region. This has likely hampered their understanding of the process and the outcomes of the holistic assessment, at least to some degree.

Challenges and Learning Opportunities for Local Partners

Participatory processes are uncommon in Tajikistan and not many people have experience with their implementation. This became evident during the selection of national research partners at the beginning of the assessment mission. While all of the Tajik scientists had conducted field research, their interaction with local actors was usually limited to interviews

and research logistics. Yet, as outlined above, conducting a workshop with several participants working together requires very different skills.

Therefore, basic training of the Tajik scientists in the MARISCO approach was part of the mission from the beginning. Usually, new MARISCO facilitators are accompanied by experienced facilitators during several workshops before they take on the task by themselves. Unfortunately, this was not possible in the context of this consultancy, since it would have required a much larger time budget for everyone involved. Given the limited amount of time, we opted for training on the job, while implementing the methods with local stakeholders. Past experiences have shown that active participation during workshops has a much higher learning effect than theoretical teachings. While the Tajik scientists had participated as experts and co-facilitators during the first two workshops in 2018, the strategy evaluation in 2020 comprised new methodological tasks. Hence the Tajik scientists had to rely exclusively on their capacitation during the virtual training. This created new challenges, since they had to execute unfamiliar tasks. However, the new facilitators became more secure with every additional implementation, and taking over the responsibility for workshop facilitation had clearly a much bigger training effect as compared to merely assisting AS and MS. Nevertheless, they were not without help: two project staff members from German Agro Action, who had some experience in participatory methods and had also attended the online training session, were present during the first workshops, and sometimes supported the Tajik scientists when explaining certain steps.

Overall, the experience brought with it significant learning results for the Tajik scientists, familiarizing them with new approaches and capacitating them to implement similar workshops in the future. From their perspective, it would have been ideal to conduct the workshops with AS and MS being present as observers who could occasionally correct them and provide detailed feedback, but the effect of learning by doing presented a valuable opportunity that would have been missed if the pandemic did not interfere with our work. Two of the Tajik co-authors now use the evaluation tools applied during the workshop for their own work, and we are hoping for new opportunities for joint MARISCO workshops as part of another ongoing research project in rural Tajikistan.

On the other hand, the implementation of decentralized workshops also resulted in additional workload. The implementation and documentation of the workshops required a considerable amount of time that had to be accommodated in the already-stretched time budget of the Tajik scientists, who had to coordinate their activities with their work duties at their respective institutions. The inclusion of these additional tasks led to time shortages on their side and compromised their capacities for writing detailed reports. Nevertheless, from the perspective of the Tajik scientists the opportunities to learn interesting new methods offering a fresh perspective on topics concerning their own work more than outweighed the additional workload.

Finally, the changes made in response to the Covid-19 pandemic had valuable learning effects for the German researchers as well. Their expectations on workshop performance by the Tajik scientists were exceeded, and this experience has shown that it would have made sense to give more responsibility to the Tajik co-facilitators already in the original work plan. For instance, they could have taken over moderation tasks with assistance by AS and MS, or moderated strategy rating exercises in parallel breakout groups. In this sense, this experience during the Covid-19 pandemic has provided valuable insights for future work with MARISCO, particularly regarding its adaptability to various workshop formats and the trade-offs to be made when radical simplifications become necessary.

CONCLUSION

Covid-19 has posed new challenges to participatory processes, with lockdowns, travel restrictions and social distancing measures often requiring teams to shift to predominantly virtual working modes (see e.g., Hall et al., 2021; Marzi, 2021). We presented a participatory assessment in rural Tajikistan where such a shift was not possible due to technical limitations and, most importantly, because it would have excluded key stakeholders from the process. Our approach to conduct small workshops guided by newly trained facilitators presents a compromise, which allowed for valuable face-to-face interaction, but also created new challenges and somewhat restrained the outcome. Radical simplifications of the applied MARISCO method were necessary, which compromised the systemic approach of the method considerably. Additional pressure was put on the new facilitators, whose limited experience with the approach also made it necessary to reduce the depth and detail of the assessment. Learning opportunities for participants were missed due to methodological simplifications and necessary reductions in workshop setup and duration. On the other hand, the methodological adaptations necessitated by the pandemic provided invaluable learning opportunities for ourselves that would otherwise have been missed: Taking the lead in facilitating a critical part of the participatory process effectively trained and enabled the Tajik scientists to conduct similar workshops in the future. For the German researchers, in turn, this experience has provided new perspectives on the methodological adaptability of MARISCO and on how to delegate more responsibility and control of the process to local partners.

Yet, we are skeptical that a complete shift to such decentralized applications of MARISCO or other systemic-participatory approaches will be feasible in the near future. Since social-ecological systems are notoriously complex, we argue that assessing and developing strategies of sustainable (agro) ecosystem management requires a systemic understanding of the local situation that can only be gained through in-depth analysis with clear methodological guidance. Our results have again shown that the successful implementation of such processes requires specific skills of process leaders, which are difficult to acquire during short online training sessions. Training series conducted over a longer period would be more fruitful, but also require more resources.

Consequently, within the limited time budget of a given assessment mission, there exists a trade-off between the time invested in training local experts and the time invested in the assessment or participatory process itself. Our experiences during the pandemic have highlighted the need to prioritize the former to the latter in order to reduce dependency from foreign experts, while building long-term collaboration and partnerships on equal footing. Not only pandemics, but also other crises such as violent conflicts can cause severe interruptions, and reducing power inequalities between external experts and local partners is a key principle of participatory processes in the first place. Here, not only civil society organizations, but also scientific institutions in the Global South deserve attention by international development projects promoting capacity building and sensitization toward more systemic and participatory approaches. The field of agriculture is particularly relevant in this regard, as research traditions are often dominated by specialized scientific sub-fields that do not embrace the complexity of social-ecological systems and the diversity of local perspectives. However, our experience has also highlighted the need to find a balance between empowering and overburdening local partners, which should also be factored in when planning for alternative scenarios in case of unexpected interruptions of the process.

While conducting participatory workshops virtually was not an option for our assessment in Tajikistan, in other cases, particularly in the Global North, this may be more feasible. The absence of a physical workshop setting creates trade-offs for group dynamics, but with the right tools and planning, even comprehensive approaches such as MARISCO can be implemented successfully when participation of all relevant stakeholders can be ensured and technical requirements be met. However, as mentioned earlier, virtual workshops have high entry barriers for marginalized groups, as they require access to technology and the specific knowledge to use it. While a shift to virtual working modes can in some cases also improve access to people how are otherwise excluded (see e.g., Roberts et al., 2021), for remote farming communities in the Global South, the opposite is much more likely. Therefore, a rapid global shift to virtual forms of participation carries the risk of further excluding marginalized stakeholders from participatory processes. In our view, in many cases there is thus no alternative to at least a certain degree of physical interaction, even in pandemic times. This is particularly the case when co-producing knowledge on sustainable resource use strategies. While there is a need to strengthen local partners, we find that truly participatory processes that take the complexity of local resource use strategies seriously need to be implemented in the field.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article, further inquiries can be directed to the corresponding author/s.

AUTHOR CONTRIBUTIONS

MS, AS, RB, and PI designed the participatory assessment approach, which was then implemented in Tajikistan by MS, AS, SK, BB, KZ, and SJ. MS and AS wrote the first draft of the manuscript and finalized the submitted version. RB and PI contributed to manuscript revision and writing. SK, BB, KZ, and SJ provided input to selected sections. All authors approved the publication of the content of the manuscript in its submitted version.

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The Art of Letting Go: Transforming Participatory Research on Adaptation Practices Among Local Livestock-Keepers in East Africa in Times of Covid-19

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Participatory action research (PAR) puts high emphasis on the interaction of the research participants. However, with the onset of the Covid-19 pandemic in March 2020, the central role of researchers in participatory research processes had to be questioned and revisited. New modes of PAR developed dynamically under the new circumstances created by the pandemic. To better understand how Covid-19 changed the way PAR is applied, we analyzed PAR in agricultural research for development carried out in the Programme for Climate-Smart Livestock Systems (PCSL) implemented by the International Livestock Research Institute (ILRI) at five research sites in Kenya, Ethiopia, and Uganda. To understand how PAR changed in a component on adaptation research in the PCSL we facilitated a reflexive study with livestock keepers and researchers to document their experiences of PAR during the Covid-19 pandemic. The analytical framework focuses on highlighting the core characteristics and the underlying ethos of PAR in this case study. The lessons learnt in the process of adapting to the realities of doing participatory research in the middle of a pandemic provide important arguments for further amalgamating the PAR philosophy into similar research designs. The onset of the pandemic has led to a further decentering of the researcher and a shift of the focus to the citizen, in this case the local livestock keeper, that made it more participatory in the stricter interpretation of the term. Letting go of controlling both narrative and implementation of the research will be challenging for researchers in many research fields. However, this shift of power and this transformation of research methodologies is inevitable if the research should remain relevant and impactful. Ultimately, the transition into a Covid-19 future and the awareness that similar pandemics could dramatically interrupt our lives any time, will have an impact on how projects are designed and funded. More long-term funding and less pressure on providing immediate results can build community trust and ownership for research at a local level.

Keywords: participatory action research, COVID-19, participation, citizen science, adaptation

INTRODUCTION

"Participation" is often used as a placeholder to fill gaps between groups of people whose main differences lie in their motivation to engage with each other, as well as differences in power, access to resources, differences in their social worlds and epistemologies. However, in times of crisis, the resilience of more democratic ways of knowledge production is a convincing argument to rethink popular participation in the social production of knowledge (Gaventa, 1991; Call-Cummings et al., 2020). In the wake of Covid-19, supporting citizen science approaches has been one important way of keeping research and engagement activities in agricultural research for development (AR4D) going.

The most recent discussions on the future of participation in response to Covid-19 highlight aspects not reflected to the same extent before, such as the potential of groups in our societies previously not considered to be able to deliver research results such as children and young people (Cuevas-Parra, 2020), and in our case farmers themselves. The debate about widening our perception of who can do research where and how has been accelerated by the circumstances created by Covid-19 such as restricting movement and social interaction. Some of the emerging key issues in participatory action research (PAR) at this time are the strengthening of existing mechanisms for community participation, building capacities of stakeholders situated in communities while building new partnerships, and developing new approaches for data collection (Al Siyabi et al., 2020). In building on critical PAR, more space has been created for people's knowledge, and for a critical look at the limitations of PAR in this new context created by an unprecedented global crisis (Call-Cummings et al., 2020).

While some of these debates have taken place in AR4D long before the pandemic (Chambers et al., 1989; Pretty, 1995), the reality is yet to live up to the promises already made in the last few decades. This suggests higher commitment to higher involvement of local people in research design and implementation (Habermann et al., 2021). The obstacles are partly institutional and partly epistemological (Neef and Neubert, 2010; van de Gevel et al., 2020). Participatory approaches have been criticized for being mere managerial tools that lack substantive involvement of local people's perspectives, knowledges, priorities, and skills. For example, "*agricultural economists, on their part, believed they were already employing participatory methods when they interviewed farmers or traders with a standardized questionnaire*" (Neef and Neubert, 2010, p. 182). Participatory research has been critiqued as being unable to compete with traditional research in terms of scientific rigor or quality (Neef, 2008), as well as for glossing over on what really is consultation to legitimize decisions already taken (Cornwall, 2008). However, "*ethical research is produced through negotiated spaces and practices of reflexivity that is critical about issues of positionality and power relations at multiple scales*" (Sultana, 2007, p. 375). Thus, what participation means to different people involved depends very much on the context, as well as the mode of engagement between participating parties (Habermann et al., 2021): there is often a lot of difference between the idealized textbook definition of participation and what is implemented practically (Harrison, 2002).

As social scientists, we design participatory procedures embedded in analytical frameworks to avoid the pitfalls of participatory designs outlined above, with a similar sense of control as biophysical sciences. These procedures often allocate a central role to social researchers, merely unfolding in different ways than traditional (non-participatory) research. The gaps seem obvious to farmers, but researchers often come with their own technical or theoretical agendas, as well as professional needs (Bennett, 2004; Habermann et al., 2021), some of which are substantially shaped by external funding providers (Eelderink et al., 2020). Thus, participation is neither a means to simply increase efficiency, nor a fundamental right: there are many nuances in-between (Pretty, 1995).

PAR is both a heterogenous practice and an idealized type of participation, and it puts a high bar on what should constitute participation (Cook et al., 2017; Benjamin-Thomas et al., 2018; Duijs et al., 2019; Call-Cummings et al., 2020; Dedding et al., 2021). Independent of the field of study, the goal of PAR is transformation of social reality to improve people's lives through active participation and creating awareness for more self-reliant development (Omondi, 2020; Stewart, 2021).

The pandemic led to strict travel restrictions for most of 2020. This necessitated methodological innovations to overcome the hurdles of the Covid-19 era. Some of these innovations involved virtual contact with "the field," such as moving in-person workshops and trainings online (Tunstall, 2021), shifting to remote photo and video diaries *via* smartphones (Marzi, 2020), and telephone surveys (Ali et al., 2020; Tilford, 2020). All these methods have been scrutinized and have undergone a critical review in the past year and the on-going learning curve has been steep (Leal Filho et al., 2020; Ramvilas et al., 2021; Santana et al., 2021).

While there have been many positive experiences in avoiding excessive travel, there are limits to how much time people can effectively spend online in meetings (Ramvilas et al., 2021; Santana et al., 2021). Virtual research substantially diminishes important personal contacts between urban/international research teams and rural people with low internet access and unreliable telephone networks, or even lack of electricity (Marhefka et al., 2020; Zhou et al., 2020; Santana et al., 2021). People already disadvantaged and marginalized are further excluded if research moves online and building trust and mutual accountability can become a challenge if the community is not already familiar with the researchers (Santana et al., 2021).

The objective of this paper is to use the principles of PAR to assess Covid-19-driven changes in the research design and methodologies of our participatory agricultural technology assessment. The analytical framework (**Table 1**) applied to achieve this understanding is based on systematic action research analysis (Greenwood and Levin, 1998; Bargal, 2006; Burns, 2007). We have chosen this approach because it explains well how PAR is different from more traditional research, and it explains both what PAR is and what it stands for (Burns, 2007).

We use the frameworks' principles to understand how Covid-19-driven changes were interacting with PAR approaches in our

TABLE 1 | Analytical framework adapted from Burns (2007).

i) The core characteristics of PAR	ii) The underlying ethos of PAR
Context bound and addresses real life problems	Combines a systematic study of a problem with endeavors to solve it
Both researchers and participants contribute to knowledge	Spiral process of data collection to determine goals and assessment of results
All participants' contributions are taken seriously	Feedback to all parties involved in the research
Diversity of experiences and capacities of local group as opportunity	Continuous cooperation between researchers and practitioners
Meanings in inquiry process lead to social action	Relies on principles of group dynamics, mutual decision-making in public way
Reflections on action lead to new meanings	Considers issues of values, objectives, power needs of the parties involved
Actions arise from the research to solve problems	Serves to create knowledge, formulate principles of intervention, develop instruments for selection, intervention, and training
Actions increase participants' control over own situation	Puts much emphasis on recruitment, training, and support of the participants

case study. The research questions we posed to document this were as follows:

What lessons have we learnt in the process of adapting to the realities of doing PAR in the middle of a pandemic?

Here we look at how different actors perceive the emergence of "digital space" in PAR in the pandemic, and to what extent the re-localization of the Participatory Adaptation Analysis (PAA) research process has led to a shift toward more co-production.

How has the onset of the pandemic changed the role of the researcher vs. the role of the citizen/local livestock keeper in PAR?

We illuminate changes in capacity development during the pandemic, and the shift of power from one "expert" to another.

What arguments emerge from our experience for further amalgamating the PAR philosophy into similar research designs?

We argue that PAR is needed to develop more resilient research designs, as well as long-term PAR partnerships to make research designs more resilient to crises.

The next section explains more about the case study project that was used for this research, and which methods were applied to reach a more in-depth understanding of the impact of the Covid-19 pandemic on the way we understand and implement PAR.

METHODS

Case Study

The research under review for this publication is embedded within the Programme for Climate-Smart Livestock Systems (PCSL). The PCSL takes a multifaceted and interdisciplinary approach to address climate change adaptation and mitigation issues in five East African livestock systems in Kenya, Ethiopia, and Uganda (**Figure 1**). The PCSL focuses on the combination of scientific data collection (both social and biophysical). This paper is based on one component of the PCSL: Participatory Adaptation Analysis (PAA). Underpinned by "positive deviance"[1] research approaches (Lapping et al., 2016; Albanna and Heeks, 2019; Steinke et al., 2019), the PAA involves participatory technology assessment of adaptation to climate change practices that are already being implemented by innovative farmers and pastoralists in the research sites, the "pioneers of adaptation."[2]

The PAA research aimed to address local livestock keepers' existing solutions relating to climate change adaptation. The research was designed to document pioneers' practices; socioeconomic and agroecological needs and benefits; and areas where research might make contributions in the future.

PAA research involves an iterative data collection process that provides many options for feedback. The fact that there are only a few purposively selected participants makes it easier to facilitate discourse and knowledge exchange among the pioneers and the external researchers.

The research design followed the steps highlighted in **Figure 2**. It shows both the original plan pre-Covid-19, and the adaptations made after the onset of the Covid-19 pandemic. It involved regular field visits, semi-structured interviews (SSIs) and a monthly ODK survey.[3] The training of field research assistants (FRAs) and research officers (ROs) served to introduce them to the planned research design. The on-site training served to introduce the FRAs and pioneers to the monthly data collection such as feed sampling and weighing of animals (Goopy et al., 2018). Finally, there was a needs-based training organized specifically for the pioneers on improvement of adaptation practices.

PAA research took place in different livestock production systems. The managing research team started with the premise that researchers can learn from, and with, pioneers to support adaptation efforts in their communities more broadly and to contribute to more appropriate adaptation pathways and technologies for local livestock keepers.

In the pre-Covid-19 stage of the research (2019 and early 2020), pioneers were identified through community-based processes not explained further in this publication. A full presentation of this research is beyond the scope of this paper,

[1]Rather than identifying failure and analyzing problems, positive deviance leads us to understand why "some people exhibit good outcomes "against the odds." (Lapping et al., 2016, p.129). Positive deviance helps us to identify local land users who stand out, having successfully implemented adaptation practices under the same stress factors as others.

[2]The term "deviant" carried many negative connotations in the research sites and was therefore replaced with "pioneer".

[3]ODK derives from Open Data Kit. It is a standard data collection tool (https://opendatakit.org/).

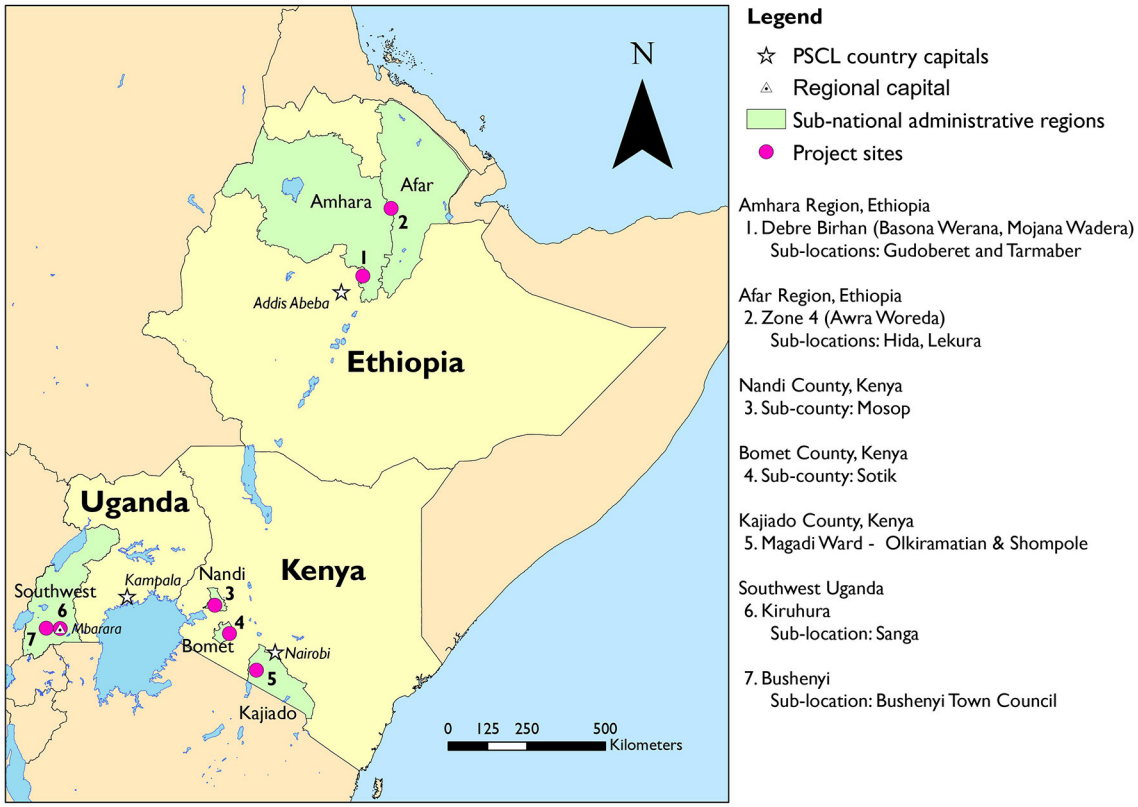

FIGURE 1 | Map of the five research sites. Amhara: Tarmaber and Gudoberet, Debre Birhan in Amhara Region, Ethiopia; Afar: Hida and Lekura, in Afar Region, Ethiopia; Kajiado: Olkirimatian and Shompole Group Ranches, Kajiado, Kenya; Nandi and Bomet Counties, Kenya; SW Uganda: Sanga in Kiruhura District, Uganda. Source: Michael Graham, ILRI.

which focuses specifically on how we changed our engagement strategy in response to Covid-19. The pioneers of adaptation became partners in our research: the pioneers selected the livestock to be part of this study, they determined the timing for collecting data, they actively participated in the data collection as well as collecting data independently (see **Figure 2**). They were active in the planning and implementation of the field days. The pioneers decided about the people to invite, and the topics to talk about. As a research team, we considered the values, objectives and power needs of both pioneers and researchers involved in this research by engaging in an open dialogue with them from the beginning, by enabling them to give feedback to us continuously, and by integrating their recommendations and preferences to adapt the research to their needs. For example, if the pioneers were not comfortable with ear-tagging the animals, alternative methods for identification were applied such as taking photographs of the animals for future identification. While pioneers had a substantial role in the research process even in the pre-Covid-19 phase, their roles expanded in the Covid-induced redesign.

In the PAA research, a different practice is analyzed for each site, responding to producers' innovations and prioritizations, as well as the research teams' preliminary evaluations. Based on the findings of the scoping study undertaken pre-Covid-19, we briefly outline the nature of these practices as background.

1. In Debre Birhan in the Ethiopian Highlands' mixed crop-livestock system, sheep fattening for market sale is emerging as a novel adaptation practice. This is a response to the decreasing viability of beans as a cash crop due to increasing frequency of frost. While sheep fattening had been practiced before, it is now done by implementing different technologies. The main challenge farmers deal with is the accessibility and quality of feed for sheep fattening, as well as the selection of the right breeds for fattening at an extreme high-altitude climate.
2. In Ethiopia's arid pastoral Afar region, the focus of the research is on changes in livestock management among the (agro-) pastoralists in response to the multiple challenges the Afar are facing in relation to climate change (Tilahun et al., 2017; Fenta et al., 2018; Mekuyie et al., 2018). The changes we are looking at is e.g., a shift from large to small ruminants to increase resilience in times of drought, and the impact on grazing and feed management caused by this shift. There are also other changes that have aggravated shortages of grazing lands making it harder for pastoralists to adapt accordingly (Rettberg, 2010; Schmidt and Pearson, 2016; Tilahun et al., 2017).

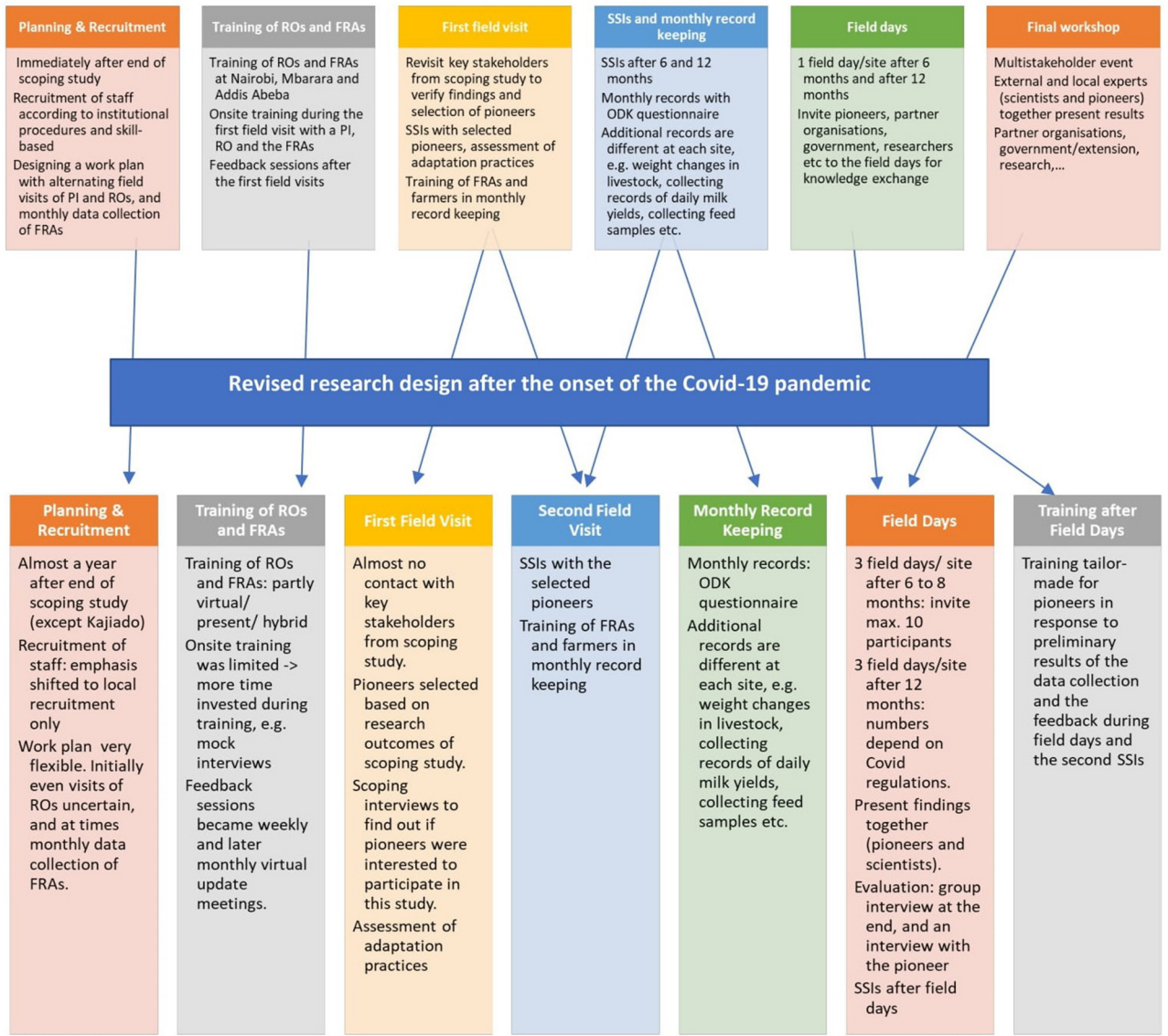

FIGURE 2 | Research design of the case study before and after the onset of the Covid-19 pandemic. The arrows indicate the direction we took after the onset of the pandemic.

3. In SW Uganda, we work in a commercial dairy production system based on extensive production, where water harvesting innovations help address farmers' persistent water shortages. Beyond water harvesting, we investigate milk productivity and different feed types (De Vries, 2018).
4. In Kenya, the two upland sites in Nandi and Bomet Counties are characterized by mixed crop and dairy farming, where we look at different feed production and preservation strategies to overcome feed shortages in the prolonged dry seasons (Tavenner et al., 2019).
5. In Kenya's lowland pastoral site in Kajiado County, we analyze breed diversification and management as a possible adaptation practice. Even though there had been attempts to introduce exotic breeds by external agencies, what the pastoralists were doing to effect adaptive traits in their livestock breeds is exceptional. The main challenge is increasing livestock productivity while grappling with the survival of livestock during drought and unplanned migrations (Campbell et al., 2000; Mwangi, 2019).

All sites have a variety of factors that influence the pioneers' decisions relating to production practices. As such, while all the practices relate to adaptation to climate change, they respond to other needs as well.

The selection process of pioneers at four of the sites was done in the scoping study phase in 2019. In the fifth site, Kajiado, pioneer selection was to have started in March 2020, but was delayed until October/November 2020. It then took place at

the same time when the PAA had already started at the other sites. Thus, most of the work with the pioneers happened during the pandemic.

Analyzing the Research Process Regarding the Impact of Covid-19

Participants in the research were asked to reflect on how Covid-19 changed their engagement with the project and how that affected their relationship with the study. In addition to the first two authors, who were the Principal Investigators (PIs), three groups of actors were included: the three research officers (ROs) supervising the field research in Ethiopia, Uganda, and Kenya (ILRI staff and co-authors) and the seven temporary field research assistants (FRAs, temporary field staff and co-authors) implementing the data collection. Both ROs and FRAs were given a questionnaire. They were asked to return the answers in written format. The pioneers were interviewed partly by the FRAs and partly the ROs (**Figure 3**). Those who did the interviews then translated and transcribed the feedback. The interviewees were four out of six pioneers from Uganda, six from Nandi and Bomet Counties, eight from Kajiado, four from Debre Birhan and five out of six from Afar. Three were missing because they could not be reached at the time when these interviews were done. The SSIs took place on the phone and in person where possible. The first author tailored the questions to each group to capture perceptions and perspectives that are particular to their project relationship (**Figure 3**).

The time frame covered in the interviews for this paper was from March 2020 until April 2021, however this varied between different respondents. Most of the research analyzed here was done between October 2020 and April 2021.

The submitted transcripts of all three groups were analyzed in NVIVO using an analytical framework based on systemic action research analysis (Burns, 2007, pp. 12-13). The first author adapted Burns' criteria for an analytical framework focused on highlighting the core characteristics and the underlying ethos of PAR in this case study (**Table 1**). Core characteristics are to address real life problems; both researchers and participants contributing to knowledge; creation of new meanings; actions arising from the research and others. The underlying ethos of PAR means amongst others to combine the study of a problem with endeavors to solve it; providing feedback to all involved; considering values, objectives, power; and mutual decision-making. This framework helps to understand to what extent the PAA research was aligned along the principles of PAR.

Our analysis emphasizes key themes that emerge from the data. Because respondents did not necessarily address all themes in the framework, we focus on the themes that emerged most clearly in the empirical data. Illustrative quotes are included as references to the original data. The Results section is structured by the three main groups of actors implementing the project: first the ROs, then the FRAs, and the pioneers themselves. The Discussion section highlights how our findings can be taken forward by PAR in the hopefully eventual post-Covid-19 era.

RESULTS

In the results, we first present how the ROs perceived the implementation of our PAR and the changes required by Covid-19, and then we move to the FRAs and look at their experiences. These two parts include observations by the first author, when appropriate. Thirdly, we follow the pioneers' perceptions of the research process. The questions in the interviews related to the analytical framework, but they were adapted individually to the three groups interviewed. In each of the following sections, we apply the criteria explained in the analytical framework above. The framework laid out more criteria than we could apply, and not all the criteria turned out to be applicable.

Perspective of Research Officers

The three ROs were hired by the PCSL team to facilitate the adaptation and mitigation research in their respective countries (Kenya, Ethiopia, and Uganda). They were directly supervised by the PCSL management team, specifically by the two main authors of this paper. The ROs themselves supervised the work done by the local FRAs. The FRAs were hired to do the actual data collection on site.

The ROs were asked to rank how well they thought our research was responding to the criteria listed in **Table 2**. This table was only filled in by the ROs, because for the FRAs and pioneers many of the statements were difficult to rate. The following section explains the responses of the ROs, as well as highlighting issues from the stories that they had submitted in response to the interview questions.

According to the ROs, the highest agreement was regarding "all participants' contributions are taken seriously." Among the other criteria, it was noticeable that "diversity of experiences and capacities of local group as opportunity" seemed less applicable in Uganda than in the other countries. Regarding the underlying ethos of PAR, the respondents agreed mostly on the high relevance of the iterative process of data collection to determine goals and assessment of results in this research. There was agreement on the fact that the research combines a systematic study of a problem with endeavors to solve it, and that it considers issues of objectives and serves to create knowledge.

The following section provides some examples from the contributions submitted by the ROs. This serves to illustrate how they perceived PAR in the case study, and how it was influenced by Covid-19. The ROs explained how they felt about the changes imposed by the pandemic; how they then responded to it; what it was like to go back to personally meet FRAs and pioneers; and what changes in PAR they noticed.

> There was a lot of uncertainty in the beginning. We were lucky because we were at the beginning of the new stage of our research, no field work was under way at that moment in Ethiopia. [RO, Ethiopia]
>
> At this point [when the first Kenyan lockdown was implemented in March 2020], I almost gave up on the project. It was hard to think of a normal situation, cases in the country were on the rise, and every day I was only worried about the number of infections being reported. [RO, Kenya]

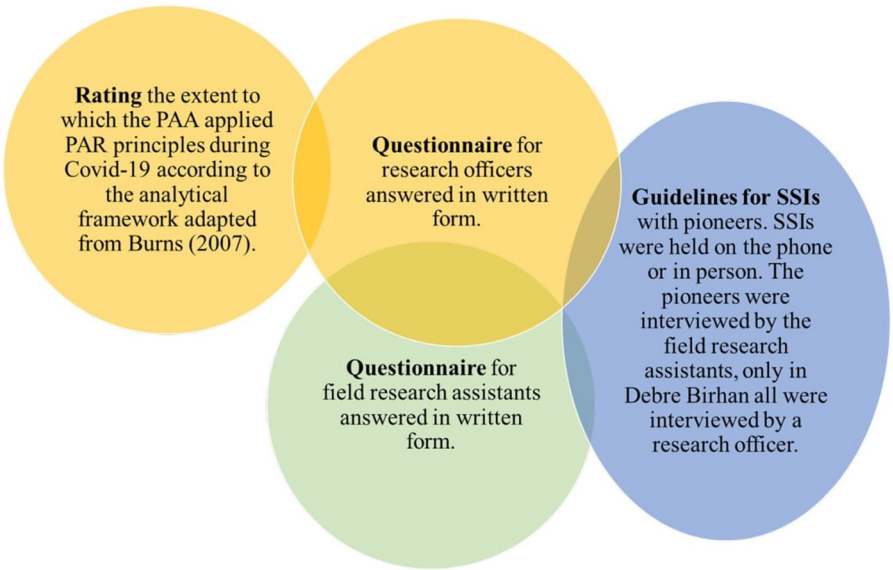

FIGURE 3 | Research design to understand how PAR was implemented during the Covid-19 pandemic. Different tools were applied for ROs, field research assistants and pioneers. All were developed based on the analytical framework adapted from Burns (2007).

TABLE 2 | Perception of the PCSL ROs in Ethiopia, Uganda, and Kenya regarding the performance of the Participatory Adaptation Analysis as PAR during the Covid-19 pandemic from March 2020 until April 2021.

Please rate the extent to which the statement applies to the Participatory Adaptation Analysis (PAA) in PCSL in your personal experience during the Covid-19 pandemic in 2020-2021.			
1 = not applicable, 2 = applies to some extent, 3 = applies fairly well, 4 = applies very well, 5 = a major focus, 6 = this corresponds 100%. 0 means that no answer was given.	Ethiopia	Uganda	Kenya
Core Principles			
Context bound and addresses real life problems	3	0	5
Both researchers and participants contribute to knowledge	4	3	5
All participants' contributions are taken seriously	6	6	6
Diversity of experiences and capacities of local group as opportunity	6	2	5
Meanings in inquiry process lead to social action	2	2	3
Reflections on action lead to new meanings	3	2	4
Actions arise from the research to solve problems	2	5	6
Actions increase participants' control over own situation	5	5	5
Underlying Ethos			
Combines a systematic study of a problem with endeavors to solve it	4	4	5
Spiral process of data collection to determine goals and assessment of results	6	5	6
Feedback to all parties involved in the research	2	3	6
Continuous cooperation between researchers and practitioners	6	5	4
Relies on principles of group dynamics, mutual decision-making in public way	5	2	5
Considers issues of….			
Values	5	2	4
Objectives	5	4	4
power needs	5	3	4
of the parties involved.			
Serves to create knowledge	5	5	6
Serves to formulate principles of intervention	6	3	6
Serves to develop instruments for selection, intervention, and training	4	3	6

The RO in Uganda explained that in the beginning of the first lockdown in Uganda, it did not look as if the research would still get started in 2020. However, he points out that in this situation it would have been good to communicate this to the people we had spoken to before the lockdown. But, as we were all in shock, we failed to let them know where we stood and what we were planning to do.

The first opening to restart our research was in September 2020. At that moment, ROs felt it was important to seek contact with local leaders and people on the ground to get a better feeling for the situation there. The new ILRI rules for field work during Covid were restrictive, and we were required to seek separate authorization for field work in relation to Covid-19 and to deliver bi-weekly reports. The new directive was quite detailed about all the precautions to be taken, and the Ethiopian RO felt uncertain about how this could be implemented.

> I prepared a fieldwork permit document [...]. But since the pandemic is a very serious and life-taking disease, with the fact that our field work could contribute to the spread of Covid-19, it was somehow challenging for me to promise to follow all the government guidelines and ILRI's directives on Covid-19, trusting the research assistants while I can't be at the field every time. [RO, Ethiopia]

In effect, ILRI's Covid-19 rules caused the research team to devolve greater responsibility to FRAs, who were casual employees based in the field sites, but whom we hardly knew. The managing research team had little leverage to hold them accountable for gathering high data quality or respecting ILRI rules regarding Covid-19 or other aspects of our field ethics. However, the managing research team decided that the only way to continue data collection was with FRAs on site. In some cases, like Nandi and Bomet Counties, this was easier because the FRAs had already done the scoping study and were well-known to ILRI researchers. It was more challenging at other sites. All in all, many challenges related to recruitment were not new. They were just aggravated by the fact that in addition to their professional competencies, the FRAs had to be in the research area as much as possible.

After recruitment, the next step was the training for the new FRAs. Normally, the first author would have done trainings on site, or she would have invited FRAs to the capital city for a joint training with the other FRAs within the country. However, because of travel restrictions, she trained one FRA after the other using a hybrid approach, partly physically present, partly online. In Addis Abeba, she provided training for two FRAs who were physically present at two different occasions given the challenges with internet connectivity outside of Addis. One day had to be shifted to an online training because the first author, who was the trainer, had symptoms of a cold. The training for the FRA in SW Uganda was held online only. In Kenya the training for the two FRAs in Nandi and Bomet Counties was only online, but for Kajiado it was done differently because of the difficulties with the internet connection there. The RO went from Nairobi to the site and met the two FRAs, while the first author did the training from Addis Abeba. The hybrid trainings were not always easy, as becomes clear from the descriptions of the FRAs later in this publication, and by comments of the ROs.

> When it came to training, we were facing some challenges. Our research assistant was challenged with the use of online communication tools in the beginning, and it took some time before he was confident with it. An advantage of online trainings is certainly the reduction of cost. But the actual time used for training was not less, and it had to be spread out over longer time, as online sessions can be really tiresome. [RO, Uganda]

As a trainer, the first author found online trainings extremely exhausting, especially as she had to repeat the same training five times within a few weeks' time. She missed the feedback that comes with direct personal interactions with the trainees, e.g., reading the look on their faces if they were following or not. Using video was out of the question due to bandwidth and internet stability constraints. The training sessions were evaluated, and the feedback was encouraging, however both the ROs and the first author agreed that this was a mere compromise and far from ideal.

As a whole team we tried to improve, and we used the experiences of the trainings after the data collection had already started. The managing research team held regular virtual meetings with the FRAs, first weekly and later monthly, using Zoom, Teams and WhatsApp. Eventually, the first author created a WhatsApp group and we held group meetings where all team members were invited. It was only later that we realized that this medium may have led to more exchange between us than our initial plan would have.

While the first 6 months of the pandemic stimulated the reorganization and led to the experiences described above, national travel restrictions were eventually loosened, enabling us to return to meeting FRAs and pioneers again in person. International travel was still impossible. Consequently, the first author located in Addis Abeba could not visit the sites in Kenya and Uganda. Wherever possible the return to fieldwork was done on a new footing, which gave us new perspectives on how changes in our project became necessary and noticeable.

Following ILRI's strict risk management protocols, the ROs joined the FRAs during different stages of the research in the field, especially at times when the first author usually would have traveled to the field but was not able to now. While the activities could have been carried out by the FRAs on their own, this was still reassuring in terms of maintaining both PAR principles and data quality.

We learned quickly that the farmers and pastoralists perceived the pandemic quite differently from people living in urban areas, like the PIs and ROs. The impact was felt much less, and they were overall much more optimistic about the situation. The ROs believed that for the pioneers, it did not seem a big issue that we continued the research, although it was quite distinct at different sites:

> In the Nandi and Bomet Counties, I felt like the participants had somehow lost hope, they didn't expect the project to continue for another year as promised during the scoping study. So,

> when the ILRI team showed up for the second phase they were very appreciative. In Kajiado, we started during the Covid-19 time and the scoping study involved meetings and household visits. The participants were at first hesitant to interact with outsiders, especially those from Nairobi, because there was a general perception at the time that Covid-19 was coming from Nairobi. But the reaction in the two sites in Kenya was very different. In the Nandi and Bomet Counties, the pioneers had experienced a few Covid positive cases in the neighborhood and they were keener to wear masks and to sanitize. Kajiado was completely the opposite, there were no positive cases in the area and the people attached the disease to people coming from Nairobi. Interestingly the masks are referred to as "corona" and so because we were the only ones who would put on masks we were called "the corona people." [RO, Kenya]

At both sites in Ethiopia, the RO had the impression that Covid-19 was not seen as something very serious in the first year of the pandemic. She was initially surprised about how relaxed farmers were about the disease.

> When I went to Debre Birhan for the first time [during the pandemic], I was expecting farmers are aware of the pandemic, however, no one was wearing a face mask. Most of the pioneers wear the facemask we provided for the first time. Except for T., she was aware [of the importance of wearing a face mask]. All farmers were inviting us to enter to their house to eat food and have tea, we were not able to say no because they were insisting us to enter their house. When we denied, they were thinking like we are afraid of not to be poisoned by their food, but the reality was that we were caring for them. [. . .] Especially during my first field visit, the interaction of almost all farmers was the same as pre-Covid-19. [. . .] But during my last visit, which was for 2 weeks, I saw some change from my first visit in terms of prevention and awareness about Covid-19. Old farmers who were invited to attend the field day at W.'s house, talking to each other to keep their distance. [. . .] they told me since the pandemic happened, they stopped greeting by handshaking and hugs, also they told me that they stopped kissing the holy bible and church wall on Sunday church gathering. [RO, Ethiopia]

In pre-Covid-19 times we often felt judged based on our ability to conform with the local customs of greetings and behaviors. However, after the onset of Covid-19 the importance of such customs was rapidly diminishing under the pressure to conform to social distancing rules. The ROs quickly adapted to this new situation, although it was surprising to them how fast this changed. Only in Uganda, the RO did not perceive much impact on how people were interacting with each other.

> The local innovators carried out their work as-business-as usual, without fear of contracting Covid-19. The majority did not wear face masks, neither did they sanitize their hands regularly. They claimed that the community where they resided did not have Covid-19, and that instead Covid-19 was in busy towns like Kampala. [RO, Uganda]

Regarding the changes that were necessary in terms of how PAR was conducted, the main impact the ROs reported was regarding the direct interaction with the pioneers, as explained above, and how they had supervised the FRAs. In terms of the interaction, it was a clear-cut disruption to pre-Covid-19. Following local norms and customs relating to greetings, socialization and hospitality is a central aspect of cultural respect which is fundamental to successful PAR collaboration. However, following Covid-19 safety protocols put us in direct tension with basic local practices such as handshaking and sharing meals.

Regarding the supervision of the research, we implemented regular online meetings. In-between the meetings, the ROs held many phone calls with the FRAs. Planning had to be more detailed, and we always had to keep an eye on the ever-changing dynamics of the pandemic. The managing research team had to respond to changing national rules in all three countries, with Ethiopia being the one with the least restrictions, Kenya under changing conditions with partial lockdowns being re-introduced in 2021, and Uganda finally under full lockdown in July 2021. Almost all responsibilities for field work were delegated to the FRAs and the pioneers. The ROs had to trust that the work would continue in a manner suitable for the research needs without their on-site supervision. This devolution of responsibility from ILRI staff based at the research center to FRAs based near the sites was one of the major changes we implemented. The next section explains how this process was perceived by the FRAs.

Perceptions of the Field Research Assistants

The FRAs are short-term researchers hired by the PCSL team to implement the PAA research. They are the people in the field, working directly with the pioneers. They are supervised by the respective national ROs. In this section, we present the responses of the FRAs to the interview questions, and we supplement their experiences by explaining the adjustments that we had to make due to Covid-19. The questions were the same as those of the ROs. We wanted to know what it was like for the FRAs to be called to work as researchers in the middle of the Covid-19 pandemic; how they experienced the period from their recruitment up to April 2021 in terms of the changes that we had to make to our PAR due to Covid-19.

The managing research team started recruiting FRAs in September 2020, but the recruitment phase lasted until February 2021, because the team was operating all sites at different timetables. Therefore, the FRAs had variable degrees of experience and exposure to the project at the time of data collection for this paper in April 2021. Three of the FRAs had already been working for PCSL during the scoping study, while the remaining four team members were newly recruited.

The FRAs were instrumental in designing the specific research plan for each site, in the selection of the adaptation practice, the selection of the pioneers, carrying out the actual data collection with the pioneers, developing a tailor-made training for the pioneers, and coordinating the field days. As explained above, Covid-19 substantially changed our hiring criteria because we needed people who were embedded within the communities. This has a big impact on the relation of the FRAs and the pioneers. The pioneers find it a lot easier to trust and relate to people from their own localities. Some FRAs even have a farming background and

keep livestock themselves. To avoid bias the ROs hired additional translators at the beginning of data collection to cross-check the quality of the data, especially for the scoping interviews and SSIs.

The FRAs were asked to respond to the interview questions in writing. Their responses varied substantially from very detailed and very personal essays to much shorter and more factual stories. Yet most of their responses provided rich insights into how the FRAs experienced conducting research during the pandemic, ranging from emotional to observational. Most FRAs were facing financial worries due to job insecurity and were glad when this work opportunity came along. The opportunity outweighed the fear of the risks taken by starting to work again and exposing themselves to unknown risks and a lot of uncertainty.

> I was happy that after a long time not being able to get out working with different people. I was going out at last. Though I was excited, I was still a bit worried about the Covid-19 pandemic, is it safe out there? Is the job worth the risk? Are we even going to be able to work? When I was called about the job, I wasn't sure that it will actually happen. The country was in lockdown, restricted movement and social gatherings were prohibited. [FRA, Kajiado, Kenya]

The responses were very similar across all the five research sites. People had been out of work for many months, and the situation was tough. Fears and uncertainty were there, but at the same time it felt good to move out of the stalemate created by the pandemic.

The FRAs were hired to carry out the actual data collection on site. Each country had one RO for supervision, but the number of FRAs varied. There was only one in Uganda, two in Ethiopia, and four in Kenya. Their number depended on the research sites and was partially influenced by Covid-19. Usually, the managing research team did not worry about the home base of the FRAs, if it was agreeable for them to travel to the research sites whenever needed. But with the possibility of further lockdowns to be imposed any time, this became important.

The managing research team developed a mix of quantitative and qualitative methods for the monthly visits by the local FRAs to collect data related to the selected adaptation practices. This monthly data collection was designed following the model of citizen science approaches with the aim of encouraging local livestock keepers to take ownership of the data collection and thus focus the research more on data relevant to them (van de Gevel et al., 2020). This is a joint exercise involving the pioneer and the FRA. In some cases, pioneers keep daily records that they share with the researcher at the monthly meetings. The high and frequent level of engagement and interaction that our research requires has made the relationship that the FRAs have with the pioneers very personal. When we hold online meetings, many FRAs talk about the pioneers as if they were close friends or family. Most of them know about personal situations, family issues, and have gotten to know the characters of the different pioneers quite well, especially those FRAs who had started the research already in 2020 and had visited the pioneers many times.

As the FRAs went back to fieldwork after a pause imposed by the first lockdown and the interruption of their work by Covid-19, some experienced mixed feelings, uncertainty and even fear, while others were more relaxed about the situation. Because of the uncertainty of field visits by the supervising ROs, the level of responsibility delegated to the FRAs was higher than they usually experienced. It was new for the FRAs that we allowed them to do most field work independently. This made them more responsible and accountable. One FRA explains how this new situation and doing research in the pandemic time made him feel:

> Going to the field in a pandemic period you can't anticipate for anything. It made me more flexible knowing that fieldwork can be halted at any time depending on the situation. It also gave me some sense of more importance and responsibility in planning and carrying out work even when alone, in the instances where supervision and planning is done *via* phone or online. It is only important for supervision to keep in touch with what is happening in the fields by checking up and probably making visits whenever an opportunity presents itself, considering safety and rules put in place. The monthly meeting has been so helpful in bridging the employer's expectations with the actual fieldworks. [FRA, Nandi and Bomet Counties, Kenya]
>
> There was not much field attendance by the supervisors, the field research assistants did most field work independently, making them more responsible and accountable. It is working well, with frequent online meetings. [FRA, Kajiado, Kenya]

The FRAs generally felt confident about their activities, and highly appreciated having the possibility to access backstopping at any time. Before sending the FRAs to the field, they attended a training. For most of the FRAs, this was an online event, but in Ethiopia they were invited to Addis Abeba due the problems with the internet connection. The following is the story of one of the FRAs that shows the level of uncertainty people were facing:

> When you invited me to come for the training [to town] everyone was worried about me. I was told by all my friends and family to be careful. All heard that the risk of Covid-19 transmission is high in the town. [. . .] On the first training day when I saw Birgit [first author] in the training room, I was shocked. I started worrying because as foreigners usually travel from place to place across the world, they have high exposure to Covid-19. After we finished the fourth-day training [. . .] I saw myself [in the mirror]. My eyes were red. I got shocked and I said "Oh my God, I got Covid." Then I started feeling headache. I was so confused and worried a lot. Then after few minutes, I went to the bathroom and looked into the mirror again. Now the color of my eyes was normal. I laughed at myself because I realized that the light in my bedroom was somehow blurred. The mirror had a reflection of red-colored light from outside through the window. When I noticed that I become calm. [FRA, Afar, Ethiopia]

This shows how much confusion and misinformation there was around in the beginning of 2021. Fears and uncertainty ruled over rational minds. The managing research team spoke to the FRAs very clearly about the risks and their duty not only to protect themselves, but also to protect others. There was a protocol to be followed, issued by ILRI, that specified a lot of detail on how to organize field work and how to work with farmers in the field. While we perceived this as an additional burden, it was

an assurance that we could minimize risks if we all followed the protocols.

When working with the pioneers, it was important to first inform local authorities and alert them to the fact that the PCSL was becoming active again. We followed the new protocols regarding the use of masks and sanitizers, and distancing. This was met with different reactions in the field, from relief to skepticism. But even in the communities where the level of accurate information about Covid-19 was low, this worked out well in the end:

> I was not afraid to start work with the community, and I was not worried about the possibility of Covid-19 transmission from them to me. Instead, I was worried and thinking about how we could go to pastoralists and work with them wearing a facemask. I was expecting that could cause challenges from the pastoralists. They may perceive our wearing face mask in the wrong way, as if we had negative feelings for them. But when we went to the field though, we explained to them everything prior to the interview things were different, they were OK with the facemask and all the prevention measure we were taking. [FRA, Afar, Ethiopia]

This risk of being misunderstood was one of the first author's main fears as well. How can we do PAR that requires openness and trust when we have to act as if we are in a sanitary hot zone? The disruption in how to interact with people within their own cultural norms could have had a significant impact on our relationship with them:

> I would not say nothing changed, because everything changed: talk about masks, sanitizers, the way of greeting each other as we are used to hugging and handshakes. So, a lot changed. [FRA, Uganda]

Both FRAs and pioneers gradually got used to these new ways, and pioneers accepted the reasons for these changes. FRAs continued coming to farms and homesteads, and temporary settlements of pastoralists as long as there was no lockdown preventing them to do so. Due to Covid-19, we tried to involve the pioneers in the actual data collection even more than we had initially planned PAR project. We had to make sure that the pioneers were able to continue the research as much as possible even without us coming to visit.

> Pioneers are involved in the research at the field phase, it was a wonderful thing that we taught them how to do most of the activities we were carrying out. In fact, I gave them an opportunity to do the girth measurements with me, doing the milk records and weighing of feeds and so forth. [FRA, Nandi and Bomet Counties, Kenya]
>
> About their involvement in the research, pioneers are happy to involve as much as required, some are happy to improve their creativity and add new ideas. That is what I understood from my regular visit. For example, K. records the weighing during every monthly record and monitor the status of his sheep. [FRA, Debre Birhan, Ethiopia]

The empowering role of engaging in the research affects how pioneers perceive the relevance of the research and their own role in it. However, even if Covid-19 restrictions led the managing research team to enhance FRAs and pioneers' roles more than originally planned, the commitment and involvement of some pioneers showed that there was still more scope for strengthening this.

After about 6 months, the FRA at Debre Birhan, who started the PAA, first started preparing the field days and the trainings for farmers. ILRI restricted the group size for meetings to 10 participants, independent of the different country regulations. We adjusted our plans to that, and we realized later that this was a good decision in terms of PAR principles. The smaller groups during the field days enabled much more interactive discussions and it was a special opportunity for pioneers to explain their practices to others. At the field days, the pioneers invited neighbors and friends for on-farm knowledge exchange. They explained about their livestock, about e.g., feeding and watering practices, breeding. The field days also involved group interviews and SSIs with the participants and the pioneers to assess their experiences and perceptions of the field day. A training event was then organized specifically for the pioneers and interested household members, based on emerging topics during the field days and SSIs. The FRA held the first training in 2021 in Debre Birhan together with some colleagues from his research center, and he received very positive feedback. The training was practical and interactive in a way it would not have been with larger groups.

Therefore, some of the adjustments due to Covid-19 were beneficial for our research in terms of PAR criteria. However, the other side of the coin is that the PCSL has clear targets, set in conjunction with the donor, on numbers of farmers reached by our trainings. Limiting the number of participants has made it more difficult to achieve this donor valued metric. While the donor partners have been sympathetic to the challenges imposed by Covid-19, this underscores the tension between prioritizing effective PAR and pressures to "achieve impact at scale."

From the Viewpoint of the Pioneers

Pioneers were the farmers and pastoralists who were selected for the PAA. They had been interviewed in 2019/2020 and were then re-visited when our research could start again during the Covid-19 pandemic. The visits started at different times at the five different research sites. First, the pioneers were visited and asked if they were interested to continue working with us. If they agreed, we continued with more interviews, and then we went on with the training for the joint data collection for the following 12 months. This section documents what it was like for the pioneers when the researchers returned after the long break caused by the pandemic. It also reflects on their perception of their own involvement in the research.

In April 2021, when the data for this publication were collected, the research had reached different stages at the five sites (Debre Birhan month 5, Nandi and Bomet Counties month 6, SW Uganda month 4, Afar month 3, Kajiado month 2). Data collection was ongoing everywhere, and the pioneers had already received part of the incentives, a compensation for the time they spent working together with us. We agreed on these in the beginning, when many of them could not yet see the benefit

that the participation in this research could bring for them, even though they volunteered to take part in it. The incentives gained more importance in Covid-times because of the increased involvement of the pioneers in the research, but also because of Covid-related economic hardships. It was decided together with the pioneers, what the incentives could be, for example feed, mineral salt, dewormers and others. The next step in the research process were the field days. The only site where field days had taken place at the time of data collection for this publication was Debre Birhan, and at the time of writing Nandi and Bomet Counties and Kajiado.

While many issues were raised regarding the impact of Covid-19, the feedback regarding the actual research was largely positive. Some pioneers said that they would have refused to meet researchers in the beginning of the lockdowns, because they were afraid what was to come. Only the Afar pastoralists had very little information about Covid-19. For the Maasai in Kajiado, the return of the researchers seemed like a positive sign that things were going back to normal. However, there was a lot of uncertainty if the researchers would contribute to spreading the disease from homestead to homestead. Coming from Nairobi, the probability of them bringing the disease was perceived as much higher than the local spread of the virus.

A key theme that emerged from the pioneers' interviews was their feeling of ownership of the research process through learning. This underlines the fact that they felt that their contributions were taken seriously, and that their experiences and capacities were seen as something positive, as an opportunity for them to manage the challenges posed by climate change. For example, in Nandi and Bomet Counties, where the PAA focuses on feed conservation and quality, it is important for farmers to know the quality of feed. The farmers in both Nandi and Bomet Counties and in SW Uganda emphasized the benefit of learning more about milk record keeping and about observing the cattle's development regarding body condition and weight gains and losses. It gave them the feeling that they owned this research, and that they were more than just a part of it. This boosted the pioneers' morale in many cases.

> As we continue working, I also continue enjoying it because I am learning a lot. The process of weighing the cows, recording the expenses and the proceeds from the same cow. I am learning about proper management so that it becomes profitable. [Pioneer, Nandi and Bomet Counties, Kenya]
>
> I felt good welcoming them at my home and expected a lot from them in terms of help on my problems affecting my livestock. The research is a good experience. We came to know new things like heart girth and body condition score measurement and on that we learnt to measure our cows on the body weight. I learnt about adaption practices like paddocking i.e. planting trees and water harvesting. [Pioneer, Sanga, Uganda]

Many pioneers mentioned that they appreciated this cooperation, the commitment of the researchers, and the fact that they respected the precautions regarding Covid-19. The fact that Covid-19 forced them to stay at home enabled some pioneers to pay more attention to the research. In Kenya, many emphasized that the pandemic was no reason to interrupt the research, as they could answer questions on the phone if needed and provide the reports by themselves.

> I feel like I am part of the research team. Whenever you guys come you notify me, and I have to be here to assist you with whatever is needed of me. And because of the team spirit am happy to be in the research. [Pioneer, Kajiado/Olkirimatian, Kenya]

While there were more similarities in the responses from Kenya and Uganda regarding how they felt about the research, the responses at the two Ethiopian sites were more general:

> After a long time when I met you again, I was so happy. For few months most of the experts, including the development agent, were not coming to us. The information we were hearing about how Covid-19 was affecting the other world was so frustrating. Your visit is very helpful for us. It is only when we are visited by educated people like you, we get knowledge and different experiences. So, after a long time when I met you in full health, I was so happy. [Pioneer, Debre Birhan/Gudoberet, Ethiopia]

These statements reflect a different attitude toward research. The expectation seems to be that the researchers bring knowledge, provide expertise, trainings, etc. regarding the technologies brought from the outside to this area. Therefore, to what extent the research we are doing can be called PAR depends on the context where the research is being implemented:

> My involvement in the research is welcoming you whenever you visit me, I give you all the information you need, and discuss with you all the challenges we have regarding livestock and supporting S. when he comes every month for weighing the sheep, but because of Covid-19 nothing has changed. [Pioneer, Debre Birhan/Gudoberet, Ethiopia]

The managing research team expected more involvement by the pioneers in Ethiopia, especially with delegating more responsibilities to the pioneers and FRAs. However, in the Ethiopian Highlands, farmers are used to an extension environment that is very hierarchical and directive. The expectations on the research team on the other hand are higher, especially in the site called Tarmaber, because there are no other development initiatives there:

> I was happy when I met you and S. Since the lady who came at the first visit didn't tell me about your return, and we didn't make any agreement for such a regular visit, I was not expecting your second visit. I never thought about you. But I am so happy about your visit. Not only me, but your visit is also very motivational for all the community. [Pioneer, Debre Birhan/Tarmaber, Ethiopia]

Regarding the expectations of this community, the RO had to be very clear at the time of the field day. The field day was intended to enable the pioneer to share his experiences with others, to show them his sheep, and how he was fattening them. But when we arrived, a group of government officials and village representatives had already gathered with an intention to hold a meeting regarding the construction of a road to the next town and they wanted to get us involved in this project. This was

the first time that the first author could travel to the field site herself after more than a year, which seemingly had raised bigger expectations. After the RO had clarified that this was not our mandate, the pioneer could then hold the field day without any further interference.

In the Nandi and Bomet Counties, farmers often work in groups to organize certain farming activities. This was already the case prior to our research. But now that social interaction has decreased, group meetings take place only one time per month, rather than weekly, as before. Visiting other farmers to learn from them, to seek advice and support, is more difficult under Covid-19 restrictions. One pioneer emphasized that the interaction with others had become limited, and that there were no more workshops and other training opportunities. He mentioned that the lack of interaction had an impact on knowledge exchange. For example, he wanted to get seeds for planting sorghum, but could not find out where to get the seeds:

> Nowadays, I am not able to go out to enquire about where I can get them. From the workshops I used to attend before, I used to go see other things and then come and practice them which would have helped in the research, but they are not there now. There is no workshop I have attended recently. [Pioneer, Nandi and Bomet Counties, Kenya]

Like in Ethiopia, pioneers in the Nandi and Bomet Counties were missing the access to knowledge that comes with social circulation, and they appreciated the fact that this research gave them the possibility to stay in touch with the outside world and to get relevant information for livestock management. The way the research was implemented provided the pioneers with knowledge, skills and some small support through the incentives, and the motivation to continue working toward a better future despite the dire situation the world found itself in in the first year of the Covid-19 pandemic.

While PAA activities are still underway, it is unpredictable whether they will result in new meanings or actions to solve problems, which are important criteria for PAR. However, at all sites the research has already given participants more control over their own situation in enabling them to appreciate their knowledge in livestock management. The participants are also learning about methods for better observing how their livestock is developing in response to their own management practices. The linkages created between the pioneers and other farmers made them less dependent on outside sources of information.

The results above presented perception of the three main groups of research actors regarding the changes in PAR during Covid-19. In the discussion we will summarize the lessons learned from these perceptions and we will highlight that is useful with and without Covid-19 remaining in our lives so dominantly.

DISCUSSION

In the discussion, we revisit the analytical framework defining the core characteristics and the underlying ethos of PAR and the negotiations observed in this case study (**Table 1**).

Core Characteristics of PAR

In this section we discuss how the pandemic created an opening to allow more room for citizen scientists to expand their agency in the research process in correspondence with the core characteristics of PAR. Citizen science is one method of PAR that enables local actors to take an active part in the research process, from project development, data collection to a peer review process of results (Ryan et al., 2018). What makes citizen science appealing is that "*large tasks can be accomplished by distributing small tasks to many volunteers and combining the results.*" (Van Etten et al., 2016, p. 3). We recommend that citizen science can be more than collecting large data sets with local actors. We recommend applying the principles of citizen science in a qualitative research setting. It is not the size of the sample that matters to us, but the role of the farmer or citizen in data collection. Many farmers experiment with different practices but don't bother documenting these experiments in a format accessible to scientists. Data quality—accuracy, completeness, and timeliness—can be an issue in PAR, and this also applies to citizen science. But there are mechanisms to navigate these risks such as the verification of submitted data by both scientists as well as citizen scientists together and comparing with similar data collected by scientists in comparable settings (Lukyanenko et al., 2016; Aceves-Bueno et al., 2017; Wehn et al., 2020).

The individualized approach of the PAA, where researchers were focusing their attention on a small, carefully selected group of positive deviants or "pioneers of adaptation," led to positive effects regarding the core characteristics of PAR. In applying citizen science approaches we addressed the characteristics of "both researchers and participants contribute to knowledge," "all participants' contributions are taken seriously" and "context bound and addressing real life problems." Pioneers felt they were taken seriously, they had the feeling that we were doing this together with them, they learned how to do record keeping and gained more autonomy. This was intended from the outset of the project, prior to the pandemic. But we delegated more responsibility to the pioneers than originally planned due to Covid-19 travel restrictions. For the managing research team, continuing data collection without going to the field sites was novel. While most of the time this mainly concerned the PIs, at times not even the FRAs could go to the sites. Then the pioneers continued the data collection on their own. Thus, through the pandemic, the above-mentioned core characteristics of PAR became even more prominent in the PAA than before. Prior to the pandemic the pressure to provide scientifically sound research outputs according to the expectations of donors and institutions of science was often in the way of implementing PAR according to its core principles.

Other important core characteristics of PAR implemented in the PAA were the connections to action, as in meanings leading to social action, action arising from research to solve problems, and actions increasing the participants' control over their own situation. Often "participatory" approaches are used simply to gain access to data for researchers' needs (Bennett, 2004). Farmers may be involved in some part of the data collection, but neither in the design of technologies to be tested,

nor in the analysis of the data collected, nor in the presentation of the results (Habermann, 2014). Increasing the responsibilities of the pioneers in the PAA research created an opportunity for them to think about solutions—and action—for some of the problems they were experiencing with adaptation practices. Hence in the research, we had both data that were more interesting from the scientists' point of view, and other data that were collected because they were of interest to the pioneers, and some overlap between the two. With the knowledge and skills acquired in the PAA, the pioneers were able to assess themselves whether the implemented adaptation practice was working for them or not, thus corresponding to the characteristic of "actions increase participants' control over own situation."

Another important component was the Covid-19 adapted format of the field days: this brought about a very positive change because the interactions in the smaller groups were more intense and sustainable. It was novel to the pioneers that we asked them to decide on many issues together with us, such as the whole set up of the field days, and that they were playing the experts' role in the facilitation of the field days. Furthermore, working in smaller groups enhanced social action and addressed the PAR characteristic "diversity of experiences and capacities of local group as opportunity." Smaller groups for field days have made a positive contribution to producers' ownership of both the content and the process, and this was one of the lessons learned from the pandemic that will influence how we organize such events in the future.

Livestock keepers were particularly self-motivated to organize and attend the field days. Covid-19 travel restrictions limited the possibility to meet others, to obtain information and to attend trainings. However, the way PAR was implemented in the PAA opened opportunities for learning and this created high motivation among pioneers, FRAs and ROs. For instance, following the field days in the Nandi and Bomet Counties, livestock keepers decided to continue meeting for knowledge exchange.

More consideration for the core characteristics of PAR has made the PAA more action-oriented and more citizen-oriented. The experiences made during the pandemic so far have led to a rethinking of "whose needs" are prioritized by the scientific and the donor community. We hope that more research will be refocused in the direction of citizen science to enhance co-production and social impact.

Underlying Ethos of PAR

This section discusses more in depth about how we managed to incorporate the underlying ethos of PAR in the data collection process. Our individualized, positive deviance approach has been beneficial for adapting to Covid-19. Delegation of more responsibility and knowledge to the pioneers reassured us that in case of more lockdowns, most of the pioneers can continue collecting data on the farm, and information sharing can continue.

Hiring people as FRAs who were more local was also beneficial for the PAA in this regard. The FRAs developed a high sense of responsibility for and ownership of the research. This was partially because they were visiting the pioneers so often, and if they held meetings, these were only in small groups. These meetings became locally embedded social nodes of connection and exchange among the pioneers themselves, as well as between the pioneers and the rest of the communities. In short, implementation of the PAA activities became more personal. Holding meetings in larger groups than 10 was not permitted by ILRI. Thus, stakeholder meetings that would have involved mutual decision-making were not held.

The ethical requirements of creating knowledge, formulating principles of intervention and to develop instruments for selection, intervention and training were important pillars of the PAA from the beginning, but they were all altered in one or the other way by the adaptation to the pandemic. An important change was how the RO's, FRA's, and pioneers' trainings were organized. The mainly virtual training for the FRAs and ROs showed us the limitations of online methods: the interactions were limited, especially as some of the trainings were only held for one trainee at a time. In addition, bandwidth limitations made communication difficult sometimes. We learned that it is better to gather more people in one training and facilitate more interactive moments.

The training on monthly record keeping on site would normally have taken place under the supervision of the first author. In the pandemic it was organized at most sites for ROs and FRAs, and then the knowledge was passed on from the FRAs to the pioneers. Only in Nandi and Bomet Counties pioneers participated in a joint training. We learned from that experience that the training on monthly record keeping is best organized jointly for pioneers and FRAs. Joint training further improves the cooperation between the FRAs and the pioneers, and possibly other local actors such as the extension agents.

The improvement of digital tools brought on by the pandemic offers new opportunities for improving the cooperation between researchers and pioneers as citizen scientists in PAR. Some tools can be adapted to be used by pioneers for data collection and sharing, provided the technical infrastructure is accessible. Most importantly the designs need to align with the local situation to help pioneers to assume more responsibilities in PAR. Yet, we agree with others that virtual research *only* will not serve the purpose of PAR for rural people in geographical isolation and with lack of adequate infrastructure (Marhefka et al., 2020; Zhou et al., 2020; Santana et al., 2021). While in our case, the research was more decentralized due to Covid-19, we still maintained a substantial amount of personal contact between the ROs, the FRAs and the pioneers.

Implications for Changing Roles in PAR During Covid-19 Times

The relational identities between researchers and pioneers started to shift with our changing implementation of PAR in the PAA, decentralizing responsibilities, creating more motivation, and more ownership especially among FRAs and pioneers. The role of the PIs, especially the first author, was reduced to a remote supervisor. A lot of what was originally part of the role of the first author had to be delegated to the ROs. Thus, the first author was removed from an active participant to a

virtual observer for most part of the research. From the point of view of the pioneers, there were differences in their own roles and identities in this research. While in the pioneers' past experiences, researchers came to collect data on their farm, and the pioneers identified merely as assistants in gaining access to these data, they now started to identify much more with being researchers themselves, collecting data and talking to other people about them. Such a visible change provides great entry points for implementing citizen science approaches in agricultural research.

Covid-19 altered the ILRI research team's perception of themselves and their own role in collecting data with the pioneers. The research team including the PIs, ROs and FRAs was comprised of people of different nationalities, different localities, and different positions in the project. In the pandemic, especially in the beginning, these things began to matter in completely different ways. Foreigners could not travel to the field anymore, due to travel restrictions, and to protect rural people, but partly due to safety concerns for themselves, because animosities started to increase when foreigners were seen as the ones bringing Covid-19. That meant that as foreigners we were suddenly grounded in our research centers and could no longer travel to the field.

For the PIs, these privileges contributed to our inability to continue our work as we had intended to. Being in the center meant that accessing field sites was challenging after the onset of the Covid-19 pandemic. Having such privileges like access to health care put some of us in the research team in an awkward position where we were both associated with bringing the disease but privileged enough to be able to handle the consequences in terms of economically surviving a lockdown, gaining access to medical treatments (including emergency evacuations and vaccinations). None of these were accessible to our rural partners. In fact, this shone more light on the inequality even among us as researchers, let alone between the researchers and the pioneers.

Nevertheless, the international researchers or PIs, had no other choice than remaining in the centers and altering the research in a much more decentralized way due to the imposed travel restrictions. We have learned from this experience, that PAR can be reframed to an even more people-centered approach than it already is, however with the novelty that our role as researchers shifts from the center to the periphery. In the case of the PAA, in taking a step back, we allowed other knowledges to flourish, we allowed other ways of knowing to become more important and realized that other ways of seeing uncertainty were not equally recognized before (Gonda et al., 2021).

With the shift of power from "expert researchers" to local research assistants and livestock keepers, research will have to be driven by local interests to much further extents than it has in the past. A more thorough understanding of how AR4D operates in terms of working with local livestock keepers requires an approach that integrates perspectives from anthropology, as well as science and technology studies to analyze the dynamics of the participatory research itself (Crane, 2014).

PAR is best placed in long-term research programs because such projects will enhance local partnership and ownership and will make it easier to use localized digital tools to improve communication and data collection. This calls for more citizen science approaches to be adapted for PAR for agricultural research for development. Shifting the responsibilities and capacities to the local level requires adequate tools to create more adapted, sustainable, and resilient research designs. These must be responsive to different situations and require contextualized development of PAR designs beyond the current pandemic. While we had a lot more possibilities to delegate tasks and could have used digital apps for data collection in the Nandi and Bomet Counties, this would not have been possible in Afar, because of pastoralists' high mobility and low digital literacy and lack of access to electricity and internet. In short, Covid-19 made the gaps between us and other researchers, us, and the pioneers, and between the different research sites much more apparent, and in the future, we must find better ways to respond to these gaps.

Our research designs should further build on the element of taking actions on the knowledge resulting from the research (Smith et al., 2010). However, we are convinced that the lessons we have learned in the process of adapting to the realities of doing PAR in the middle of a pandemic provide important arguments for further pushing PAR approaches into similar research designs. The pandemic has led to a further decentering of the researcher and a shift of the focus to the citizen, in this case local livestock keepers, that made it more participatory in the stricter interpretation of the term. While it is important that the designers of research projects develop an in-depth familiarity with the sites they are studying, we must acknowledge the fact that in some cases this emersion in field studies may no longer be possible for all people involved in the research process.

CONCLUSION

Based on the PAA experience, we conclude that the pandemic has opened new pathways for PAR transformation. Implementing PAR during the pandemic has shown us that further shifting the focus away from external researchers as central actors of the research process has many advantages: well-trained field research assistants on site in long term data collections can become useful resource persons for local land users. As they share culture and language, it reduces barriers in communication, and building trust is less of an issue as compared to interacting with outsiders. With careful triangulation, data quality can be secured. Delegating responsibility and letting go of control promises to make PAR more impactful. Power is shifted from the central research location to rural actors and communities. Furthermore, decentering researchers supports the selection of remote sites for research rather than the more accessible, but often over-researched communities. Yet, we need to be cautious in overly relying on the use of digital tools as lack of access to these technologies may further marginalize remote communities. If research becomes a hybrid form of virtual and real encounters,

rather than fully virtual, then capacity can be built locally among both land users and researchers. Moreover, it will become more attractive for locally based researchers to remain in their areas and build networks and skills there. The central researchers and designers of the research can learn to accept that they can't control every step of the research process. This has significant implications not only for how projects are designed, but also for how they are funded. In calling for more long-term funding, less pressure on providing immediate results, and in supporting long term engagement with more trust in the community, and more ownership for research on a local level, we challenge forward-thinking donors to develop new modes of funding together with an innovative, open-minded PAR research community.

DATA AVAILABILITY STATEMENT

The datasets presented in this article are not readily available due to confidentiality as per the informed consent statement in our research.

ETHICS STATEMENT

Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

AUTHOR CONTRIBUTIONS

BH and TC jointly drafted the outline of the paper. BH wrote the first draft that was edited for scientific content and language by TC, as well as further draft versions of the paper. LG edited the final draft. The other authors were involved both in research design and data collection, as well as contributing to refinement of the manuscript. All authors contributed to the article and approved the submitted version.

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Displacement of the Scholar? Participatory Action Research Under COVID-19

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The impact of COVID-19 on conducting research is far-reaching, especially for those scholars working for or alongside communities. As the pandemic continues to create and exacerbate many of the issues that communities at the margins faced pre-pandemic, such as health disparities and access to resources, it also creates particular difficulties in collaborative, co-developed participatory research and scholar-activism. These forms of community engagement require the commitment of researchers to look beyond the purview of the racialized capitalist and neoliberal structures and institutions that tend to limit the scope of our research and engagement. Both the presence of the researcher within the community as well as deep community trust in the researcher is required in order to identify and prioritize local, often counter-hegemonic forms of knowledge production, resources, and support networks. The pandemic and similar conditions of crises has likely limited opportunities for building long-term, productive relationships of mutual trust and reciprocity needed for PAR while communities refocus on meeting basic needs. The pandemic has now not only exacerbated existing disparities and made the need for engaged, critical and co-creative partnerships even greater, it has also abruptly halted opportunities for partnerships to occur, and further constrained funds to support communities partnering with researchers. In this paper we highlight accomplishments and discuss the many challenges that arise as participatory action researchers are displaced from the field and classroom, such as funding obstacles and working remotely. An analysis of experiences of the displacement of the scholar exposes the conflicts of conducting PAR during crises within a state of academic capitalism. These experiences are drawn from our work conducting PAR during COVID-19 around the globe, both in

urban and rural settings, and during different stages of engagement. From these findings the case is made for mutual learning from peer-experiences and institutional support for PAR. As future crises are expected, increased digital resources and infrastructure, academic flexibility and greater consideration of PAR, increased funding for PAR, and dedicated institutional support programs for PAR are needed.

Keywords: participatory action research, academic capitalism, COVID-19, community engagement, scholar activism, institutional support, participatory methodology, participation

INTRODUCTION

COVID-19 has been particularly effective at exposing and exacerbating inequality and injustices (Dorn et al., 2020). Widening disparities in access to food, healthcare, and housing have resulted in increased rates of malnourishment and homelessness, and exposed the classist, patriarchal, racialized and racist structures that often produce and maintain these disparities. Rates of hunger are doubling around the world, even in wealthy countries like the U.S., where many communities continue to experience food insecurity. Income and wealth inequalities have likewise grown and exacerbated the commodification and financialization of housing resulting in increased housing precarity and homelessness. Meanwhile, the climate crisis also continues to worsen and wreak havoc in many parts of the world, producing new forms of precarity and uncertainty in some neighborhoods, while others already on the edge become more vulnerable.

Community resilience to crises is rooted in deep and trusting relationships and ecological knowledge (Gómez-Baggethun et al., 2012; Aldrich and Meyer, 2015), and the COVID-19 pandemic has been particularly effective at disrupting and fracturing relationships, thereby challenging sources of community trust and resilience. As people have been required to quarantine or reduce movement outside, many have been isolated and displaced from their everyday lives, their communities, coworkers, and their families and friends. Scholars are no exception, and have also been displaced from their classrooms and students, along with their field sites and their research. This scholarly displacement is particularly salient with scholar activists and those involved with participatory action research (PAR) (Muñoz et al., 2021). The displacement of the activist-scholar comes at a time when there is dire need for more action-research scholarship that centers on the knowledges and experiences of those communities on the frontlines of ecological, economic, and health crises—all raging in the wake of COVID-19 and other on-going crises, such as anthropogenic climate change. Yet, although inequalities and injustices laid bare under COVID have intensified activism in some instances around the world (Mendes, 2020; Marshburn et al., 2021), PAR has been significantly hampered during COVID-19. In other words, impacts of the pandemic have added urgency to the issues that communities are facing, while hindering relationships between the scholar and community, and disrupting PAR methodologies for many communities and researchers alike. The dynamic and collaborative nature of PAR and the sheer logistical challenges that come with community-based research have also become more difficult during the pandemic.

Another challenge to PAR scholars that has been exacerbated by the COVID-19 crisis is the increasing neoliberalization of academic institutions. Over the last several decades, research and higher education models have been restructured toward privatization and commercialization, with focus on generating revenues, and managing professionals (Jessop, 2017, 2018). This restructuring has inserted universities as players in the marketplace blurring the limits "between universities, the state, the non-profit sector, and the market" (Brackmann, 2015, p. 120; see also Rhoades and Slaughter, 1997; Münch, 2014). Similarly, market-oriented financial practices have transformed the ways in which universities and academic institutions engage with communities and the emphasis given to community-based projects, outreach and research. Neoliberalization has also formalized who can participate in these spaces of learning and how knowledge production occurs, with emphasis on knowledge as an economic asset and measured through quantitative metrics often in the form of number of publications and citations (Jover, 2020).

Within this model, the significance of a college education has shifted from the promotion of a liberal arts education to one focused on preparing students to be "job-ready" upon graduation. As such, although service learning and community outreach programs have become increasingly commonplace in higher education institutions, they are often seen as a form of "professional development", used to enhance the college experience and help prepare students for the "real world", despite the narrative emphasis on "community" and "engagement" (Cantor et al., 2014; Holley and Harris, 2018). This practice recalls the history of using communities as "learning labs", where it was uncritically assumed that by sending out students to "do good", community benefits would be accrued. As such, community engagement and PAR, centered on cultivating genuine forms of co-production of knowledge and when done well,[1] are often at odds with the capitalist model of commodified education and knowledge production. The values of solidarity and social justice that underpin PAR methodological approaches often conflict with and challenge economic priorities and neoliberal structures now increasingly promoted by academic institutions (Brackmann, 2015).

[1] See https://organizingengagement.org/models/participatory-action-research-and-evaluation/ for case studies of PAR conducted "done well".

While academic institutions continue to support PAR scholars in a number of ways, there is concern that this continuing shift toward academic capitalism and neoliberal restructuring limit opportunities for meaningful and radical collaboration between universities, researchers and communities (Ozias and Pasque, 2019). These concerns are particularly relevant now, under COVID-19, which has challenged social and economic structures at all levels. How the COVID-19 crisis is exacerbating structural issues in the academy has begun to be identified in the literature, pointing to the emerging evidence that shows that the "coronavirus pandemic has (re)produced further academic inequalities," at all scales, particularly for early career academics (Davies et al., 2021, p. 3). There has been less engagement however, with the "intersection of community engagement and neoliberal policies, practices, and logics" (Brackmann, 2015, p. 116), which the current crisis is also affecting.

Drawing on our own experiences as PAR scholars under COVID-19, this paper reflects on the challenges and opportunities of doing PAR work during a pandemic crisis and lockdown, and the lessons learned during this period. The authors of this paper conducted a shared analysis of our nine PAR-based case studies during the COVID-19 pandemic to elucidate a range of experiences, including the institutional barriers and supports that impacted our work with and for the community. More specifically, we reflect on our displacement from these communities, the reliance on digital methodologies, and the role of the university in supporting PAR and promoting community engaged research and projects during the pandemic and within academic capitalism. Through this reflection on our experiences we identify and explore: (1) the temporalities of the impacts of the pandemic on PAR and (2) the academic institutional factors that have shaped PAR during the pandemic. The PAR projects included here showcase the strengths and weaknesses of working remotely and the impacts of the pandemic on the scholar. Not only has COVID-19 highlighted how PAR and scholar activism are more relevant and necessary than ever before, but it has also highlighted the need for broader academic and institutional support in anticipation of future crises.

PAR Under Academic and Racial Capitalism

Over the last decades, research and higher education models have been restructured toward economic interests through privatization and commercialization, with a focus on generating revenue, and producing professionals for the market-place (Jessop, 2017, 2018). A growing body of literature across disciplines has engaged with this restructurating, identifying the emergence of "academic capitalism" which portrays the advancement of entrepreneurial models in education and research, as well as the reduction of public resources (Rhoades and Slaughter, 1997; Slaughter and Leslie, 2001). This shift has resulted in new intermediating organizations that foster market-like behaviors, expand managerial capacity, and create new circuits of knowledge tied to capitalist logics (Metcalfe, 2010; Jessop, 2017). Community engagement and PAR—which are centered on cultivating forms of co-production of knowledge that critically address socio-economic hierarchies and promote values of solidarity and social justice—are often at odds with the commodified model of education and knowledge production (Brackmann, 2015).

These structural issues emergent with academic capitalism have long been highlighted and challenged by Indigenous and Black scholars in both the decolonial and Black Radical Tradition. Robinson (1983), in his influential work on the Black Radical Tradition, coined the term "racial capitalism" to argue that capitalism is inherently racialized, whereas, "Capital can only be capital when it is accumulating, and it can only accumulate by producing and moving through relations of severe inequality among human groups" (Melamed, 2015, p. 77). This inequality, vis-à-vis the historical and material structures of colonization, is predominantly based on a patriarchal system and the othering and racialization of specific peoples to support their exploitation. Indigenous scholar Leann Betasamosake Simpson points out that educational systems "are primarily designed to produce communities of individuals willing to uphold settler colonialism" (Simpson, 2014, p. 1). Furthermore, universities across the world are often physically built on the stolen land of Indigenous peoples, while historically excluding Black and Indigenous students, and perpetuating an ontology that erases and devalues Indigenous and Black knowledges (Freire, 1968; Robinson, 1983; McLaughlin and Whatman, 2011; Simpson, 2014; Mbembe, 2016). These structures perpetuate patriarchal, racialized and colonial harms, which are then exacerbated and furthered by the exploitation of academic capitalism. Arguably, academic capitalism itself is built on the material histories of Black and Indigenous exclusion. These structures of inequality sever relationships by separating scholars from both these communities and their specific sites of knowledge production, hindering potential emancipatory collaborations and research pathways that can challenge these systems.

Gender and whiteness (and white supremacy) are imbricated in capitalism, and academic capitalism is no exception. The struggle against racism, patriarchy and capitalism in academia is longstanding and ongoing. Historically, groups such as women and Black, Indigenous, and other people of color (BIPoC) scholars have been marginalized by the power structures of academia. Domosh (2000) outlines her transgressions of studying "women" as setting her back in terms of the job search. Eaves (2019) reflects on the challenges inherent to examining feminist and gender geographies as well. She states that "our national undercurrent is materialized on stolen land, structured on white supremacy, and rooted in the rise of colonialism, imperialism and capitalist exploitation. That system must be continuously examined, critiqued, and dismantled from multiple analytical frames in order to advance struggles for justice and liberation, which are at the core of inquiry in feminist and gender geographies" (p. 1319).

It is on this foundation that the academy is built. Inequities in the Academy have been called out by many Black, Latinx, Indigenous, and critical scholars who argue that it perpetuates inequalities already present within society (Domosh, 2005; Castañeda, 2018; Eaves, 2019; Kidman, 2020). The pursuit of advanced degrees is expensive, causing students without

generational wealth (often stemming from a historical lack of access and privilege) additional stress as they work as underpaid graduate assistants or are forced to self-fund their already under-funded research. Hamilton (2020, p. 300) recalls the alienation she experienced in a discipline drenched in whiteness and colonialism. She notes that institutional calls to action against racist policing and declarations of solidarity with Black Lives Matter rang as virtue signaling. She refers to geography as "the realm of the white unseen" in reference to this lack of self-insight that the discipline has long practiced, not to mention the violence that the academy perpetuates against people of color, such as the tenure denial of deserving academics, most recently, as in the case of Nikole Hannah Jones at University of North Carolina, Chapel Hill and Cornell West at Harvard University.

In relation to PAR, scholars' connection to underserved, potentially vulnerable, and even invisible communities is not a given. Further, lack of university support for community-engaged work results in a loss of insight about the world that cannot be recouped through the workings of academic capitalism. Oswin (2020) points to a rising solidarity among "Others" that have been harmed by and marginalized by academia even among institutional calls for "diversity". Losing BiPoC, queer, and women scholars has resounding effects on the very knowledge claims that geography and other disciplines can make.

PAR is about collaborating with the community in all parts of the research (e.g., research design and knowledge production) and this is not compatible with relationships that extract, exploit, and exclude, i.e., supremacist and rigid hierarchical systems. When done well, PAR is directly counter to academic capitalism, and to the dominant power structures of the neoliberal university. It can disrupt formal, and unresponsive systems by challenging how an institution that is not egalitarian can be entrusted to conduct PAR and assist communities. As a result, PAR scholars working within the system often need to fight against internal pressures and funding priorities to have their work recognized, or they risk being displaced. The kinds of knowledge and power, such as local ecological knowledge and social capital, that support community and ecological resilience and regeneration in the face of major crises (e.g., pandemics, earthquakes, hurricanes, economic depressions), are the very kind that PAR scholars from diverse disciplines have practiced for decades, and even during the pandemic (Macaulay, 2017).

The neoliberal university limits those opportunities and the kinds of partnerships and projects that advance social justice and socio-ecological resilience. Declining state support for public services has put pressure on universities to simultaneously espouse a public good mission, and to extract what returns they can through academic capitalism practices (Rhoades and Slaughter, 1997; Brackmann, 2015). For example, in the U.S. there are 112 public universities that receive federal funding to benefit society through teaching, research, and extension. While these land-grant universities are tasked with reducing economic and health inequalities, measuring success of faculty and programs only entails counting publications, citations, external funding awards, and patents (Gavazzi, 2020). Additionally, the dismantling of humanity departments and programs, and a shift by the National Science Foundation (NSF) to focus on economics, health, and national defense while stating that "research that is predominantly post-modern, post-structural, humanistic etc. is not a good fit" demonstrate only some of the many restrictions and limitations on research that are currently in place under an academic capitalist model (Eaves, 2019).

James et al. (2021) argue that the COVID-19 pandemic presents an opportunity for a collective stock-taking, in which actors and stake-holders reconsider policy responses and pursue alternative, community-focused approaches. These approaches are essential in addressing issues of equity and power, affecting policy and providing communities with opportunities to contribute to an inclusive process that is cognisant of their needs (Afifi et al., 2020). By embedding ourselves with and within the many social justice movements and struggles, and working in traditionally marginalized communities, many of which have been highly impacted by the pandemic and lockdown, due in part to the failures, gaps or absence of government programs and support, PAR scholars can both contribute to and draw from this crisis moment and the community struggles and demands happening in different parts of the world. Along this same vein, PAR scholars have a unique opportunity to use this moment of crisis to consider research goals, the academic and funding structures within which they do research, and the ways in which our research and teaching roles can further challenge the neoliberal capitalist model. The COVID crisis has created a unique opportunity for people and societies to reconsider their lives. As people and communities leave their jobs, conduct labor strikes, demand social and racial justice, and push for better climate regulations, we in academia can also challenge the increasing neoliberalization of our institutions, and instead demand more accountability and institutional responsibility to the communities and societies in which our institutions are based.

Building Community Resilience in the Face of Crises Through PAR

Building strong interpersonal relationships and high levels of trust with community members is central to scholars undertaking PAR (Hall et al., 2021; Mokos, 2021). Participatory action-oriented community-engaged research requires an ethical commitment to the communities with whom we work; we must remain reflexively critical of our positions within the research and the influence of asymmetrical power relations inherent in the relationships we develop (Mokos, 2021). Despite these clear objectives, PAR is inherently messy and complex. Many of us work in communities that have experienced historical and ongoing structural forms of racism, marginalization, poverty and violence. For many communities, experiencing crisis or living with severe precarity and uncertainty was already part of daily life. In these contexts, PAR researchers, as (often) elite outsiders, need time to build relationships, understand community needs and demands, and learn to listen for what might go unsaid.

Crisis events like COVID-19 are shocking disturbances which can put these relationships at risk, lead us to reconsider our positionality in the context of emerging issues, and isolate the researcher from organizations and communities. Despite

these challenges, scholars have argued that community-based participatory action research remains one of the most effective ways to conduct research during periods of crisis (Afifi et al., 2020). While important questions must be asked regarding the vulnerability of the groups with which we may be conducting research (Hall et al., 2021), when done well, PAR can engage with vulnerable communities during these periods in order to overcome issues of equity and power (Afifi et al., 2020). Indeed, in many disaster situations communities themselves provide a knowledgeable network able to mobilize and react to the situation they face in effective ways (Schoch-Spana et al., 2007; Cho et al., 2021). PAR scholars can both provide support through relationships and partnerships, as well as through knowledge and data production. These relationships can in turn help to improve civic preparedness for disasters by creating opportunities for communities to contribute to preparedness policy and its implementation (Schoch-Spana et al., 2007).

The requirement to remain socially-distant and protect community members presented a significant challenge to building the trust and close collaborations at the core of PAR. To overcome this challenge and continue advancing scholarship requires a sudden reliance on digital technology such as video conferencing to facilitate meetings with community members and organizations, which significantly alters the nature of scholar community interactions. Embracing these innovative methods requires establishing the capacity for both researchers and participants to work with the necessary tools and to give appropriate regard to the ethical and privacy issues associated with the use of such technologies (e.g., Nguyen et al., 2020). Hall et al. (2021) have argued that the digital divide is less about a country's wealth and more about the communities whose digital knowledge and usage practices were already less than optimal before COVID-19. This point is further reiterated by Lourenco and Tasimi (2020) who recognize that the COVID-19 pandemic has ushered in a reliance on digital and online measures to gather data and as a result has excluded many different communities.

In these contexts, collective power is built through awareness, reciprocity, and strong relationships of trust that community members create with each other, organizations, scholars and other institutions. Through these practices and partnerships, communities can creatively and cooperatively resource needs for security, belonging, and dignity, and cultivate resilience (Haines, 2019). This is the kind of knowledge and power through which resilient communities have created robust structures of mutual aid, community land trusts, and cooperative enterprise that have operated outside of oppressive, supremacist power regimes. Community-partnered research helps document racist discrimination (Orozco et al., 2018), while original research co-designed and co-authored with frontline community leaders (Fagundes et al., 2020) serves to inform movements and support their outreach for more accountable policy [see Rural Coaltiion's USDA Climate Comments (see text footnote 1), which use original maps and findings from Fagundes et al., 2020]. Community resilience research finds that indicators such as local and traditional ecological knowledge, strength of social networks, and degree of place attachment have all been tied directly to adaptation capacity in the face of disaster (Koh and Cadigan, 2008; Wind and Komproe, 2012; Prior and Eriksen, 2013; Martin et al., 2017; Houston, 2018). This knowledge is emplaced (e.g., in particular geographies), embedded (within particular communities, cultures, and social networks), and embodied (in the lived experience of human beings living in diverse physical bodies). PAR methodologies are designed to cultivate these forms of emplaced, embedded, and embodied knowledge and build collective power. These partnerships and methodologies therefore rely on working on the ground, in the community, being seen by community members and also working closely with them.

METHODS AND CASE STUDIES

In order to identify (1) the temporalities of the impacts of the pandemic on PAR and (2) the academic institutional factors that have shaped PAR prior and during the pandemic, we drew from a diverse set of PAR projects that we conducted (or attempted to conduct).[2] The resulting author team is composed of a group of scholar activists bound not by a specific project, but by a shared vision of academia as an asset for the community (**Table 1**). Calls for case studies were placed on several online email lists[3] and shared between personal networks. Authors' work is with and for diverse communities, such as migrant farmworkers, Indigenous and queer communities, youth in the urban periphery, and urban housing coalitions. These communities are located in the global North (Canada, UK, and the US) and the South (Brazil, Mexico, and Peru). The projects were at different stages of development when the pandemic started, and include projects that were initiated during the pandemic. The authors make up a group of international scholars at different career stages (students, research staff, and early, mid-career faculty), from a representative set of institutes (teaching, research, small, and large). Our methodological approaches were equally diverse, and include a wide ranging set of tools to meet the needs expressed by our community partners, such as interviews, focus groups, participant observation, and digital, community and participatory mapping techniques.

These methodological approaches were impacted by the pandemic in different ways and in varying degrees (see **Table 1**). Over the course of several months, we individually and collectively (through digital meetings) reflected on our experiences conducting PAR during the pandemic. Several themes emerged; such as methodological issues and successes of conducting PAR remotely, the heterogeneous effects of the pandemic on scholars due to their positionality, and the

[2]Note that several of the authors have personal experience with COVID-19, as family, friends, or themselves contracted COVID-19 prior to or during the writing of this manuscript.

[3]The email lists used to advertise the call include: the Critical Geography listserv crit-geog-forum@jiscmail.ac.uk, the Participatory Geographies Research Group of the Royal Geographic Society listserv pygywg@jiscmail.ac.uk, the Scholar Activist listserv scholaractivists@lists.riseup.net, the Community Geographies Collaborative https://cgcollaborative.org/, and the American Association of Geographers Food and Agriculture Specialty Group's Food Justice Scholar-Activist/Activist-Scholar Community of Practice https://gfasg.wordpress.com/activist-scholarship/.

TABLE 1 | Participatory action research project descriptions.

Case study	Community location(s)	Type of study	Type of PAR	Research design pre-COVID-19	Research design during/post-COVID-19	COVID impact	Related works	Investigator(s)
Equitable development planning to fight urban displacement in a US city	US city	Participatory action research, policy advocacy	Community engaged participatory mapping and data analysis, collaborative policy development	Interviews, mixed-methods	Digital communication, quantitative analysis	Increased housing precarity for community members. Reduced community engagement, unable to visit communities, and loss of interviewing opportunities	Muñoz et al. (2021)	Jeremy Auerbach, Solange Muñoz, Elizabeth Walsh, Alex Cooper
Impact of community-based forest conservation and management in Indigenous and campesino communities	Oaxaca (MX)	Forestry policies analysis, commons management	Community engaged participatory mapping	Interviews, participant observation, participatory mapping, archive, videography	Reaserch stopped	Community research stopped, unable to visit communities, and documentary film production delayed		Geronimo Barrera
Youth everyday experiences and adaptive practices to resource scarcity (food, water, energy) and disaster risk	Sao Paulo (BR)	Participatory youth action research	Youth-led community engagement (aged 12-18) and co-production of knowledge, reflection-action approach	Face-to-face university extension course implemented at two community social centres, including activities such as youth-led community walks, photo-voice, participatory risk mapping, community theatre, community journal, multi-stakeholder dialogue	Online university extension course delivered through online groups, including photo-voice, videos, introduction to digital risk mapping, weekly assignments, online group discussions and individual interviews	Suspension of research for several months. The project was adapted into an online format however, the community social centres struggled with digital exclusion before they received the necessary equipment. Digital exclusion of vulnerable youth (lack of access to phones or internet) also remained a key issue over the entire course of project implementation.	Börner (2021)	Susanne Börner
Civil Soceity Organisations in the UK	Several UK cities (New Castle, London, etc.)	Planning policy recommendation	Community engagement	Focus group meetings, Qualitative analysis	Online survey, documentary analysis	Reduced community engagement, change of the type of research methods	Cho et al. (2021)	Lucy Natarajan, Elisabeta Ilie, Hyunji Cho
Queer Displacement in Atlanta, GA and Queer Burlesque	Atlanta, Georgia (US)	Ethnographic and observational	Participant observation	Interviews, Participant Observation, Archival	Remote interviews	Social connections & community events were cancelled during the pandemic and libraries and archives were closed, making gathering resources difficult. Mental health impacts from isolation.	Cofield (2021)	Rachael Cofield

(Continued)

TABLE 1 | Continued

Case study	Community location(s)	Type of study	Type of PAR	Research design pre-COVID-19	Research design during/post-COVID-19	COVID impact	Related works	Investigator(s)
The Valverde Movement Project	Valverde neighborhood, Denver, Colorado (US)	Mobility planning	Community engagement, story mapping	N/A (started during COVID)	Mixed methods	Challenges in developing relationships of trust and reciprocity, however the breadth of academic and mobility collaborators able to be reached was enhanced because of the online environment	https://bit.ly/ValverdeMovementProject21	Elizabeth A. Walsh, Cara Marie DiEnno
Disparity to parity: Balancing the scales of agricultural policy for justice & resilience	US	Agricultural policy, synthesis, analysis, advocacy	Frontline Grassroots Coalition-led action-research collaboration	Plans for an in-person write-shop and rural farm/border/community organization field site visits; applied for 3 USDA NIFA grants (not funded)	Digital communication, collaboration, and co-authorship; the new website (disparitytoparity.org) as hub for collective work, with in-kind pro-bono assistance	Added urgency to the topic of food/farm/land/labor/racial injustice in agricultural systems and policies	disparitytoparity.org	Garrett Graddy-Lovelace
Fairness, migrant justice & the organic movement in Canada	BC/Canada	Participatory Action Research, Collaborative Scholar-Activism	Interviews, participant observation, document review	N/A; nascent research that emerged from relationships that existed pre-COVID	Qualitative analysis (mixed primary data collection methods)	Enabled collaboration across space where virtual actions in solidarity and participation in gatherings would not have been possible. Also added urgency and created confusion and gaps in knowledge with rapidly changing employment/health and safety context. Limited opportunities for invaluable in-person interaction to build trust and explore possibilities for collaboration.	Klassen et al. (in press)	Susanna Klassen
Agrobiodiversity Nourishes Us/La Agrobiodiversidad Nos Nutre: Research-Action for Agroecological Transformations	Yucatan (MX); Lare (PE); Appalachian (US)	Agricultural policy analysis and laying out of agrobiodiversity research agenda/ethics	Encuentro Shared Analysis Sessions	Interviews	Digital communication methods; we pivoted what was going to be a 'Guidebook' into a multilingual, multimedia Special Feature at the open access journal Elementa: Science of the Anthropocene.	Community meetings cancelled; professional precarity for some research project co-leads		Veronica Limeberry, Garrett Graddy-Lovelace

institutional support (or lack thereof) for PAR during the crisis. The following section is an analysis of our experiences, followed by a discussion on our findings, with focus on both the limitations and opportunities that arose in the context of doing PAR in the context of a global pandemic and the neoliberal university. We conclude with recommendations for researchers, research funding organizations, and universities to better support PAR partnerships so that they are in place and prepared for future crises.

CONDUCTING PAR DURING COVID-19

Can PAR Be Remote?

COVID-19 pulled all of us out of the communities where we were working and locked us in our homes as we navigated the many uncertainties of the virus and its toll, with some of us even contracting the virus. During the early days of the pandemic, unpredictable and rapidly shifting government guidelines and information made planning difficult, if not impossible. New projects that started during COVID-19 lost their momentum, while other projects were temporarily suspended. For PAR researchers, who rely on partnerships and relationships that are often constructed on the ground, this digital shift initially created a lot of uncertainty and challenges as we all struggled to figure out what technologies were available, who had access to them, how they worked and the different ways in which they could be combined. However, as the pandemic progressed, we started to adapt our work despite the many limitations and the digital fatigue (both of researchers and participants) even as we all became much more familiar with the different technologies available, as well as more flexible and creative in adapting our research and objectives. While the utilization of online measures were helpful for all of us to quickly transition from in person to online meetings, it also impacted with whom and how we were able to communicate and the projects and objectives that came out of this new online form of communication. Our PAR projects demonstrate how different technologies worked in different contexts, often based on what people and communities were already using in each site.

Displacement of the Scholar-Activist

A significant way many of us were able to maintain relationships and build on our research was by working directly with social organizations who were already organized and in many cases functioned successfully online. This allowed us the possibility of shifting our work to an online platform that felt meaningful and already had an established online significance. With online presence now a common strategy for providing visibility to social organizations during the pandemic, organizations representing equity-deserving communities were already present in some online capacity, which made adjusting to online partnerships relatively easy. This allowed some of us to continue our partnerships and develop innovative ways and opportunities to rework research and project objectives. For example, drawing on their online work with different organizations and working with American University's Center for Environment, Community and Equity,[4] author GGL hosted a 2021 Earth day virtual webinar for nearly 500 registrants. Authors JA, SM, and EW were also able to interact with the community organization they worked for, as this organization had access to Zoom and a resident interpreter (Muñoz et al., 2021). Author SK's PAR also evolved through virtual collaboration around webinars, and was made possible because of the commitment of the community organization she works with (Fuerza Migrante) to continuing engagement in a virtual way through the pandemic, and other social movements organizations for creating online venues for these discussions (Klassen et al., in press). Thus, for some of us, these online transformations were positive, despite their limitations, and highlighted the importance of the organizational relationships on which PAR often relies, as necessary to their ability to move online.

Our discussions regarding the role of organizations in facilitating PAR also lead us to reflect on who was left out of this new COVID dynamic. Community organizations are important stakeholders and advocates for communities, as well as facilitators for researchers to enter into communities, however they cannot represent all community members and at times create or represent community divisions or conflicts. Although many of us were successful in maintaining close, and ongoing working relationships with organizations that led to online initiatives and projects, others discussed being isolated from the community because organization leaders abruptly halted communication. Without stronger relationships with the community residents and other members of the organization, authors JA, SM, and EW were left to try to understand what had happened to the partnerships they were trying to foster (Muñoz et al., 2021).

At the same time, in another project, instead of working with organizations, author RC was able to create community partnerships with individuals through local, intentionally ephemeral events. Although these events stopped entirely during the pandemic, thanks to these established relationships prior to the pandemic, author RC was able to maintain meaningful and strong relationships with participants and the broader community during lockdown. Similarly, the relationships in some ways changed online, allowing researchers and participants alike to reimagine these partnerships and objectives, and to consider future opportunities and research frameworks.

The Shift to Digital PAR

The ways in which each of us "resolved" the COVID-19 dilemma of not being in close contact with our partners involved different online formats of "formal" and "informal" means of communication, with limitations that included issues such as language, age, infrastructure, and the different stakeholders involved. Although countries with existing access to advanced technological frameworks were assumed to be less affected than developing countries without the same infrastructure in place, in reality our PAR programs conducted COVID-19 highlight that the digital divide was not so clear. None of the communities with which we worked were completely isolated and in some cases, in

[4]https://www.american.edu/centers/cece/

countries like Mexico and Brazil, daily technology like WhatsApp facilitated authors' connections with participants on a daily basis and/or in more informal conversations, than the more formalized Zoom meeting settings.

Author GBT described how he had been forced to leave the communities where he was conducting interviews and mapping workshops, canceling many planned activities. Nevertheless, he remains in contact with community members using WhatsApp, with "voice messages our preferred means of communication, particularly because the residents speak Chatino, a language that does not have a written form. We have even used [voice messages] to discuss [important] concepts, and I use it to continue learning the language and to ask questions when I am translating interviews." Author SB used WhatsApp as a way to employ PAR methods with the help of community social centers that facilitated contact with São Paulo youth. Author SB used WhatsApp to digitally develop activities that were no longer possible in person. Although "translating these dynamic activities into WhatsApp had certain limitations [with] youth falling back into participant roles [instead of] being co-creators of the whole process", author SB was able to use WhatsApp for a variety of activities such as photo-voice and group discussions, including even more practical activities where participants made recycled objects from plastic bottles and shared photos with the group. In this way, WhatsApp has facilitated both long-term relationships through informal contact and also allowed for the sharing of more structured activities for data and data collection.

Interestingly, the use of "informal" technology, like WhatsApp may be more successful when conducting research with communities in conditions of vulnerability, particularly in countries like Brazil or Mexico where it is widely used as a main means of communication. Additionally, these examples showed how WhatsApp helped reduce digital exclusion of hard to reach, vulnerable social groups. The digital methods that we chose and the rhythms of communication that we adopted were often based on the suggestions and needs of social organizations and participants' preferences and personalities. The authors' experiences showed that interaction worked best where we did not try to impose something new, but rather worked with what participants felt most appropriate and accessible. Although WhatsApp was a valuable tool available to some of us, others shifted to more "formal" modes of digital communication using Zoom and other teleconferencing applications, with mixed outcomes. This shift to remote PAR "took courage to allow for mistakes and imperfection in order to try out new formats and to get out of our comfort zone" (Börner, 2021).

Unlike authors GGL and VL, who were working with organizations that were already online, SB discussed some of the initial challenges faced by the social organizations with whom she was working, that did not have the technological capacity at the beginning of the pandemic (such as work phones and laptops). Understaffing was also a problem, since many social organizations were addressing many of the sudden community needs and demands, like emergency food aid, that the COVID-19 lockdown originally caused. Authors JA, SM, and EW also struggled to build relationships of trust and support, as the organization they were working became increasingly overwhelmed as they scrambled to provide emergency food aid, access to emergency welfare assistance and basic knowledge to a large Latino immigrant population (Muñoz et al., 2021). These issues are further compounded with time zone difference, unequal internet access, and unconventional living arrangements.

Emerging Opportunities

As discussed earlier, the shift to digital created many opportunities for many of the authors. Authors GGL and VL describe how "the online mode of organizing allowed us to expand our reach and correspondence domestically and even internationally". They describe how their project "Disparity to Parity to Solidarity: Balancing the Scales of Agricultural Policy for Justice and Resilience" (D2P, dispartitytoparity.org) which was already largely a virtual endeavor in part due to lack of funding, was cited by Indian agrarian leaders during the ongoing Indian Farmer Uprisings which called for minimum support prices and guaranteed markets for diverse growers to stave off corporate capture. Authors GGL and VL suggest that because of this online pivot, methodologies and online activities actually "became broader, more regular, more diverse and more integrative in shared, digital formats". Similarly, for author SK, who was already physically distanced from the communities with whom she was working, "the lockdown changed perspectives on what was keeping us apart. Geographical distance diminished as a factor that might otherwise prevent working together across great distances and borders". She continues to say, "In my experience with this PAR project, COVID actually opened up opportunities to feel proximity more as a sense of shared goals and values, which is what enabled our collaboration to continue and even grow, despite the COVID crisis." Many of us shared similar experiences–although starting from a place of uncertainty and projects changed, often in significant ways, we were able to make things work and advanced meaningful partnerships and projects, sometimes even because of the conditions created by the pandemic.

These opportunities were also accompanied by the limits and inevitable exclusions of digital technologies. As authors JA, SM, and EW describe, after large meetings with multiple stake-holders, two languages, and technical glitches, they missed the opportunities for the small talk and watercooler moments; conversations before or after meetings with individuals, walking and chatting about informal issues, or engaging in non-work events, all of which contribute to relationship building and trust, and provide a framework for project development and innovation. Author SB described how she initially lost participants who had originally signed up to do a face to face extension course. Going online meant recruiting new participants willing to do the activities online. Although she was successful in her ability to recruit a new cohort, author SB explained how, "reaching hard to reach groups such as vulnerable youth in the urban periphery was already challenging pre-pandemic, and the COVID-19 crisis only exacerbated the gap between urban centers and the periphery". Using email to reach out to participants, authors HC and LN stated that it was not easy to present the research as a collective endeavor in collaboration

with participants. They worried that the research would "be seen as using the data from participants purely for the purposes of researchers' academic objectives, rather than providing future benefits for community actors." They also highlighted how COVID-19 further isolated already equity-deserving individuals, explaining, "Many local participants, especially those who are less affluent, older or with lower education attainment were less likely to connect with local organizations through a digital platform."

As discussed above, virtual remote data collection during the displacement of the PAR researcher from the field during COVID-19 opened up a myriad of sub-challenges as well as opportunities. In **Table 2**, we provide a comprehensive view of the different scenarios of field research under COVID-19 based on our different experiences, to point out the key Strengths, Weaknesses, Opportunities, and Threats (SWOT) of virtual remote PAR. It is important to note that there is no one-size-fits-all approach to how PAR was conducted under COVID-19, and our PAR programs highlight a heterogeneity of experiences, with sometimes similar but also contrasting experiences.

Conducting activities entirely online furthermore raised various ethical and practical questions, such as concerns over trust-building, establishing connections and maintaining continuity. Some of the authors found creative approaches for trust-building, such as deep listening to the needs of community partners (including issues that were disconnected from the project) and following up with resources, data and connections; or dynamics such as using video calls, short videos and photos as a form of personal introduction. However, although some of the authors had already developed strong relationships they were able to build on, for many of us the online setting did not compensate for regular, informal and in-person trust-building opportunities, exacerbating the challenges of creating strong partnerships, especially with participants in conditions of digital vulnerability.

Institutional Support and the Impacts of COVID-19 on PAR Scholarship

The pandemic not only created opportunities and barriers to PAR methods, it has also affected us within our institutes and the broader Academy. We do not want to equate the weight of the impacts of COVID-19 on equity-deserving communities with those on scholars, yet want to mention the ways in which scholars have also been affected by the pandemic, particularly within those institutions and structures that have embraced academic capitalism as their *modus operandi*. Similarly, COVID-19 has had a dramatic impact on the careers of academic researchers and PAR itself, as It is evident that it also perpetuated and exacerbated inequalities among scholar activists: students, staff, and faculty. In this section, we argue that although we have observed weakened interactions between universities and communities due to the COVID, it appears from the cases that the previously established relationships that exist before crises, can help to mitigate challenges during crises. Here we discuss the factors that limited and enabled relational activities of PAR and reflect particularly on the relationships between the university and the community in the context of power dynamics in relation to PAR scholars and the functioning of academia.

COVID-19 and the Impact on the Student Researcher

The majority of students are under institutional timelines and during the pandemic were not necessarily provided extensions on program requirements nor additional pay. Doctoral students were left scrambling to alter their projects under the pressure of institutional funding and program timelines. Although many of the projects included in this paper were successful in either completing or advancing their research, many projects that would have advanced PAR methods and methodologies had to be re-routed, delayed, or entirely canceled. Furthermore, many doctoral programs in Canada and the United States now only offer 4–5 years of funding, when PAR practices and other qualitative methods may require longer periods of relationship building and data collection. Author RC describes their experience of writing the dissertation during COVID-19 as a period of struggle and little guidance. "Research resources and materials were scarce, and Atlanta was shut down. Archives and libraries were closed, ensuring a lack of physical materials and [inability to conduct] archival research to complement what my participants were telling me." They continue to describe how, "I wrote my entire dissertation during the isolation of 2020 Atlanta. There was no vacation from COVID. There was no chance of reconnecting with participants and community friends and no talking through my findings in a communal space." COVID-19 also extended author RC's program, forcing them to pay for two semesters out of pocket, even while "cis white hetero men in my cohort year continued to receive funding". This sense of isolation and lack of emotional and financial support is widespread among graduate students and often goes unacknowledged by faculty and administration in normal times. COVID-19 exacerbated these conditions creating severely precarious conditions for many students. As author RC puts it, "There was a visceral trauma of COVID-19."

COVID-19 and the Impact on Faculty

The neoliberal turn of University systems in many countries around the world has radically transformed the hiring and support of faculty, who is able to receive this support, and how it is administered. Universities were quick to use the pandemic to increase austerity measures, implement hiring freezes, buy out contracts, and promote early retirement. COVID-19 also allowed for the hiring of more short-term and less stable faculty positions, like fixed-term adjunct and lecturer positions. In day-to-day operations, universities waited to announce whether classes would be in-person or virtual, while adjunct instructors had less flexibility in determining either their class schedules or even their own safety to teach. At the same time, some of us did receive support from our institutions in the form of tenure extensions, technological assistance and instruction, working from home, family leave, etc. In many ways, although tenure track faculty continued to feel the stress of working long hours and moving between teaching, administrative, and research responsibilities, the

TABLE 2 | Strengths, weaknesses, opportunities, and threats analysis of PAR under COVID-19 using digital tools.

STRENGTHS	WEAKNESSES
- Expansion of activities/scope/target group/outreach. - New creative formats emerge (digital photo-voice, videos, text and audio communication, Zoom meetings, webinars, resource exchange, WhatsApp, email, group vs individual activities, ...). - Heterogeneity rather than a "1 size fits all" approach. - Traditional, "formal" channels of communication (e-mail, videoconferencing, …) may be complemented by new "informal" tools such as social media and WhatsApp (especially in Latin America where they have become an "institutionalized" form of communication). - Protects community members at risk (immunocompromised).	- Data collection largely depends on the quality of "relational groundwork" and established connections pre-COVID. - Hinders consensus building. - Presupposes access to technology through laptops/computers/smartphones and stable internet access. - Limitations to trust-building and creating connection with new participants using online tools. - difficulty of conveying the purpose of research through digital tools (e.g. email) instead of personal interaction. - Not all participatory activities can be transferred 1-to-1 into an online format and challenge of being participatory and inclusive. - Systemic inequalities exist and lead to digital vulnerability where low-income and rural populations experience unequal and low-quality access to technology/ broadband connection. - Use of digital tools requires a certain digital literacy as well as a certain sense of autonomy and self-confidence. - Technical issues hinder the "flow" of online activities (e.g. interference of others, noise disconnection of video (privacy), unstable internet connection, ...).
OPPORTUNITIES	**THREATS**
- New ownership and new formats may emerge. - Digital tools can also lead to more inclusion rather than exclusion and make participation broader, more regular, more diverse, and more integrative in shared, digital formats (such as webinars etc.). - Digital tools may facilitate shared analysis, debates, resource exchange, co-authorship, design and analysis, and co-editing. - Use of informal digital tools (e.g. WhatsApp) alongside more "formal" channels of communication can especially increase inclusivity and receptiveness by the target group. - New connections across time and space may emerge (inter-local, international, cross-sectoral, …). - A new sense of proximity may develop as a sense of shared goals and values enabling collaboration despite physical distance. - Greater digital literacy of the participants developed during COVID-19 (temporality). - May enable a different reflection on the sense of self. - Opportunities for research institutions and researchers to collaborate with diverse partners to redress harm and co-create equitable and regenerative pathways that spring forward from crises. - May allow for more often check-ins.	- Uncertainty in a rapidly changing situation and changing government guidelines create stress on researchers and participants. - Sharpening of already existing digital divides may increase the difficulty of reaching vulnerable local communities and may lead to an exclusion of those most equity-deserving (due to a lack of access to technology and/or internet) in equity-deserving communities. - Digital illiteracy can lead to a struggle with less "institutionalized" and new digital tools. - Age-related risks: young people (especially in low-income families) may not have access to an individual phone; less affluent, older, or less educated groups, may be less likely to connect through a digital platform. - Self-esteem and self-confidence which may be still fragile in many young people may limit their active participation in virtual settings. - Difficulty to accommodate diverse interests from multi-stakeholder participants when using for instance Zoom meetings and risk of domination of more confident participants over more quiet ones. - Going digital may lead to a shift from a relation of co-creators of knowledge back to researcher-participant dynamics. - Digital fatigue may take its toll on the continuity of participant engagement (temporality).

pandemic reinforced the institutional divisions between who is provided full support and funding opportunities, and those who are seen as temporary workers or figures in departments. These strategies entrenched inequalities at the university level while hindering participatory action and community-led/based research.

COVID-19 and the Support of Institutional Community Engagement Programs

Additionally, and surprisingly to some of us, many of the author-scholars included here, described how they benefited from the flexibility of institutional support of established community engagement offices or new initiatives to uplift and support scholars doing PAR.

Author EW found that the University of Denver's (DU's) Center for Community Engagement to advance Scholarship and Learning (CCESL) opened up diverse possibilities, since it already had a strong record of community-engaged research, through which it had established trusting relationships with community members as well as city officials, particularly through author CMD's field work. With healthy relationships already in place spanning sectors as well as academic institutions, CMD and EW were positioned to respond quickly to a call for proposals from a new NSF program, the CIVIC Innovation Challenge.[5] The strength of existing place-based relationships not only helped them secure the planning grant, it also enabled them to swiftly launch a collaborative, action-oriented, inter-institutional research initiative with neighborhood partners during the pandemic. The quarantine posed challenges—especially because the neighborhood they were partnering with had the highest hospitalization rates for COVID-19 in the city (Németh and Rowan, 2020). However, in other ways, the pandemic created

[5]https://nsfcivicinnovation.org/

a window of opportunity for them to do the kind of anti-racist, asset-based, intersectional, transdisciplinary, community-engaged, applied research to which they are committed. Similarly, the apocalyptic nature of 2020 (and visibility of social justice movements taking to the streets) revealed the profound structural disparities in our cities in ways that created opportunities to have more honest and open public conversations about infrastructural racism. This moment of opportunity helped their team galvanize collaboration among the 25 multi-sector partners. Moreover, because all members of the inter-institutional research team were local to Denver, when neighborhood leaders invited academic partners to support outreach efforts for their vaccination clinic, they were able to mobilize university resources to support tri-lingual flier design, printing, and door-to-door distribution.

Author SB's work in Brazil was greatly facilitated by the extension office at the University of São Paulo, which was open to adapting her course to an online format and to recruit new participants. As she explains, "when adapting to the digital, academic institutions showed a certain flexibility [making it possible] to change/delay the date for the extension course, to enroll additional students, and to send the inscription forms online". Similarly, the Community Engagement Partnership Recognition Fund[6] (PRF) from the University of British Columbia, which offers small grants for community partners in PAR partnerships, offered dedicated funds for projects that addressed the impacts of the pandemic. While the administration of these funds still present barriers for community partners, other accommodations like allowing oral progress reports by phone made the funding process less onerous for author SK's community partner.

Yet, there were concerns of lack of flexibility and support from institutions for us as scholars to operate beyond official roles. Nevertheless, these examples and case studies highlight both the opportunities and challenges for both doing PAR research under normal circumstances and the way these challenges and opportunities can be exacerbated and used in times of crisis. As author SB reflected, community engagement offices can "link universities closer to community stakeholders and establish partnerships for the future, which can facilitate new digital research projects and support researchers in identifying participants and deal with administrative requirements of funders and universities."

COVID-19 and Institutional/External Funding for PAR

Some of the early career researchers struggled against multiple barriers as a result of insufficient funding, lack of funding support and recognition, and funding time structures that did not take into account the challenges posed by a pandemic crisis. Several experienced a manufactured urgency from tight timelines. Authors CMD and EW found "an urgency arose from the inflexibility of the 4-month planning grant. This type of urgency is typical of white supremacist cultures, where rigid timelines reinforced by funders who expect too much for too little, often make it difficult to take time to be inclusive, encourage democratic processes, think long-term, or learn from mistakes." Similarly, author SB found "as a postdoctoral researcher on a project with a limited duration, I also struggled with the lack of a cost-extension from the funders." Additional barriers were also discovered, such as the PRF grant awarded to author SK's partner organization, Fuerza Migrante, which required a charity number to process funds directly to the community partner, an extra level of bureaucracy that made getting material support to the community partner—the funding recipient—even more challenging. While many of us benefited from established community engagement offices or new initiatives to uplift and support scholars doing participatory work (e.g., the Public Scholars Initiative at the University of British Columbia), many of the authors had to find ways to overcome institutional barriers and continued to operate outside of institutional pathways, and found inspiration from communities themselves. For example, author JA was awarded a community grant but his institute requested 50% of the funds for University overhead despite all the research taking place within the community. To avoid these overhead costs and ensure that the funds would be allocated completely for PAR, author JA established himself as an independent consultant. This resulted in not only additional challenges for author JA, such as finding and purchasing professional liability insurance, but also severed a link between the community and the university.

In contrast to author JA's experience, other authors were able to continue their research with communities due to university funding and support despite COVID-19. In some cases, already established relationships between universities and local communities were conducive to aiding projects serving the public during the pandemic. Although the importance of universities' relationships with local communities was positive by some accounts, the understanding of the value of participatory research seemed to vary across academic institutions. Our PAR projects highlight a divergence in the support granted different actors, which depend greatly on their institutional positions and obligations, as well as the existing offices and programs, and duration of contracts. Those who had secured positions with sufficient research support, or who were at universities with community engagement offices tended to be able to continue their research. Several authors were awarded funding specific to community-focused COVID responses, such as the PRF grant awarded to author SK and the NSF Civic Innovation Challenge awarded to authors CMD and EW. According to authors CMD and EW "these reflect important paradigmatic shifts and expanded epistemological diversity in research funding. We encourage [grant providing organizations] to continue on an anti-oppression path and to continuously work to dismantle patterns of white supremacist culture within the institution."

CONCLUSION

While COVID-19 has demonstrated that participatory action research has never been more needed, the pandemic has also

[6]https://communityengagement.ubc.ca/our-work/partner-recognition-fund/

exacerbated the challenges of conducting PAR. As set out above, we reflected on our own research experiences during the COVID-19 pandemic to reflect on the challenges of doing PAR under quarantine and in the broader context of academic, patriarchal, and racial capitalism. The impacts of COVID-19 have not only laid bare the impacts of capitalism on community relationships, but also have highlighted how the neoliberal university model is unevenly providing resources with effects that have the potential to work against the general PAR ambition of broadening institutional engagement with communities. While there were instances where institutional supports enabled PAR to continue (or even catalyzed it in one instance), for the most part it was the commitment of the individuals involved; relationships held by researchers and community organizations (not universities) and the use of unconventional digital tools (e.g., WhatsApp and Zoom) that enabled PAR during the pandemic. In many ways we had to relearn and reevaluate how to do our work in ways that made it possible and that remained true to the nature of PAR. For those of us who had already established strong relationships with community members and organizations, the shift was often easier than many of us expected.

Despite being heterogeneous and not offering a one-size-fits-all approach, our experiences also show how beneficial mutual learning from peer-experiences can be. Hence, a coordinated information platform would be beneficial for peer-learning by listing tools for digital PAR aimed at researchers as well as community stakeholders seeking to reproduce certain interventions. In the early days of COVID-19, some websites and blogs emerged to list online tools for PAR. However, online collections of resources and tool guides for remote PAR are only available in a piecemeal fashion and do not sufficiently address the needs of digitally vulnerable populations. Moreover, most tools and suggestions are directed at English-speaking audiences. Our contribution seeks to provide a starting point for an international and global North-South dialogue which brings together PAR academic voices to document both formal and informal practices of digital engagement. It may also provide a stepping stone for building stronger networks, cooperations, and partnerships between universities and community partners.

Of course, scholar-community relationships are at the heart of trusting and equitable PAR work, but institutions can do more to create the conditions for and reduce barriers to creating and maintaining these relationships. Reflecting on the wider academic context, the analysis of these case studies provide insights on the direction and possible alternatives of institutional support for PAR. Even though there is no panacea outside a radical re-imagining of the Academy, several changes to the current academic system could be put forward. Firstly, increased institutional support and resources for digital work, such as community access to online tools and workshops. Second, halting the reliance on short-term positions and providing security of tenure, which is needed for morale and focus in long-term and relational work, and to recognize PAR scholarship in promotion. Third, the funding system needs to change to become more flexible (e.g., in terms of deadlines) and invested in smaller-scale community projects. Lastly, creating or expanding community-engagement programs or offices that (1) build capacity for anti-racist, equity-centered, intersectional, collaborative learning and action, and (2) provide the support PAR scholars need during future crises. This institutional support can help place researchers in an active and sustained role during crises instead of being reactionary, interrupted, and displaced.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

AUTHOR CONTRIBUTIONS

JA and SM conceived the original idea. UA, JA, GB, SB, HC, RC, CD, SK, VL, SM, LN, AM, and EW contributed to the analysis and writing. All authors contributed to the article and approved the submitted version.

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The Leuven Gymkhana: Transdisciplinary Action Research Questioning Socially Innovative Multi-Actor Collaborations in COVID Times

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Literatures on social innovation, collective agency and multi-actor collaboration stress the importance of action research and joint problematization to research ongoing processes of collaboration and transformation to advance both theory and practice in these fields. In this paper we analyze our experience building a transdisciplinary action research (TAR) trajectory between 2020 and 2021 to investigate socially innovative multi-actor collaborations (IMACs) and urban governance innovation trajectories in the city of Leuven (Belgium). We specifically focus on (1) how we involved a wide array of researchers, stakeholders and practitioners in the TAR trajectory; (2) how we enacted joint problematization and action, ensuring that all facilitative leadership roles were taken care of; (3) the challenges that the specific COVID context posed on TAR and the innovative tools and approaches we took to adapt under such circumstances; and (4) how our TAR contributed to the ongoing IMACs in Leuven. Discussing our experience in relation to issues raised in action research literature, we summarize key dimensions, roles and tasks necessary in TAR to enable facilitative leadership and multi-actor collaboration and successfully drive joint problematization and transformative change. We conclude that our TAR trajectory in Leuven became a case study of IMAC in itself, and so learnings from our TAR directly dialogue with and inform our empirical analysis of the performance of IMACs too. Through this realization and the analysis of our experience, we get to broader question the role of action research and researchers in urban governance innovation.

Keywords: positionality, social innovation, Leuven, transdisciplinary action research, joint problematization, governance innovation, action research, innovative multi-actor collaboration

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INTRODUCTION

In the first months of 2020 we initiated a research aiming to analyze socially innovative multi-actor collaborations (IMACs) (Medina-García et al., 2021) and urban governance innovation trajectories in the city of Leuven (Belgium). We were specifically focusing on two ongoing IMACs aiming to transform the city's food system: (1) the multi-actor collaborative platform Leuven2030 and (2) the

parallel collective development and implementation of a Food Strategy for the city. The aim of the research was to understand the collaboration process of Leuven's Food Strategy, the interferences between practice and governance levels, and the transformative socially innovative processes that occur in and through these IMAC trajectories.[1]

In our research we followed recommendations and experiences in the fields related to our research, i.e., social innovation (Andersen and Bilfeldt, 2013; Arthur, 2013; Konstantatos et al., 2013; Kunnen et al., 2013; Moulaert and MacCallum, 2019), governance and urban planning (Healey, 2012; Albrechts, 2013; Novy et al., 2013; Gray and Purdy, 2018; De Blust et al., 2019), and sustainable transformation of food systems (Tornaghi and Van Dyck, 2014; Moragues-Faus et al., 2015; Bradbury et al., 2019; Hammelman et al., 2020). These stress the importance of "praxis oriented," transdisciplinary research and joint problematization among researchers, practitioners and stakeholders to investigate and address current complex urban challenges to advance both theory and practice. We embraced these recommendations by taking a Transdisciplinary Action Research (TAR) epistemological and methodological approach.

As Fontan et al. (2013, p. 311) describe, in TAR "a researcher collaborates with practitioners in the effort to change a situation and resolve a problem experienced in a milieu, community or organization, and to improve the understanding of the phenomena in question." Action research (AR) in general is a critical research approach rooted in the epistemological belief that combining different types of knowledge and experiences and building horizontal relations between researchers and "objects of research" can contribute to cocreation and democratization of socially valid knowledge and empowerment of the actors participating in the research process (Fals Borda, 2006; Andersen and Bilfeldt, 2013; Moragues-Faus et al., 2015). According to Bradbury et al. (2019, p. 6) AR does so "not by starting with the expert understanding of our problems, but by helping those with stake in an issue to see their own problems more clearly and to take intelligent action with others in response to their shared learning."

The objectives of applying TAR to our research in Leuven were to: (1) gain a broader understanding of the complexities of ongoing IMAC processes while contributing to their performance and the broader governance transformations in the city; (2) contribute to internal reflection within each IMAC trajectory and participant initiative; and (3) enable dialogue, exchange and mutual learning among actors involved in governance innovation in the city. We experimented with different ways to interact with ongoing IMACs and contribute to collective reflection, joint problematization and further multi-actor co-creation, that would be relevant both for the academic scholarship and the daily practices of the initiatives involved (Fontan et al., 2013). In this paper we share our experience doing TAR between spring 2020 and summer 2021 and reflect on the challenges and learnings along the process. Through the analysis of our TAR we contribute to action research literature distilling key dimensions of TAR and specificities on how to conduct socially innovative TAR in the field of governance innovation.

The remaining paper is structured as follows. In Section Epistemological and methodological approach: transdisciplinary action research to investigate governance innovation in Leuven we explain our TAR epistemological and methodological approach, showing how social innovation theory enriches action research literature and practice bringing in specific analytical tools (i.e., socio-institutional analysis) and ethics (i.e., reflecting on the socially innovative nature of TAR and the positionality of researchers in the phenomenon investigated). In Section Our experience conducting transdisciplinary action research in Leuven: research trajectory, challenges, and adaptations we describe our experience conducting TAR to investigate socially innovative multi-actor collaborations in Leuven. We specifically focus on (1) how we involved a wide array of researchers, stakeholders and practitioners in the TAR trajectory; (2) how we enacted joint problematization and action, ensuring that all facilitative leadership roles are taken care of; (3) the challenges that the specific COVID context posed on TAR and the innovative tools and approaches we took to adapt under such circumstances. In parallel, we explore (4) how our TAR was a socially innovative practice in itself, interacting with and contributing to ongoing IMACs in Leuven. In Section Discussion we discuss how action and research enrich each other and how, when applied to research about IMACs, the TAR trajectory became an actor in the broader landscape of governance innovation. As such, it contributed to changing existing social relations empowering vulnerable and excluded actors in Leuven, and became a field for experimentation that directly informs and affects further steps in the IMACs investigated. Further discussing our experience in relation to issues raised in AR literature, we summarize key dimensions, roles and tasks necessary in TAR to enable facilitative leadership and multi-actor collaboration and to successfully drive joint problematization and transformative change. Specifically, we address the importance of transparency, continuous negotiation and adaptability, and combination of project-based interventions and potential to contribute to long-term transformations in the TAR process; the agency of interaction and of collective outcomes; relevant dimensions of communication governance in TAR (in COVID times); and the relevance of establishing an Editorial Board. In Section Conclusion we conclude that our TAR trajectory in Leuven became a case study of IMAC in itself, and so learnings from our TAR directly dialogue with and inform our empirical analysis of the performance of IMACs too.

Abbreviations: IMAC, innovative multi-actor collaboration; TAR, transdisciplinary action research; AR, action research; PAR, Participatory Action Research; SI, social innovation; IASP, Institutional Aspects of Spatial Planning; IMSDP, International Module in Spatial Development Planning; CSA, Community Supported Agriculture; UGADI, Urban Governance And Democratic Innovation.

[1]We further elaborate on the empirical results about governance innovation through innovative multi-actor collaborations (IMACs) in Leuven in the article "Innovative Multi-Actor Collaborations as Collective Actors and Institutionalized Spaces. The Case of Food Governance Transformation in Leuven (Belgium)" (Medina-García et al., 2022).

EPISTEMOLOGICAL AND METHODOLOGICAL APPROACH: TRANSDISCIPLINARY ACTION RESEARCH TO INVESTIGATE GOVERNANCE INNOVATION IN LEUVEN

In this section we elaborate on the body of knowledge that has guided our transdisciplinary action research trajectory and how we structured our research. To explain our specific epistemological approach, we enrich the action research (AR) approach with reflections about transdisciplinary research introduced in social innovation literature.

The Basics of Action Research

Action Research (AR) is an umbrella term covering a variety of approaches to building "collaborative research, education and action oriented toward social change" (Kindon et al., 2007, p. i). When different strands of AR extended in the 1970s, it represented a major epistemological challenge to mainstream research and knowledge production traditions, opposing positivism and the supremacy of academia (Fals Borda, 2006). By involving those vulnerable communities affected by the issues investigated, it advocates combining academic research and knowledge with everyday praxis and wisdom. It also seeks a more horizontal relation and collaboration between research subjects and objects, which empowers participants and stakeholders of the research through democratization of knowledge (ibid.). As an epistemological position, AR is a "philosophy of life" (Fals Borda, 2006), while from a practical methodological perspective, AR is a cyclical process (Kindon et al., 2007), which starts with a joint identification of the issue and research that leads to collective action, followed by a reflection about the learnings from the action to start the analysis, investigation, action and reflection processes again. Along the AR iterative process, different meanings, knowledge and outcomes are negotiated and coproduced that are useful both for academia and practice (ibid.).

As any collaborative process, AR takes time and relies on building trust by being sensitive to participants' interests and sensibilities. As Monk describes:

> *Action Research is not an approach that can be rushed into, but one that takes time and talent, that requires the building of trust, and being sensitive to 'turf'.[…] Working across the boundaries of academia and other worlds requires cultivation of mutual understanding and respect, sensitivity to differences in organizational cultures and goals, networking and sharing information, recognizing and strengthening individual and group capacities, questioning priorities, formulating questions so as to foster change and not simply to 'explain' what is, and, not surprisingly, dealing with diverse personalities.* (Foreword in Kindon et al., 2007, xxiii)

Already from these words, we understand that such a research approach requires reflexibility and care for the process, the actors involved, the relations established and the methods negotiated.

AR From a Social Innovation Perspective: Transdisciplinary Action Research

AR relates directly to the definition of social innovation (SI) from the Euro-Canadian school (Moulaert and MacCallum, 2019). SI addresses collectively defined needs by means of innovating in social relations and empowering those affected by the issue researched and often excluded from decision-making (Moulaert et al., 2013). Actually, much has already been written about the relation between AR and SI, and the transformative power of AR applied in SI research (Arthur, 2013; Fontan et al., 2013; Konstantatos et al., 2013; Moulaert and MacCallum, 2019; Van den Broeck et al., 2020). Taking into account that our research is focusing on collaborative processes within *socially innovative* multi-actor collaborations, the consideration of AR as a collaborative process and as SI adds an extra complexity layer, i.e., investigating a process while experiencing it. Consequently, for our research, we enrich the general AR approach with learnings and considerations from its application in SI research, aiming to contribute to this field with the specific experience of researching about and with IMACs.

Like AR, SI research is praxis-oriented and aims to facilitate a process of knowledge co-production, integrating tacit, practical and collective knowledge and experiences (Konstantatos et al., 2013). From this perspective, SI research has the potential of being socially innovative through its own activities, which follow the same values of solidarity, reciprocity and association of SI itself (Moulaert and MacCallum, 2019; Assaf et al., 2021). The key for achieving such potential lays in adopting a *transdisciplinary* approach, that connects researchers, practitioners and stakeholders outside academia through a process of *joint problematization* by which participants collectively define and address uncertain and complex social problems (Moulaert and MacCallum, 2019). Similar to AR literature in general, in transdisciplinary action research (TAR), stakeholders are not just taken as "informants," but are actively involved in the co-design and co-creation of the problem definition, the research methods, data analysis, and dissemination of results in different formats and languages that are meaningful for the actors involved and that can lead to a solution to the problem investigated.

What is specific in SI research from a planning perspective though, is the *institutionalist approach* to SI and governance transformation processes (Healey, 1999; González and Healey, 2005; Van den Broeck, 2011; Servillo and Van Den Broeck, 2012; Moulaert et al., 2016; Manganelli, 2019; Oosterlynck et al., 2020), which aims to unveil the time and space-specific organizational and institutional frameworks in which these occur. It focuses the attention on analyzing actors and stakeholders, arenas, discourses and practices to identify interrelations between specific practices and episodes and deeper structural changes in governance structures (González and Healey, 2005).[2] This approach helps understanding power

[2]The institutionalist approach analyses "actors, institutions and structuring dynamics" (Healey, 1999, p. 112), and differentiates organizations from institutions, understood as "frameworks of norms, rules and practices which structure action in social contexts" (Healey, 2006, p. 302)" (Manganelli, 2019, p. 27).

relations and (dis)empowering mechanisms both in the "object of study" and the action research process, and serves as the basis for further joint action and research. To conduct such an analysis, and enriching the general AR approach, apart from combining academic and "everyday" knowledge, TAR also requires *inter-disciplinarity*, that is, on bringing together input and methodologies from different disciplines to achieve a holistic understanding of the issue at stake (Moulaert and MacCallum, 2019).

Novy et al. (2013) already explored how to establish platforms where academics, practitioners and other non-academic stakeholders can interact along the process of knowledge cocreation. Specifically, they identified five key elements to achieve successful joint problematization, knowledge coproduction and long-lasting collaboration relations in TAR. First, specific interests, knowledge and skills of each participant need to be identified, valued and integrated in the joint design of research questions and steps, in the collective understanding of terms and results, and in the valorization and evaluation of the results. Second, appropriate spaces and time need to be designed and allocated to build trust among participants and to facilitate democratic decision-making and the contribution of each of them in each stage of TAR. Third, and related to the previous point, communication tools and strategies shall be designed so that all actors can contribute "on equal footing." Managing communication among the diversity of actors that participate in a TAR process requires translation between languages, registers, realities and logics of the actors involved and taking the time to exchange and negotiate approaches to build common understanding and strategies. Fourth, contribution and allocation of resources and tasks by the different participants shall be transparent, clear, fair and negotiated according to the characteristics and possibilities of each actor. Resources in this context include material and immaterial ones, such as time, knowledge, skills, expertise or labor among others (Ansell and Gash, 2008; Martinelli, 2013). Fifth, all participants shall be able to disseminate cocreated knowledge in their own context, be it in the shape of a collective outcome and/or in different formats and styles adapted for specific interest groups or purposes.

In terms of data gathering techniques for SI research, Konstantatos et al. (2013) defend the use of qualitative and participatory methods based on interaction between researchers and stakeholders like interviews, focus groups, participant observation and participatory methods. Lately, media-based and artistic methods and new tools to collectively explore and visualize issues and relations, such as participatory mapping and diagramming, have also spread within TAR as a means to emphasize exchange and negotiation among actors in the knowledge co-creation process, both in data gathering and analysis stages (Kindon et al., 2007).

Two Key Aspects in the TAR Process: Reflexivity and Positionality

Two other concepts are stressed in SI literature while conducting and evaluating TAR: reflexivity and positionality. These terms relate to the ethics of TAR and aim to reflect on the role of TAR as SI and about how researchers become part of SI by collaborating with other actors during joint problematization, respectively (Moulaert and MacCallum, 2019).

Reflexivity refers to the continuous reflection about the TAR process as a SI trajectory. It relates both to "the social relevance and ethical appropriateness" of the collective research and action (Moulaert and MacCallum, 2019, p. 115) and the power dynamics enacted and changed in and through the collaboration process. For this, actors involved in TAR must acknowledge AR in itself as a form of power to affect reality and so wonder whether its use is justified as the means to address particular questions in particular contexts (Kindon et al., 2007) and ensure that the process develops according to SI principles (Moulaert and MacCallum, 2019). Some aspects to consider are: whether all relevant stakeholders are being integrated in the TAR and whether there is a fair share of tasks, knowledge and authority (ibid.); whether relevant scientific-, policy-, and practice-related knowledge is being produced and appropriately adapted and disseminated to reach diverse interest groups; whether the collaboration is contributing to more democratic and sustainable knowledge production (Novy et al., 2013) and analyzing how new cocreated knowledge is contributing to changing the reality (Hamdouch, 2013).

Positionality, refers to the researchers' continuous reflection about their role and contribution in the TAR and SI processes and requires consciousness about context and power relations between them and other participants (Konstantatos et al., 2013; Vicari Haddock and Tornaghi, 2013). It also requires further assessment of the researchers' biases, believes, and perspectives vis-à-vis "the subject, participants and research context and process" (Major and Savin-Baden, 2013, p. 71) as well as their performative impact in the broader trajectory of the SI initiatives investigated (Vicari Haddock and Tornaghi, 2013).

Role of Researchers Within SI Trajectories and SI Research

Similarly to any other stakeholder, researchers can engage in different stages within SI research. To enable a rich reflection about our role in the TAR trajectory, we summarize roles that researchers in particular, and academia as a collective agency, can take in TAR from the SI and transdisciplinary AR literature.

First and foremost, SI research and TAR scholarship aim to fight the general critique to academia that academic environments, as they deal with the creation of "valid knowledge" and discretionally choose research topics, may contribute to reinforcing dominant discourses and empowering or disempowering specific narratives and actors (Hammelman et al., 2020; Klein, 2020). Therefore, the deliberate decision to investigate socially innovative trajectories through TAR is in itself an engagement to contribute to SI by building and disseminating alternative experiences, co-created visions and understandings and interrelations among fields of knowledge that "redefine" reality and "what is right," and legitimize specific action and actors (Moulaert and MacCallum, 2019; Klein, 2020). Nonetheless, such an ethical stance must not divert researchers from committing to rigorous research and knowledge

building. As Fontan et al. (2013, p. 317) remind, despite taking a collaborative and participatory approach, researchers must maintain their academic independence of thought and freedom of action, caring for the quality and integrity of the research, and refusing to subordinate to the interests of particular partners.

Second, within a specific TAR trajectory, as Hamdouch explains (Hamdouch, 2013, p. 259), the challenge for researchers to contribute to SI trajectories is to continuously reflect about "how new knowledge about the reality of SI initiatives and dynamics can be built and, at the same time, contribute to changing the reality." For this, researchers take a deliberate stance in regards to the issue researched. For instance, when we research IMACs transforming food systems, we do so from the critiques built from SI literature to mainstream approaches of sustainable transitions and the critiques of alternative food networks to mainstream food systems.

Third, when immersing in SI processes, researchers may take the role of "active actors" contributing to the codesign and implementation of SI action or as "facilitators" mediating among actors in the field and helping in the knowledge cocreation and the collective learning processes (ibid.). Vicari Haddock and Tornaghi (2013) further explore this line, noting that researchers can help shaping dialogue among actors and enabling new alliances by means of mobilizing the knowledge they gain during the research and sharing it with actors on the field. Moreover, the "action research thinking" introduced by researchers in SI trajectories can "help stakeholders become aware of their existing/potential powers, capabilities and resources and assist them in the design and implementation of democratically co-created solutions that could "work" for them" (Hamdouch, 2013, p. 260). In this respect, the role of researchers as documenters and analysts of the SI reality is always different from that of practitioners or other stakeholders (Kunnen et al., 2013).

Coordination and Facilitative Leadership Roles in the Governance of TAR and IMAC Processes

By building a collaborative TAR trajectory in Leuven, not only do we position the research process within the SI case study, but it also allows us to "practice" with collaboration processes and improve our understanding of the IMACs we are investigating. Thus, our reflections about our role as researchers in IMACs in Leuven and about how coordination and facilitation are enacted in TAR can inform our results in relation to the role and performance of IMACs too. For these reflections, we complement theories about coordination of TAR processes with the lens of collaborative governance we mobilized to understand collaborative processes within IMACs.

Regarding how joint problematization is facilitated within TAR, Cassinari et al. (2011) draw attention to the differing performance and involvement of actors participating as "stakeholders" and/or as part of the "coordination team." Stakeholders are understood here as "any person or organization, who is affected by the social context and effects of the research project, or who can contribute to the process of knowledge production" (Cassinari et al., 2011, p. 16). Stakeholders can participate along the whole process, or intervene in specific activities or interaction moments, e.g., in problem identification, analysis or results implementation stages. Coordination responsibilities however, are required along the whole process, which include: (1) identifying and framing tasks and time-frames; (2) communication management; (3) leading with the "tension between heterogeneity and effectiveness" through reflexivity and trust-building; and (4) maximizing application of results in practice through "cognitive integration of knowledge" (Cassinari et al., 2011, p. 17). In our research, while the authors of this paper took a coordinating role as part of the "Editorial Board" established at the beginning of the TAR, and, thus, were involved in all stages, other researchers and stakeholders of the IMACs only participated in some stages or activities under the role of "stakeholders" of the TAR.

To further explore the governance of the TAR and roles taken up by different participants, we recognize the three facilitative leadership roles Ansell and Gash (2012) identify in collaborative governance: *stewards, mediators* and *catalysts*. Each role cares for different dimensions of the collaboration: the integrity of the collaboration process, the relations between participants and the potential and impact of the collaboration, respectively. As Ansell and Gash (2012) describe it, *stewardship* is closely related to the first coordinating responsibility, since it involves convening stakeholders, framing the agenda of the collaboration, helping establishing the collaboration and caring about the institutional structure, resource allocation and transparency of the whole collaborative process. *Mediation* relates to the following two coordinating responsibilities, with the focus set on nurturing and stabilizing relations among participants and contributing to building shared understandings. Tasks related to this role include easing engagement, communication and trust-building of and among participants and mediating and arbitrating in conflicts and differing understandings as they arise. The *catalyst* role relates to the last coordinating responsibility and implies that participants reflect on the mutual reinforcement between the collaboration process and the innovation that is collectively achieved, helping the group identify valuable action and research avenues and pursuing them.

Conducting TAR to Investigate Governance Innovation in Leuven in COVID Times

Between 2020 and the summer of 2021, we set up and developed a TAR trajectory to investigate governance innovation in Leuven, focusing on two (presumed) innovative multi-actor collaborations (IMACs) in the city: Leuven2030 and the collective development of a food strategy.

Leuven2030, initially named Leuven Klimaatneutraal 2030, was established in 2013 as a non-profit governmental organization, after decades of multi-actor experiments and projects addressing sustainability issues at the local level. It acts as multi-actor umbrella organization to join forces among the local administration, public companies, businesses, knowledge and social organizations and citizens in achieving a carbon-neutral city by 2050. However, Leuven2030's "climate neutrality" approach fell short in addressing some aspects of the sustainability transition, such as the transformation of food systems. In reaction to this, a bottom-up process to develop a food strategy for Leuven was initiated in 2017 by urban actors

that were already building an alternative food system, parallel to the work of Leuven2030 but aiming to involve all actors participating in Leuven's food system. After several workshops, the Strategy "Food Connects" was published in 2018. In the subsequent years, this strategy was subject to several processes of institutionalization, during which its objectives were integrated in the Leuven2030 Roadmap developed in 2019, as well as in the work of the local government and Leuven's Climate Action Plan passed in 2020.

In addition to the inherent challenges of applying TAR in a new context for the lead researchers, the specific timing of our research, coinciding with COVID, casted additional obstacles that forced us to keep evaluating and adapting the research plans. When the Belgian government enforced tele-working and highly restricted physical social interactions in March 2020, measures that in different degrees of severity remained until the fall of 2021, both researchers and urban actors involved in Leuven2030 and the transformation of Leuven's food system were forced to find online (or hybrid) alternative ways to continue academic activities and collective reflections and actions. This affected communication, interaction and trust-building processes among researchers and between researchers and stakeholders, and triggered their creativity to adapt participatory research methods related both to AR and the work of IMACs.

In order to face these additional challenges and increase the reach and impact of our research, the lead researchers took the strategic decision to build a collaborative research trajectory involving different types of stakeholders from the IMACs studied and combining different levels of teaching and research within the department of Architecture at KU Leuven. These were: two advanced master thesis students and the students in two courses coordinated by Prof. Pieter Van den Broeck that focused on putting into practice strategic spatial planning through TAR, i.e., the Institutional Aspects of Spatial Planning (IASP) course taught in the fall semester and the International Module in Spatial Development Planning (IMSDP) in spring.

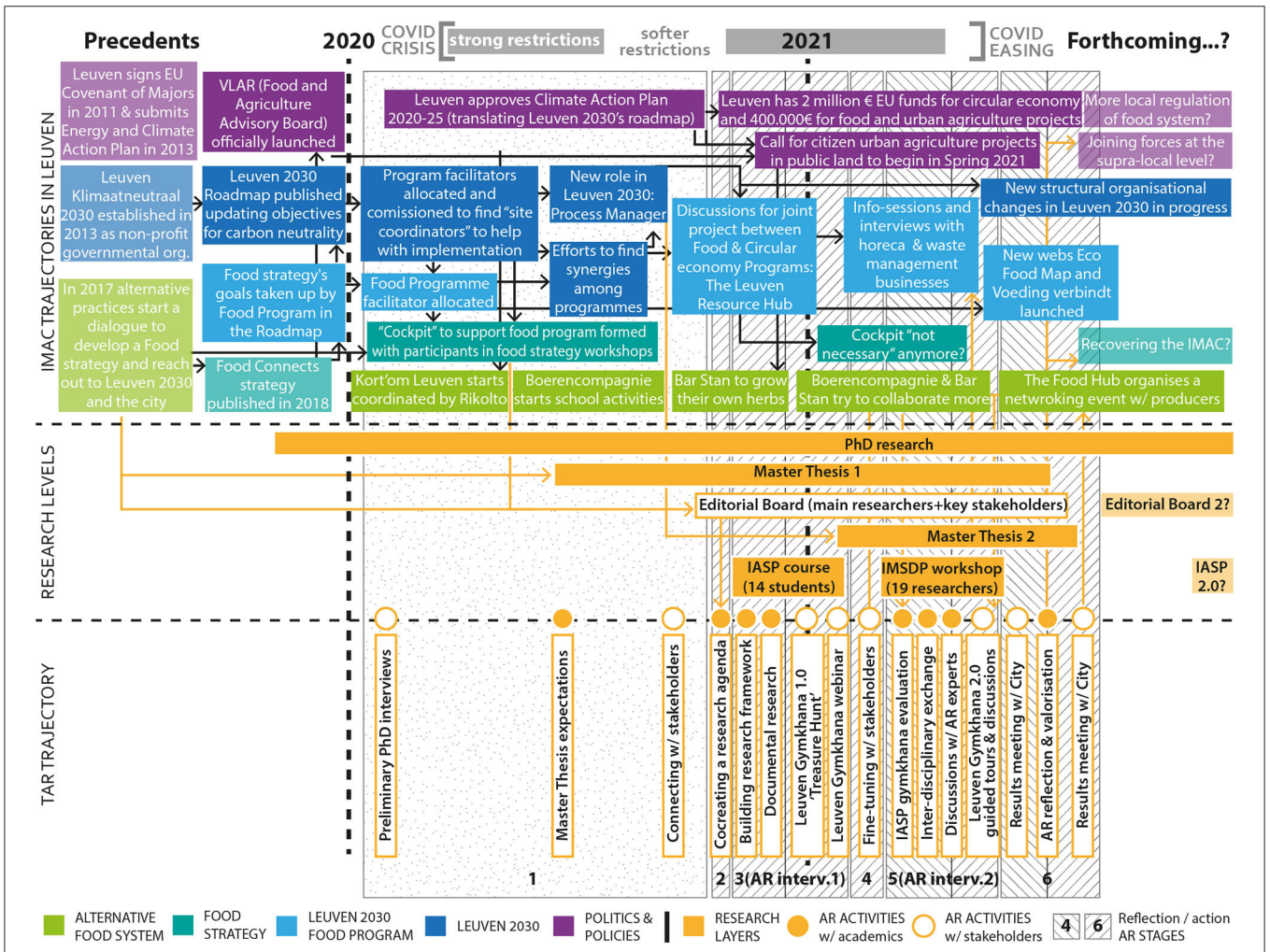

FIGURE 1 | Timeline describing key moments and actors in the IMAC trajectories investigated (top), the research levels involved in the TAR (middle) and the specific TAR activities and stages (bottom).

TABLE 1 | List of researchers and stakeholders involved in the AR trajectory in order of contribution.

AR participant	Type of actor	Stages of involvement	Role in AR	Level of engagement
PhD researcher	Researcher, master theses & IASP-IMSDP teaching assistant	1–6	Coordinating team	Editorial Board (lead researcher), UGADI speaker & coordinator
Professor, Head of (P&D) Planning, & Development Unit	PhD and master theses promotor & IASP-IMSDP coordinator	1–6	Coordinating team	Editorial Board (lead researcher), UGADI speaker & contributor to collective writing
Representative from Rikolto	Practitioner in food systems & participant in Gent's & Leuven's food strategies	1, 3.3, 5.4	Relevant governance and food system stakeholder	Informant, joint problematization (JP) as webinar speaker, gymkhana partner & JP preparing tours
Representative from Rikolto	Practitioner in food systems & coordinator of Kort'om Leuven	1	Food system stakeholder	Informant
Rep. From Gent en Garde program	Practitioner, coordinator in Gent's food strategy & expert in food strategies	1, 3.3	Governance and food system stakeholder	Informant & JP as webinar discussant
Rep. From Leuven City—dep. Sustainability	Policy-maker related to Leuven2030 & Climate Action Plan	1	Relevant governance and sustainability stakeholder	Informant
Rep. From Leuven2030 1	Coordinator in Leuven2030 & participant in Roadmap	1	Relevant governance stakeholder	Informant & relevant contact facilitator
Master Thesis student 1	Advanced master student & researcher	1 - 6	Coordinating team & IASP student	Editorial Board (lead researcher), UGADI speaker & contributor to collective writing
Rep. From Leuven2030's Food Programme - Rikolto	Food Program Facilitator, expert in food system transformations	2, 3.2, 5.4	Relevant governance and food system stakeholder	Informant & relevant contact facilitator
Rep. From Leuven2030's Food cockpit	Initiator of Leuven's Food Strategy, member of BoerEnCompagnie's board & social entrepreneur	2–6	Coordinating team, relevant governance stakeholder	Informant > Editorial Board (key stakeholder 1) & JP as webinar speaker
14 IASP students	Advanced master international students	3.1, 3.2, 3.3 (5.4)	Students & researchers	Research team in AR stage 1, (JP as tours participants)
Rep. From Leuven2030 2	Process coordinator in Leuven2030 & BoerEnCompagnie's harvester	3.2–6	Coordinating team, relevant governance stakeholder	Editorial Board (key stakeholder 2) & JP as webinar discussant
KU Leuven Dep. of Architecture, Rikolto, BoerEnCompagnie, Bar Stan, Biotoop, Voedselteams, the Food Hub, Solikoop, Content, Noordoever, Färm, Colryut	Relevant organizations or businesses in the transformation of Leuven's food system	3.3	Food system and Food Strategy stakeholders	Partners in LeuvenGymkhana Treasure hunt hosting posters
Rep. From Leuven City—dep. Sustainability 2	Politician assistant in Sustainability	3.3, 5.4, 6	Governance and food system stakeholder	JP as webinar and tours participant & relevant contact facilitator
Rep. From Leuven City—dep. Sustainability 3	Politician in change of Sustainability	3.3, 6	Relevant governance and food system stakeholder	JP as webinar speaker & results discussant
Academic from Hamburg	Expert in governance of food systems	3.3, 5.2, 5.3	Researcher as stakeholder	JP as webinar participant > IMSDP tutor on governance of food system
? treasure hunt players & 3 webinar participants	Leuven citizens & academics in food systems	3.2 and/or 3.3	Food system stakeholders	Treasure hunt and/or webinar participants
Master Thesis student 2	Advanced master student & researcher	3.4, 5.1, 5.2, 5.3, 5.4, 6	Researcher	Webinar participant, support to research coordinators, UGADI speaker & contributor to collective writing
19 IMSDP students	International researchers	5.1, 5.2, 5.3, 5.4, (6)	Students & researchers	Research team in AR stage 2, UGADI participants & contributors to collective writing, (developing INSIST)
Rep. from BoerEnCompagnie	CSA farmer, initiator of Leuven's Food Strategy	5.1, 5.3, 5.4, 6	Relevant governance and food system stakeholder	Partner in LeuvenGymkhanas, host of LG 2.0, JP as key food stakeholder & results discussant
Rep. From Bar Stan	Manager of alternative practice in Leuven's food system, participant in Leuven's Food strategy	3.2, 5.1, 5.3, 5.4	Relevant food system stakeholder	Partner in LeuvenGymkhanas, catering provider & JP as key food stakeholder

(Continued)

TABLE 1 | Continued

AR participant	Type of actor	Stages of involvement	Role in AR	Level of engagement
1 academic from University of Bologna (Unibo)	Expert in governance research	5.2, 6	Researcher as stakeholder	JP as UGADI speaker
1 researcher from University of Bologna (Unibo)	Expert in governance research	5.2, 6	Researcher as stakeholder	JP as UGADI speaker & contributor to collective writing
1 academic from Universidad Complutense (UCM)	Expert in governance research	5.2, 6	Researcher as stakeholder	JP as UGADI speaker & contributor to collective writing
1 researcher from Universidad Complutense (UCM)	Expert in governance research	5.2, 6	Researcher as stakeholder	JP as UGADI speaker
25 students from 4cities master (module taught at UCM)	International students and researchers in urban governance	5.2, 6	Researcher as stakeholder	JP as UGADI (speakers &) contributors to collective writing
3 AR experts	Experienced action researchers from P&D	5.3	Researcher as stakeholder	IMSDP tutors on AR
Rep. From Content Leuven	Manager of alternative practice in Leuven's food system	3.2, 5.4	Food system stakeholder	Partner in LeuvenGymkhanas & JP preparing tours
Rep. From The Food Hub Leuven	Manager of alternative practice in Leuven's food system	5.4, 6	Food system stakeholder	Partner in LeuvenGymkhanas & JP preparing & conducting tours
BoerEnCompagnie, Bar Stan, Rikolto, Voedselteams, the Food Hub, Hal5, Content	Relevant organizations or businesses in the transformation of Leuven's food system	5.4	Food system and Food Strategy stakeholders	Partners in LeuvenGymkhana 2.0 tours hosting posters and advertising activities
15 LeuvenGymkhana tours participants	Citizens, students & fellow P&D researchers	5.4	Food system stakeholders	JP as tours participants

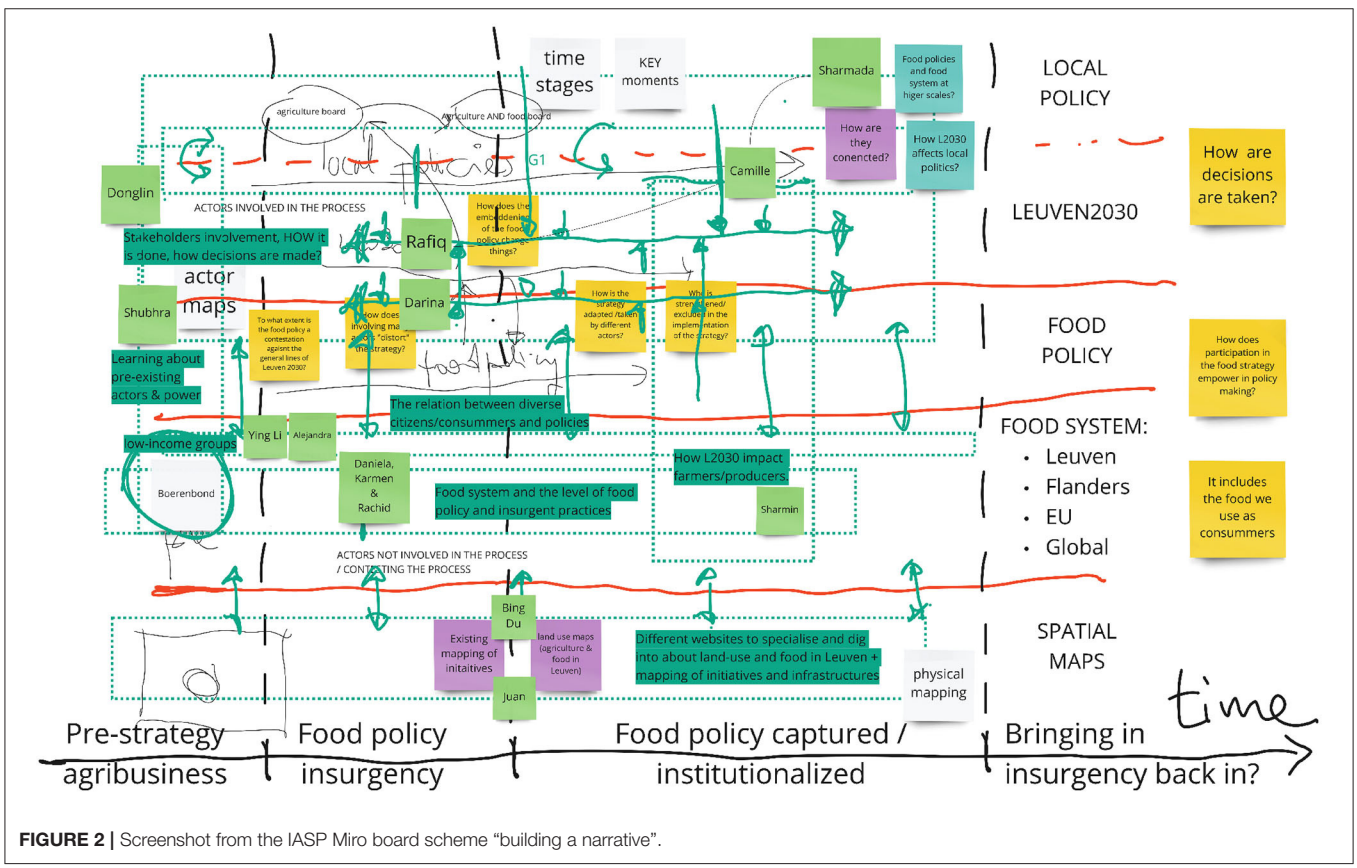

FIGURE 2 | Screenshot from the IASP Miro board scheme "building a narrative".

Within the resulting collaborative TAR trajectory, the authors of this paper acted as the "Editorial Board" that drafted the research questions and approach and cared for the research integrity and process along the year. The latter required documenting and discussing, not only the results of the TAR, but the process itself, for instance, by making minutes of all meetings and documenting group management documents and decisions, and recording and transcribing meetings with stakeholders. The other researchers intervened in different stages of collective problematization, as well as in the design and implementation of TAR interventions involving a broader array of actors from the city, i.e., citizens, experts, and academics, alternative practices in the food system, coordinators from Leuven2030 and politicians and civil servants from the local administration.

In **Figure 1** we summarize the key moments of the ongoing IMACs in Leuven that we were researching and acting on in relation to the research layers combined in our trajectory and the specific research activities and interventions conducted (the TAR trajectory), indicating the resulting TAR stages that guide our analysis of the TAR experience in the following section.

OUR EXPERIENCE CONDUCTING TRANSDISCIPLINARY ACTION RESEARCH IN LEUVEN: RESEARCH TRAJECTORY, CHALLENGES AND ADAPTATIONS

Strategic Design of the TAR Trajectory and Collaborative Framework in COVID Times

The research trajectory started with a preliminary research that helped frame the research issues, map actors involved in the case studies and inform the TAR agenda and plan. This included interviews with representatives from Leuven2030, Gent en Garde, Rikolto and the municipality conducted by PhD researcher Clara Medina-García between January and February 2020 and further documentary research about Leuven2030 and the "Food Connects" Strategy. The insights from this stage led to the assumption that Leuven2030 was an example of socially innovative multi-actor collaboration (IMAC) (Medina-García et al., 2021) that is contributing to democratic innovation in Leuven. They also helped identify sustainable transformations in the local food system as a relevant field for further research through TAR, taking Leuven2030's Sustainable and Healthy Eating Program and Leuven's Food Strategy as entry points.

Given the extra difficulties COVID casted on meeting and mobilizing stakeholders, the PhD researcher and her promotor resolved to frame the TAR trajectory along the 2020–2021 academic year as several cycles of collaborative research involving other researchers and students from the Department of Architecture of KU Leuven. In June 2020, Sharmada Nagarajan joined the research team to develop her Planning Master Thesis.

Table 1 lists all the individual and collective actors −70 researchers and 40 stakeholders- that participated along the different stages of the TAR, specifying their role and contributions.

Building Relations With Stakeholders and Negotiating an Action Research Agenda and Plan: The Birth of the Editorial Board

In October 2020 the incipient research team conducted more exploratory and propositional online meetings to identify key stakeholders with whom we could establish a collaborative mutually enriching relationship along the year. The stakeholders previously interviewed became the first nodes from which to build a network for the TAR through the "snowball" method. This led us from one general coordinator in Leuven2030 to the Food Program facilitator, who referenced us Erik Béatse, member of the "Cockpit" that was supporting the implementation of the Leuven2030 Food Program.

During our meeting, we learnt that Erik had been involved in the development of both Leuven2030 and the Food Strategy from the beginning—on a voluntary basis—and kept working as a social entrepreneur and board member in BoerEnCompagnie, a Community Supported Agriculture (CSA) initiative in Leuven. We soon identified common interests in the governance and social justice dimensions of the Food Strategy and potential to enrich the research from his practical perspective, to support his and collective critiques to the ongoing IMACs and help the further implementation of the Food Strategy through our TAR. We then agreed to establish an Editorial Board for the TAR with Erik as key stakeholder supporting research coordinators. Together, we co-designed the research agenda for the next TAR stage with the IASP students. Without defining a specific expected outcome, the resulting "IASP Brief" text drafted initial assumptions, general objectives and a theoretical frame to guide them.

First Cycle of TAR: The Work With IASP Students

Co-developing an Institutionalist Analysis Framework: Joint Problematization and Desk-Screen-Research

In November 2020, when stronger lockdown measures in Belgium forced all academic activities to go online, the IASP course started with 14 advanced master students, all international. In the first session, the Editorial Board introduced the case studies and the Brief. Our starting point was the preliminary critical assumption that, although Leuven2030 and the Food Strategy were examples of governance innovation in Leuven, social justice, discussions about "uncomfortable topics" related to the transformation of the food system and civil-public collaboration (explained below) were gradually disappearing in Leuven2030's Food Program and the Food Strategy. The objective for the IASP team was to perform a "TAR intervention" with which we could explore these preliminary assumptions and alter public-civil relations in Leuven, aiming to improve the access of civil society to the implementation of the Food Strategy.

Through online collective brainstorming and discussion sessions and documentary research, IASP students started taking ownership of the issue and developing a collective institutionalist analysis through the reconstruction of a narrative of the IMACs investigated. Research coordinators kept reflecting about the

research and group processes between working sessions and readjusting the work plan for following ones. As the research advanced, the team identified areas that needed further research in order to fully grasp what was going on in Leuven's food governance (**Figure 2**). Then, IASP students divided into five teams to explore specific dimensions that could enrich our collective understanding: (1) the evolution of local and supra-local policies and politics in relation to governance and the food system; (2) the evolution and work of Leuven2030; (3) the current food system, its impact and the actors involved in Leuven's food system; (4) the principles behind the Food Strategy and the alternative practices trying to transform the food system; and (5) identifying and making maps that supported the work and results from all groups.

All groups worked simultaneously in online collaborative text files and a miro board accessible to all IASP members, and kept sharing and discussing their advancements in plenary sessions. During these meetings we could establish connections among groups and realize the complexity of layers, actors and institutional relationships that collided in the process of developing of Leuven2030 and the Food Strategy. Occasional interaction with our key stakeholder through the Editorial Board complemented the groups' research and gave us feedback on our analysis and intervention ideas.

Eventually, we agreed that making the complex findings accessible and comprehensible to the broader population and opening a broad debate about them with citizens and stakeholders involved in the processes was already an ambitious objective for the IASP TAR intervention. With this in mind, and taking into consideration COVID restrictions regarding group gatherings, the team co-designed and developed two activities: the LeuvenGymkhana[3] treasure hunt and a Closing Webinar. To advertise the activities and facilitate online conversations about the findings, we created the "LeuvenGymkhana" brand,

[3]Gymkhana is a term used in sports and leisure environments that refers to a competitive game in which participants complete a series of challenges following a circuit of stops. Originally, in Indi, the term referred to a "place of assembly".

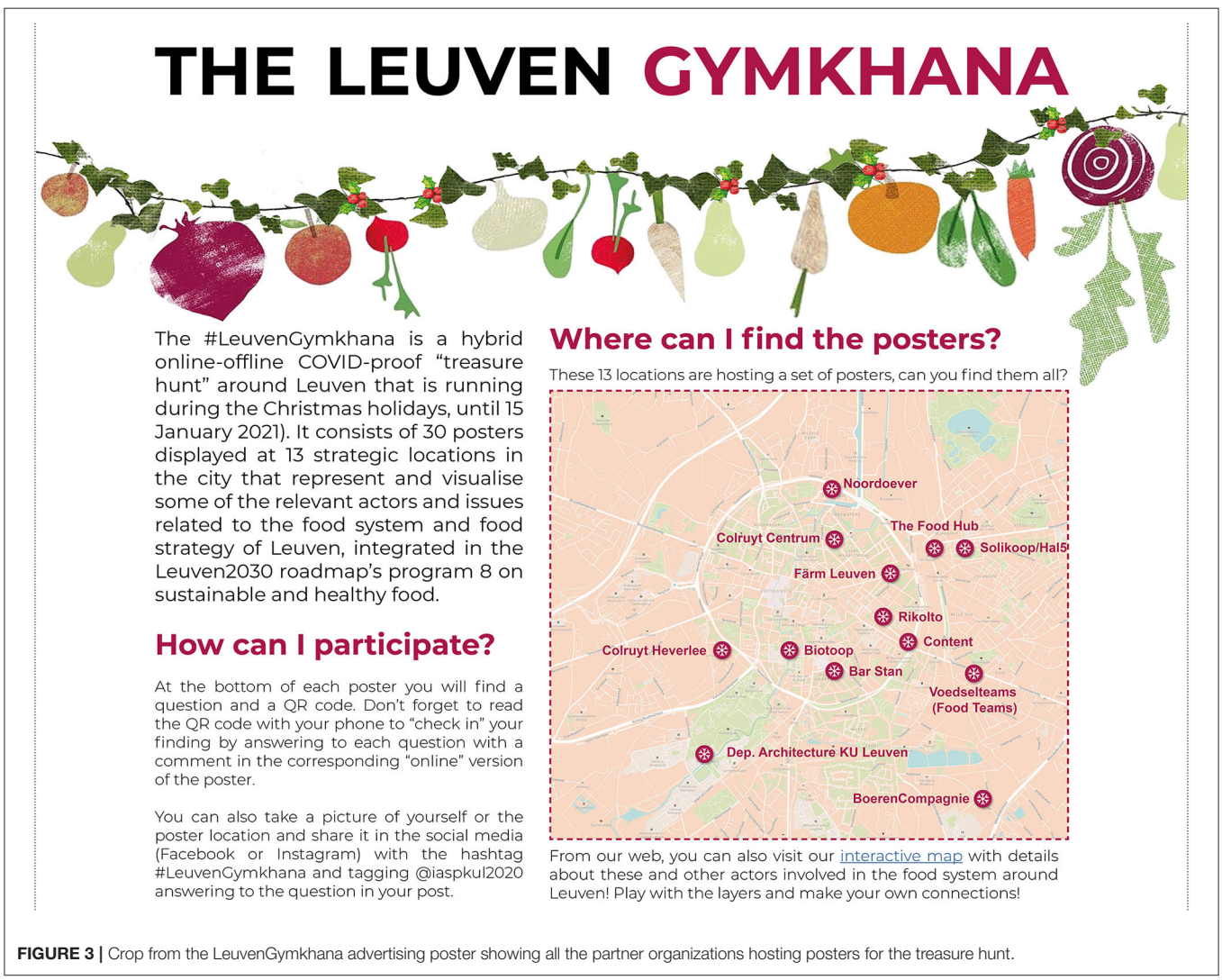

FIGURE 3 | Crop from the LeuvenGymkhana advertising poster showing all the partner organizations hosting posters for the treasure hunt.

website and Instagram profile. The Editorial Board checked the relevance and appropriateness of the collective idea with Sarah Martens, an expert in civic participation that had recently joined Leuven2030's coordination team. From then on, she remained close to the Editorial Board bringing in Leuven2030's perspective.

Once the idea had been validated, the five IASP research teams rearranged to cover the "practical tasks" required to run the interventions: poster atlas production, content development, website creation and management and documenting the process. The research coordinators retained continuous dialogue with the key stakeholders, who helped finetune the content produced. They were also responsible for organizing the agenda and practicalities for the treasure hunt and the webinar (IASP's exam). This included reaching out to actors in Leuven's food system taking advantage of previous personal relations and their position in university and negotiating their collaboration as partners hosting the posters of the gymkhana (**Figure 3**), and/or as speakers or discussants in the event.

Democratizing Our Findings and Inviting Stakeholders in Our Joint Problematization: The LeuvenGymkhana Treasure Hunt

The LeuvenGymkhana treasure hunt consisted of 30 posters displayed at 13 strategic locations in Leuven that represented and visualized some of the relevant local actors and issues related to the food system and Food Strategy (**Figure 4**). Each poster either introduced the organization hosting the posters or featured a specific statement sharing part of our analysis, supported by relevant graphics, e.g., timelines, actor-maps, diagrams or maps, and posed a question for participants to react online[4] While the posters functioned as offline medium displaying our findings, social media tools like Facebook, Instagram, and WordPress functioned as the platforms on which to advertise the event and facilitate online discussions.

This intervention focused mainly on connecting with alternative practices and actors in Leuven, visualizing them and engaging the public in the broader debate of the Food Strategy. On the one hand, asking for permission to show posters in local businesses and organizations allowed us access to new stakeholders. On the other, we would further develop the narrative and test it by gathering comments from such stakeholders and participant citizens. While we succeeded in the networking part, mainly thanks to references from our network of stakeholders, we did not manage to collect online reactions from participants. Consequently, we could not really assess the reach of the intervention among citizens nor integrate their views at this stage.

Involving Decision-Making Stakeholders in Joint Problematization About IMACs in Leuven and Negotiating Further Steps in Our TAR: The LeuvenGymkhana Webinar

As closing event of the gymkhana, we organized a webinar on 22 January where we could share our IASP work, learn

[4]All posters are accessible by topic and stop in the LeuvenGymkhana website https://leuvengymkhana.wordpress.com/blog/.

FIGURE 4 | Pictures of the LeuvenGymkhana posters displayed in the premises of different stakeholders of the food system in Leuven between December 2020 and January 2021.

about the perspectives and experiences of the relevant actors of the Food Strategy identified during our research, and start a conversation among them with the specific focus on governance. Its organization was strategic to capture the attention and perspective of bigger actors and decision-makers related to the Food Strategy involved in its drafting process and implementation and to empower voices stating that alternative practices and citizens were being excluded from further decision-making. Our objective was to integrate more actors in the joint problematization about the current stage of the implementation of the Food Strategy and to find common agreement on challenges to move forward and on how the TAR trajectory could support the process.

The event was public but required prior registration via an online form in which we could gather some background information from participants, share the objectives of the research and obtain consent for recording and using the event for our research purposes. Not only was this form an adaptation of "standard" information letters and consents to online events, but also to the collaborative nature of our TAR. In total, 5 relevant stakeholders and 7 external participants joined (see **Table 1**).

The webinar raised and revealed specific aspects of governance and participation within Leuven2030 and the Food Strategy that helped us fill some gaps in our narrative and further refine our TAR goals for the following stages. From the personal experiences shared we could better understand the multi-actor collaborations that led to Leuven2030, its Roadmap, and the parallel development of the Food strategy. The renewal of the local government in 2019, the City's choice to regard agriculture as a matter of sustainability rather than just an economic activity, and the decision to embrace the Food Strategy to guide steps in the new legislature, were identified as key moments that reinforced the Food Strategy's goals and subsequent implementation. Participants also discussed how Leuven2030 and the Food Strategy had evolved through time, from being citizen- and expert-led initiatives to a current institutionalized framework supported by the City and larger organizations. Through the debate, stakeholders agreed on the need to re-open the strategy to citizens and to realign and restructure their goals and functioning to be more inclusive of the perspectives of alternative practices as well as the diversity of consumers in terms of diet, culture, time and money availability, location. They also agreed that it was time to address conflicting and "uncomfortable" topics pertaining to food and agriculture left out in the process of building consensus, such as debates around meat consumption. Lastly, questions were raised about how to re-open and conduct broad debates to discuss and improve upon these aspects (taking into account COVID times), and who should moderate these debates.

These discussions and learnings were documented in a report developed by research coordinators[5]. These were discussed by the Editorial Board and taken up as starting points to update the IASP Brief into the IMSDP Brief. The report was mailed to all participants and made available publicly in the LeuvenGymkhana website to expand the community around our TAR.

At this stage Lariza Castillo-Vysokolan joined the research team, which added a new dimension in the TAR trajectory, since she would combine her master thesis research, focusing on the role of Leuven2030 as a collaborative platform (Castillo-Vysokolan, 2021), with an internship within Leuven2030's Food Program. This allowed her (and the team) to gain insights from inside and better understand the governance transformations within Leuven2030 and the current approach and role of the Food Program in the implementation of the Food Strategy.

Second Cycle of TAR: The Work With IMSDP Researchers

Transferring Knowledge to IMSDP Students and Engaging Alternative Practices: Playing and Evaluating the IASP LeuvenGymkhana

The work with the 19 international pre-doctoral researchers participating in the IMSDP between March and May 2021 posed three extra challenges in relation to the IASP experience. First, none of the students were familiar with Leuven and the Flemish context, as they were attending a 3-month research training program. Second, this was a hybrid group, with some students able to travel to Leuven and others attending online with the possibility to join live later if international traveling restrictions allowed it. Third, the IMSDP work was to build on the IASP experience, a methodological and team-building challenge requiring knowledge transfer and facilitating that the new group took ownership of the previous joint problematization and learnings and managed to move forward.

Bearing this in mind, the first session of the workshop consisted in playing together a hybrid version of the IASP LeuvenGymkhana, guided by the Editorial Board, and watching the webinar together. The research coordinators took advantage of the walks arranging meetings with two alternative practices hosting our posters directly involved in and affected by the Food Strategy: the CSA BoerEnCompagnie and restaurant Bar Stan. Also, catering for the day was provided by two LeuvenGymkhana partners.

As we visited the posters on site, the lead researchers kept sharing pictures and recordings from the explanations with the students following online, who, in exchange, had more time to explore the website, get familiar with the IASP material and discuss the gymkhana in the online classroom. This experience allowed the IMSPD team to test and criticize the Gymkhana from a participant's perspective; to read, understand and discuss all posters; and to start getting familiar with Leuven's food system by visiting relevant stakeholders. The meetings with the alternative practices turned out key in learning about the interests, struggles and existing collaborations among them and, from this point on, BoerEnCompagnie and Bar Stan became key stakeholders in our TAR. Lacking the time to formally join the Editorial board, they kept contributing to further joint problematization by giving feedback on our advancements and sharing their experiences further in short meetings with the research coordinators and supporting the logistics of the LeuvenGymkhana 2.0.

[5]The Webinar report is accessible in the LeuvenGymkhana website https://leuvengymkhana.wordpress.com/final-event/ and attached as **Supplementary Material** in this article.

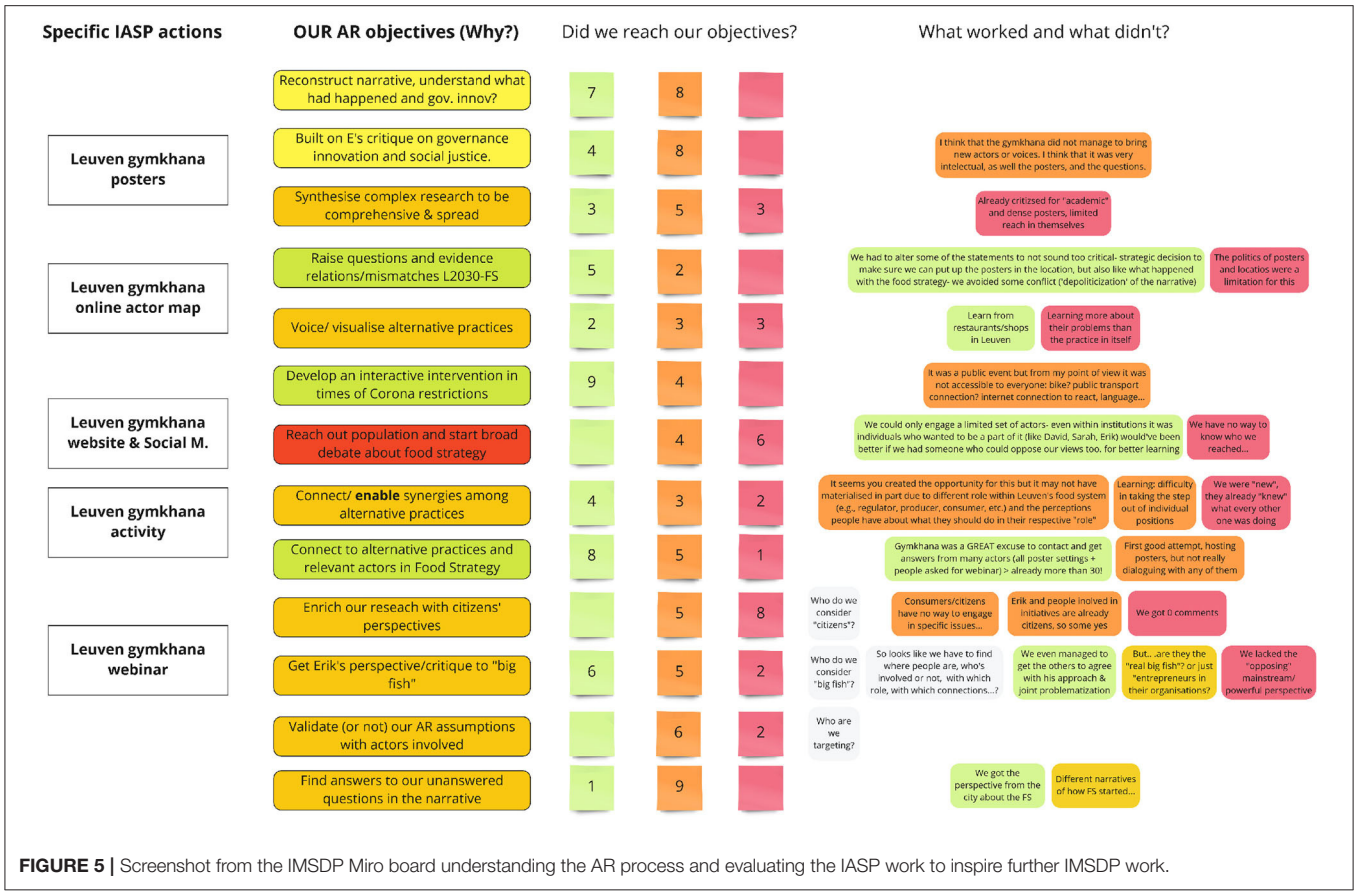

FIGURE 5 | Screenshot from the IMSDP Miro board understanding the AR process and evaluating the IASP work to inspire further IMSDP work.

The second session started with presentations by the research coordinators, aiming to provide additional insight on the history of Leuven2030 and the Food Strategy, the work developed with IASP students and the theoretical framework behind our work. The development of the session was in itself dynamic, with presentations building on each other and putting them to test with questions and different interpretations from students. These discussions advanced the IMSDP joint problematization and set the basis toward the final scheme for our analysis: the LeuvenGymkhana timeline.

Using the insights from the first sessions, in the third session we evaluated the objectives and impact of the IASP research and interventions (**Figure 5**). This allowed research coordinators to further rationalize the TAR process already conducted and the IMSDP students to further understand TAR and start restructuring objectives toward the IMSDP's intervention. The only "condition" imposed by the Editorial Board was to continue with the LeuvenGymkhana concept to take advantage of the connections, partnerships and "brand" already built.

As we had done with IASP students, in the following sessions, we experimented with work across different teams and combining individual and collective reflections. This enabled deeper conversations in small groups but presented the challenge of losing specific messages and ideas when communicated during plenary sessions. Using Miro as a common whiteboard was useful to overcome such limitations and to keep track of and understand the perspectives of each group. It also provided the opportunity to reshuffle information and collectively develop new schemes during plenary sessions, as well as to go back to previous work when the group felt somewhat lost defining the next steps.

Meta-Level Inter-disciplinary Exchange About Governance Innovation: The UGADI Seminar

To reinforce the inter-disciplinary nature of our TAR, the research coordinators also mobilized a network of academics researching governance innovation in different contexts. For this, the Planning and Development Research Unit from KU Leuven joined the Faculty of Political Sciences from the Universidad Complutense in Madrid, the Department of Social Sciences from the University of Bologna and the School of Architecture and Landscape Architecture from the University of Edinburgh to apply for UnaEuropa Seed funding[6] to set up two hybrid seminars in which different researchers and students could exchange and enrich their perspectives and approaches. Despite not getting the funding, the parties decided to continue with the organization of a hybrid seminar on 19 and 20 April 2021, attended simultaneously by researchers and professors from the participant universities and students from the 4cities module on

[6]More information about UnaEuropa Seed funding at https://www.una-europa.eu/initiatives/seed-funding.

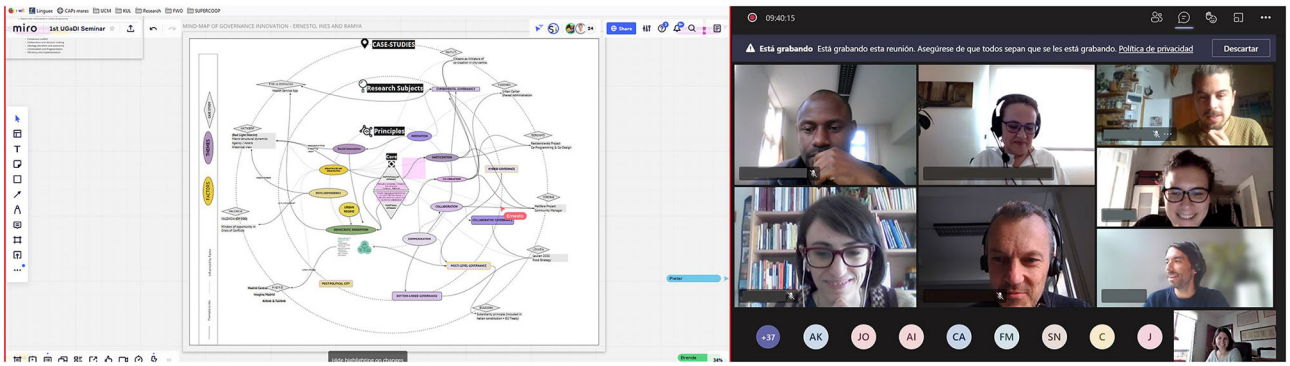

FIGURE 6 | Screenshot during the UGADI Seminar Plenary session sharing the collective outcomes produced about governance innovation research.

Governance that was taking place in Madrid and the IMSDP students in Leuven.

The resulting UGADI Seminar on Urban Governance And Democratic Innovation (see **Figure 5**) consisted of three blocks: in Block 1 (Theoretical Exchange) professors gave theoretical and methodological lectures, in Block 2 (Research Exchange) researchers and students shared their research approaches and experiences, and in Block 3 (Collective Writing) the collective discussion continued in smaller groups and materialized through the cocreation of three texts, a mind-map and a video report[7] (**Figure 6**). The collective reflections developed about governance innovation research will be included in the next INSIST Issue on Governance[8]. Moreover, the event was especially useful for our research, "forcing" research coordinators to improve their analysis and narrative of the on-going processes in Leuven and helping IMSDP students advance their understanding. The focus on governance innovation also helped clarify the focus of our collective interventions in Leuven around the governance of the Food Strategy and avoid getting lost in "content-specific details" regarding the transformation of the food system.

Building a Common Understanding: Joint Problematization and Intervention Codesign

The slightly relaxed COVID regulations in the following weeks allowed physical work on campus. While hybrid meetings opened up new opportunities for interaction among those on campus, and flexibility for all members to participate regardless of their location or personal situation, it also posed extra challenges in terms of technological set up and management of group dynamics and work as we advanced in the definition of a TAR intervention. For this stage, experts in TAR from our network (Seppe de Blust, Michael Kaethler, Barbara Van Dyck, Ruth Segers, and Alessandra Manganelli) joined as tutors in specific sessions.

With the new intervention, the IMSDP team intended to overcome the limitations identified in the previous version of the LeuvenGymkhana and move forward in the facilitation of a critical debate about the Food Strategy with all actors involved and those that were being excluded in its implementation. For this, the gymkhana concept was adapted into a series of interactive guided tours on various aspects of Leuven's Food Strategy. We also identified the need for an improved communication strategy and to continue with the simplification of our analysis and schemes.

Once the intervention idea was agreed upon, the IMSDP team re-arranged in "practical teams" to cater for all the tasks needed for the design, planning and implementation of the tours. Compared to the IASP experience, this work got more professionalized, and we dedicated more time both to identify tasks and to allocate roles according to everyone's interests and skills, but also physical availability (**Figure 7**). This time all students took a dual role, one related to the thematic knowledge more appealing to them—by choosing the specific gymkhana they would design and guide—and a practical role according to the specific skills they could contribute, i.e., content development, graphic design, practical arrangements, social relations, web and social media management, and reporting. Depending on the objectives of the remaining sessions and the workshop activities, the team would work as per thematic or practical role.

While IMSDP students focused more on planning the intervention, the PhD and Master researchers kept advancing the analysis of the trajectory of governance innovation in Leuven, in a continuous exercise of updating, reframing and feeding the analytical framework. The resulting LeuvenGymkhana Timeline (**Figure 8**) depicted key moments in the history of Leuven2030 and the Food Strategy, and the insights we were deriving from them. These insights were parallelly discussed with the IMSDP class during the development of the tour scripts in a mutually enriching process, and kept being updated during the tours. Through this process, we came to clarify three key issues that explained the current situation of IMACs and governance innovation in Leuven:

[7]The UGADI video report is available at https://vimeo.com/si4sdmadrid/ugadi2021.

[8]Http://insist.earth is a website initiated by the European Spatial Development Planning Network, who aims to bring research closer to practice and policy by organizing and facilitating workshops and publishing findings in so-called cahiers. We are currently working with some of the IMSDP students on a new cahier on governance to share our work and AR trajectory with a broader audience.

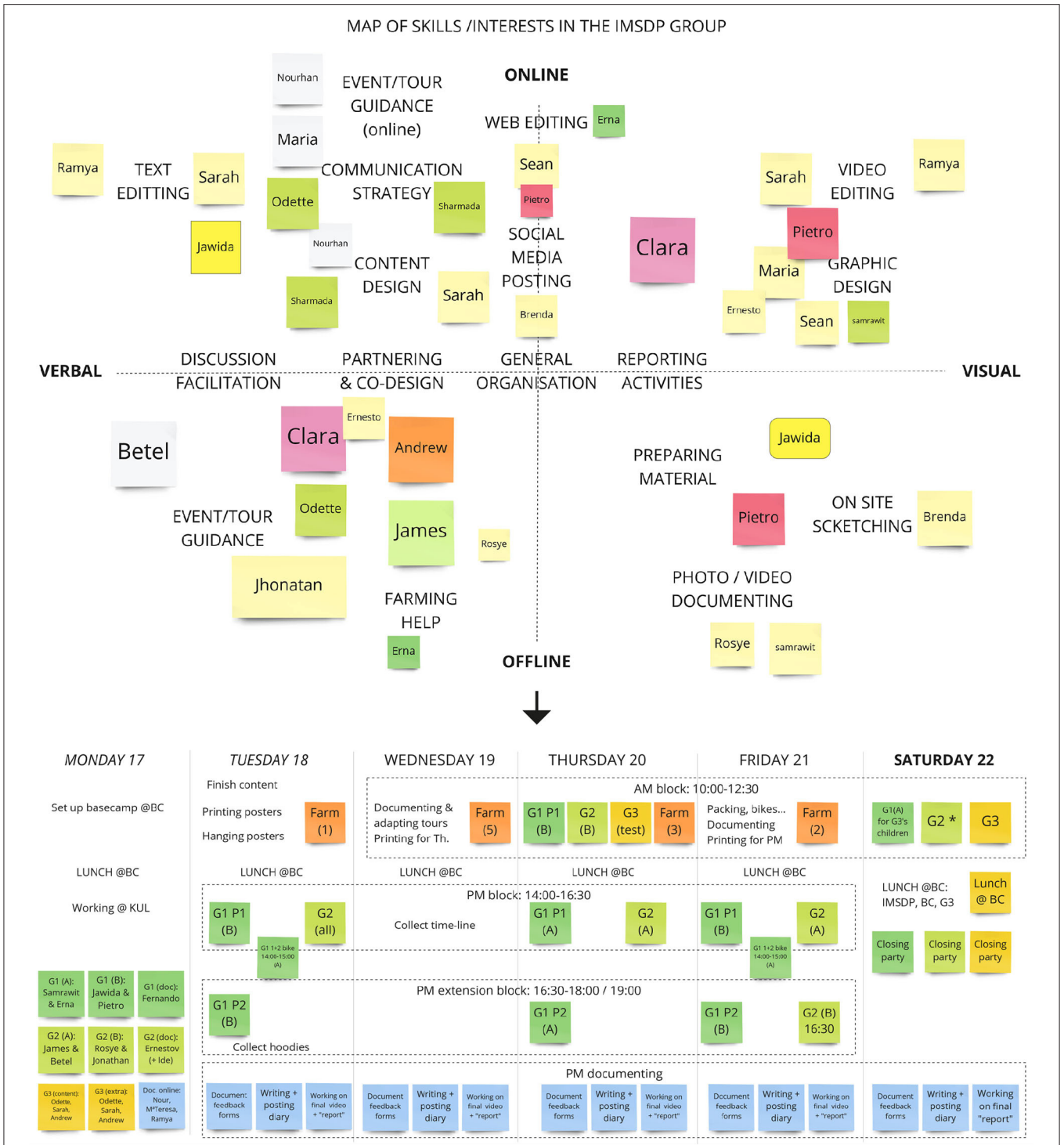

FIGURE 7 | Screenshot from the IMSDP Miro board negotiating the reorganization of working teams as per required tasks and personal skills and interests and the organization of work during the workshop week.

1. The Food Strategy has been subject to several stages of institutionalization or formalization, as the initial document got integrated in Leuven2030's Roadmap and the new Climate Policy of the city.
2. The current stage in this process of institutionalization shows that the IMAC around the Food Strategy is "splitting" in separate trajectories: (1) a "Big-MAC" led by Leuven2030 and the City where more resourceful actors of the food system can

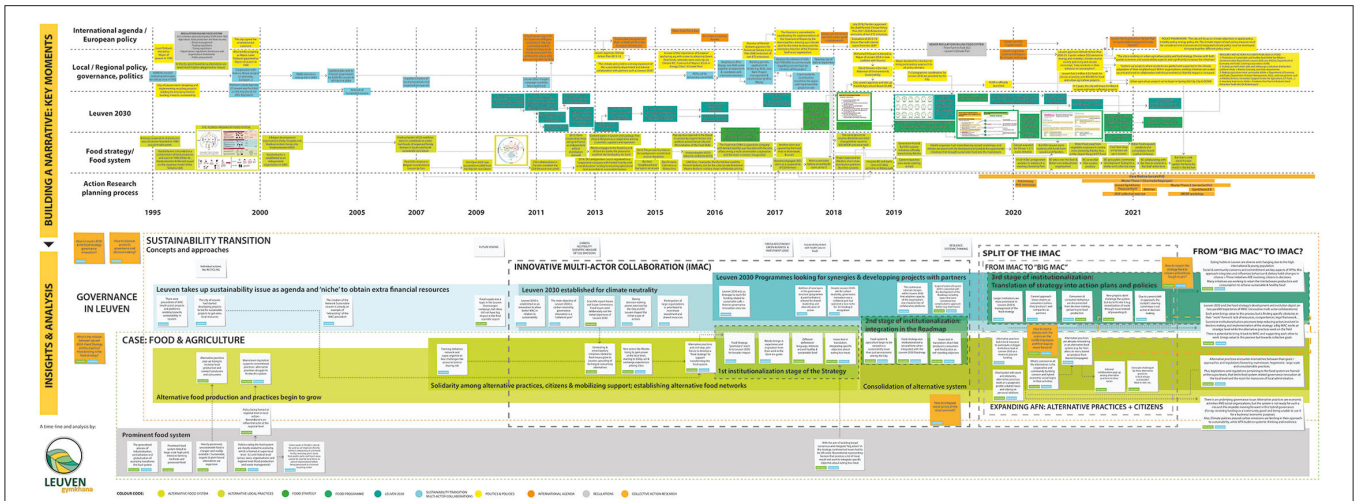

FIGURE 8 | Timeline gathering results and insights from the research about governance innovation and the implementation of the food strategy in Leuven used during the LeuvenGymkhana tours (Full resolution version included as **Supplementary Material**).

keep engaging in decisions about further implementation of the strategy and (2) a parallel consolidation of an alternative food system by alternative food practices. The former is led by the outcome-oriented project logic, more carbon-neutrality and mainstream approaches to sustainable transitions and economic-oriented interests of mainstream and bigger actors of the food system, while the latter is based on hybrid social, ecological and economic logics and on relations of trust and collaboration.

3. The split is due to a lack of care for all facilitative roles in the IMAC, as actors taking the lead in further implementation focus more on "meeting objectives" (a catalyzer role) rather than the governance of the IMAC and Leuven2030 does not perform as steward and mediator anymore.

Reinventing Civic Engagement in Leuven to Reopen the Debate About the Food Strategy: The LeuvenGymkhana 2.0 Tours

The week between 17 and 22 May 2021 was dedicated to an intensive "trial and adapt" exercise of simultaneously conducting the tours, adapting the scripts, and preparing for a final event at BoerEnCompagnie, the base camp of the LeuvenGymkhana 2.0. This intervention aimed to reimagine civic engagement and experiment with alternative means of public debate that could double up as a trust-building process among actors.

Three Gymkhanas were designed and conducted with three specific themes and target audience (**Figure 9**). Gymkhana 1 (G1) "From farm to fork, what does it really mean?" was more targeted to young people and aimed to reopen the debate on what "sustainable and healthy food for all" means, addressing sensitive issues that had dissolved in the several steps of institutionalization of the Food Strategy. Gymkhana 2 (G2) "The Journey of our food" aimed at spotting the actors already building an alternative food system in Leuven and discussing the obstacles they are encountering, to inspire other practices to follow their example as well as further steps in the implementation of the Food Strategy. Gymkhana 3 (G3) "Food justice for all" would only run on the last day, wrapping up the discussions raised in the first two plus reconnecting with urban governance and the broader process of development of the Food Strategy and the actors involved. Specifically targeting actors working in the implementation of the strategy, this tour was designed as a trust-building platform aiming to trigger a collective reflection about the whole trajectory of the Food Strategy and inspire ways to move forward together.

Learning from the difficulties to engage relevant stakeholders for the webinar, G3 was scheduled on Saturday and combined with a closure collective meal at BoerEnCompagnie served by Bar Stan, where a video report of the LeuvenGymkhana would be screened. Our event would coincide with a farming and socializing event organized by BoerEnCompagnie, which facilitated further opportunities for exchange between participants of the Gymkhana and BoerEnCompagnie's community. We displayed the LeuvenGymkhana timeline as a three-meter banner at BoerEnCompagnie to support explanations during the tours and trigger further discussions about further steps in the Food Strategy.

Performing the tours allowed the team to further discuss with stakeholders and to really open debates with citizens and food initiatives, although with a limited reach (**Figure 10**). Despite the effort displayed in advertising our tours and personally inviting the most relevant stakeholders, only 15 people joined, most of them students or researchers from different fields. Some were actually IASP students that got to realize what their initial contribution had led to and "managed to understand what they were doing" during these tours. Only one of the five G3 participants was among the main stakeholders directly invited. The short notice of the event, its coincidence with exams period and a long weekend,

FIGURE 9 | Summary of LeuvenGymkhana 2.0 tours and their itineraries as shown in the leaflet.

FIGURE 10 | Summary of pictures conducting the LeuvenGymkhana 2.0 tours in May 2021.

and the rainy weather during the week might have hindered broader participation.

However, for us the making of three tours prototypes was in itself an objective and an excuse to further learn from, debate with, and empower stakeholders. Moreover, the resulting prototypes are valuable outcomes that actors in Leuven's food system can take over to involve more actors and recover the IMAC. For this, the chain of testing, interacting with stakeholders and partners, reflecting, adjusting and learning by doing, and a parallel work of documenting the experience and sharing it live in website diaries and social media were key. Also, the "unexpected" conversations that we maintained with stakeholders by visiting

their premises and the video report of the gymkhana might have impacted the actors that are implementing the Food Strategy, as to learn better about what other actors are working on and the obstacles they encounter and inspire ways to move forward together, instead of splitting apart in their efforts.

Wrapping-Up, Valorizing Results, and Opening the Door to a New Stage of TAR

Like in previous stages, several individual and collective reflection moments were necessary to apprehend the IMSDP TAR process and results. A first step were the LeuvenGymkhana diaries and video report developed by IMSDP students. Once the IMSDP workshop was over, research coordinators kept reflecting while writing blog posts about the TAR in Medina-García's PhD blog (Medina-García, 2021) and the final Master thesis documents submitted in June (Nagarajan, 2021) and September (Castillo-Vysokolan, 2021).

Moreover, representatives from the city of Leuven that had not been able to attend the tours showed interest in our work and requested a follow-up meeting in which the Editorial Board could share our learnings and recommendations on how to "recover the IMAC" in further implementation of the Food Strategy. Preparing this meeting helped digesting and synthesizing the gymkhana discussions and insights into recommendations, while the meeting in itself became another stage in the process of valorization and discussion of conclusions with more relevant actors. It even opened the door to starting a new stage of TAR in the following semester with a new group of IASP students involving the City in the Editorial Board. A full report of the discussion of the results and recommendations with Leuven2030 and City representatives was also developed and shared with participants and other stakeholders in Leuven.[9] This open-access article and a parallel one sharing our learnings about IMACs (Medina-García et al., 2022) are another step in the continuous translation of the results in different formats and styles to valorize and mobilize them among academia *and* stakeholders of the processes investigated. **Table 2** summarizes all the AR artifacts and activities cocreated, reflecting on their role along the AR trajectory.

DISCUSSION

TAR as Social Innovation

Socially innovative TAR requires that theoretical and analytical research enriches, and is enriched by, getting immersed in the practical reality of the issues investigated and interacting with the actors involved. As a research, we tried to implicate relevant stakeholders of the ongoing IMAC processes in Leuven to our joint problematization and critical analysis of the current governance of the Food Strategy. Researchers contributed to this process contrasting academic literature, official discourses built by organizations and individual experiences shared by stakeholders. As actors new to the research context, the international researchers brought in a "naïve" and fresh reading to the stakeholders' reality and experiences that helped identify nuances, gaps and contradictions. With our analysis, we managed to reconstruct the trajectory of Leuven2030 and the IMAC governing the Food Strategy and illustrate the current "split of the IMAC."

Meanwhile, as action, through our interventions we experimented with ways to address the challenges collectively identified, i.e., empowering citizens and alternative practices that were no longer integrated in decision-making related to Leuven's Food Strategy. The LeuvenGymkhana interventions and events provided the opportunity to re-imagine "public events" in times of physical (not necessarily social) distancing that could become a prototype for alternative and gamified modes of civic engagement and collaborative governance. Through the design and implementation of these interventions we also tested alternative governance platforms with which to recover the IMAC with the actors involved in the Food Strategy. The LeuvenGymkhana did not aim to reinvent the wheel but rather focused on co-creating a flexible framework answering to the requirements of IMACs in Leuven that could be adapted into a platform for public debate and simultaneous trust-building. As such, it became a mini-IMAC in the landscape of governance innovation in Leuven.

After all, our experience showed how, while increasing our understanding about governance innovation in Leuven, our action research activities were socially innovative and empowering toward actors that are being excluded in further implementation of the Food Strategy. Not only did we manage to provide evidence for the emerging exclusion mechanisms causing the "split of the IMAC," but we also developed and tested new participatory methodologies that could be used to recover the IMAC around Leuven's Food Strategy and increase civic engagement of all types of actors in Leuven's food system. From this perspective, our TAR trajectory becomes a case study of IMAC in itself. Thus, the analysis or the trajectory we developed through this paper informs both methodological discussions on TAR and literature on governance and social innovation.

Positionality, Negotiation, and the Key Role of an Editorial Board in TAR

TAR is a continuous process of collaboration and negotiation that starts with a preliminary institutionalist analysis of the topic of research and researchers taking a stance in relation to positions within the field of research and the ecosystem of actors affected. "Content specific" issues related to the food system and power dynamics identified in the institutionalist analysis inform each other in the definition of the researchers' position and the TAR trajectory, and also evolve along the research trajectory. Through the design of the Editorial Board and the IASP-IMSDP research agenda, the research coordinators deliberately and consciously sided with specific critical voices on the implementation of the Food Strategy and smaller alternative food practices in Leuven as a way to contribute to ongoing IMACs in Leuven. Further research by the IASP and IMSDP teams evidenced the dynamics behind stakeholders' critiques and so empowered the actors that had raised them.

[9]This final report is attached as **Supplementary Material** in this article.

TABLE 2 | List of AR artifacts and outcomes cocreated along the process, reflecting on their role as "process" and as "outcome."

AR artifact/outcome	Stage	Authoring participants	Value as process	Target audience	Value as product
IASP brief	2, 3	Editorial board	Co-creating a TAR agenda and plan	IASP students	Setting up objectives and expectations for IASP course and TAR cycle 1. Sharing a reference theoretical & methodological reader
IASP collaboration agreement (template attached as **Supplementary Material**)	3	Researchers of the Editorial board (research coordinators)	Ethical reflection about the collaboration process and issues related to authorship and rights on cocreated materials	IASP students	Setting up collaboration framework and transparent ethical protocol during and after the IASP course
IASP Miro board	3.1	IASP team	Allowing development and exchange of individual and group understandings and learnings. Used to build a common framework and poster atlas. Supporting group dynamics and project management	IASP team	Documenting the IASP process and outcomes
The LeuvenGymkhana atlas Link to all posters: https://leuvengymkhana.wordpress.com/blog/	3.2	IASP students, partners in Leuven Gymkhana 1.0	Organizing and synthesizing diagrams, quotes and questions about IASP thematic findings. Discussing results with partners as reviewers	Leuven citizens and stakeholders of the food system	Sharing and valorizing findings of the IASP research and opening a debate about them with stakeholders. Providing evidence-based results as basis for the script and performance of Leuven Gymkhana 2.0 tours
Interactive online map of actors related to the food system in Leuven Map link: https://arcg.is/yre9q	3.2	IASP students	Identifying, locating and classifying actors in Leuven's food system in relation to Leuven2030 and the principles of the Food Strategy	Stakeholders of the food system and strategy	Visualizing actors from our research & complementing the food actor map being developed by Leuven2030 from a governance perspective
The LeuvenGymkhana website Web link: http://leuvengymkhana. wordpress.com	3.2, 3.3, 5.1, 5.3, 5.4, 6	IASP team > IMSDP team	Forcing to refine our narrative about the IASP-IMSDP trajectory, objectives and learnings in layman terms to be able to share these with the wider network of stakeholders we wanted to reach to participate in activities. Transferring knowledge from IASP to IMSDP students	Citizens and stakeholders of food systems, IMSDP Researchers	Consolidating a "brand," spreading the word about our activities, enabling public debate about our research and findings and valorizing them with the broader network of stakeholders
The LeuvenGymkhana Closure Event Event info link: http://leuvengymkhana. wordpress.com/final-event/	3.3	IASP team, specially Editorial Board	Helping reaching out and engaging relevant actors in the food program and strategy as informants and raising their interest to collaborate in JP along the TAR trajectory	Relevant actors in the Food Strategy and wider citizenship and academia	Gathering relevant actors of the Food Strategy together, gathering their experiences, empowering critical voices about the process and building joint problematization about current challenges and steps to overcome them
IASP webinar presentations	3.3	IASP students	IASP self-reflection process, understanding and valorizing our TAR process and intermediate IASP results	Relevant actors in the food strategy	Valorizing our TAR trajectory to relevant stakeholders and triggering their interest in engaging, following-up and imagining further contribution of TAR
The LeuvenGymkhana webinar report (attached as **Supplementary Material**)	4	Researchers of the Editorial board (research coordinators)	Interiorizing learnings to improve analysis. Making sense of discussions in the webinar and identifying collectively agreed challenges to take up as objectives for further TAR with IMSDP	Relevant actors in the Food Strategy and wider citizenship and academia	Valorizing the exchange and debate during the webinar with stakeholders and wider community and legitimizing further TAR based on joint problematization
The IMSDP brief	4, 5	Editorial board	Updating co-created TAR agenda and plan	IMSDP students	Setting up objectives and expectations for IMSDP course and TAR cycle 2. Sharing an updated reference theoretical & methodological reader

(Continued)

TABLE 2 | Continued

AR artifact/outcome	Stage	Authoring participants	Value as process	Target audience	Value as product
IMSDP Collaboration agreement (template attached as **Supplementary Material**)	5.1	Researchers of the Editorial board (research coordinators)	Ethical reflection about nature of the collaboration and issues related to authorship and rights on cocreated content	IMSDP team and key stakeholders	Setting up collaboration framework and transparent ethical protocol during and after the IASP course among researchers and key stakeholders
IMSDP Miro board	5.1	IMSDP team	Allowing development and exchange of individual and group understandings. Used to build a common timeline and collective design of gymkhanas. Supporting group dynamics and project management	IMSDP team	Documenting the IMSDP process and outcomes
Presentations for UGADI Seminar Link to UGADI video report: https://vimeo.com/ si4sdmadrid/ugadi2021	5.1	Researchers of the Editorial board and Master Thesis Student 2	Understanding and valorizing our TAR process and intermediate IASP results trajectory	IMSDP team and other UGADI participants	Basis for further development of learnings and inspire TAR intervention with IMSDP
Collective outcomes from UGADI seminar (Texts to be published in forthcoming governance https://insist.earth issue) Link to video report: https://vimeo.com/si4sdmadrid/ugadi2021	5.2	IMSDP team and participants from Unibo, UCM and 4cities master	Setting up the focus on governance in IMSDP work discussing and clarifying concepts & methodologies. connecting IMSDP trajectory with broader academic debates	IMSDP team and other UGADI participants & network and broader academic community	Valorizing process and discussions from the seminar among participants and with broader academic community. Inspiring IMSDP with other research experiences
LeuvenGymkhana Timeline (attached as **Supplementary Material**)	5.1, 5.3, 5.4, 6	Researchers of the Editorial board and Master Thesis Student 2	Collecting results along IASP-IMSDP research and collective problematization. Reflecting about results and building insights. Informing tour scripts and learning from them	IASP-IMSDP teams, stakeholders & participants of Gymkhana tours	Alternative graphic representation of research findings facilitating explanations during tours. Artifact able to trigger discussions with stakeholders and participants during and after the Leuven Gymkhana 2.0
LeuvenGymkhana tours planning, posters, & scrips (scripts attached as **Supplementary Material**)	5.3, 5.4, 6	IMSDP team, Leuven gymkhana 2.0 partners	Distilling our learnings, enriching the timeline, translating our message in layman terms, and integrating many of the actors involved in governance innovation in the city in the TAR analysis process as reviewers	Stakeholders & participants of Gymkhana tours, alternative practices in Leuven's food system	Sharing and valorizing results in layman terms with tour participants. Valuable evidence-supported scripts and instructions to run gymkhanas that other stakeholders in Leuven can take up to replicate
Performing and documenting Gymkhana tours	5.4, 6	IMSDP team	Testing and refining the tours scripts and insights about the cases through practicing them and interacting with citizens. Running tours during the week and special invitations to G3 raised interest from relevant stakeholders to join	Participants of Gymkhana tours, stakeholders of Leuven's food system and Food Strategy and TAR academia	Sharing, valorizing and discussing IMSDP results with tours participants. IASP students realizing the value of their work and understanding the TAR process. Generating support material for other stakeholders to replicate the tours
Diaries of the LeuvenGymkhana Link to diary entries: https://leuvengymkhana.wordpress.com/category/ gymkhana-diaries/	5.4, 6	IMSDP team	Reflecting about the Leuven Gymkhana 2.0 intervention trajectory and results	Participants of Gymkhana tours, stakeholders of Leuven's food system and Food Strategy and TAR academia	Consolidating and valorizing the "Leuven Gymkhana" brand and TAR trajectory. Keeping and raising interest of stakeholders to follow and further engage in the TAR trajectory
LeuvenGymkhana video report Link to video: https://vimeo.com/si4sdmadrid/ imsdpleuvengymkhana	5.4, 6	IMSDP team	Reflecting about the Leuven Gymkhana 2.0 intervention trajectory and results	Participants of Gymkhana tours, stakeholders of Leuven's food system and Food Strategy and TAR academia	Sharing and valorizing the "Leuven Gymkhana" tours and TAR trajectory with participants of G3 and closing party and broader array of stakeholders

(Continued)

TABLE 2 | Continued

AR artifact/outcome	Stage	Authoring participants	Value as process	Target audience	Value as product
Blog posts by PhD researcher Link to blog: https://si4sd.home.blog/	1–6	PhD researcher	Reflecting about the IASP and IMSDP work and LeuvenGymkhana TAR interventions' trajectory and results. Reflecting about personal role and performance	IASP, IMSDP and other participants of the TAR trajectory and stakeholders of Food Strategy	Sharing the work conducted, the reasoning behind steps taken and the impact of the whole TAR trajectory with participants, stakeholders and wider community
Master thesis document (Master thesis 1) Details in references list.	1–6	Master Thesis Student 2, research coordinators as supervisors and Key Stakeholder 1 as reader	Reflecting about the IASP and IMSDP work and LeuvenGymkhana TAR interventions' trajectory and results. Reflecting about personal role and performance	Master Thesis student 1 and readers and scholarship on TAR and governance of food systems	Achieving a Master Degree. Consolidating collaboration and mutual enrichment trajectory with Key Stakeholder 1 (reader) sharing the work conducted, the reasoning behind steps taken and the impact of the whole TAR trajectory with Thesis readers. Contributing to academic debates and informing further TAR and results reflections for academic papers
Translating conclusions into recommendations for actors involved	6	Editorial board	Reflecting about learnings about the governance of the food system along IASP, IMSDP and tours discussions and upgrading them into policy recommendations	Relevant actors in the implementation of Leuven's Food Strategy: City, Leuven2030 and food practices	Sharing and valorizing results and research recommendations for further implementation of the Food Strategy with relevant actors affected. Driving a debate about these results with them
Report from discussion of results and recommendations with Leuven2030 and City representatives (attached as **Supplementary Material**)	6	Researchers of the Editorial board (research coordinators)	Upgrading results and recommendations as discussed with relevant actors involved extending the stakeholders participating in joint problematization	Relevant actors and stakeholders in Leuven's Food Strategy	Sharing and valorizing results and collectively decided challenges and recommendations for further implementation of the Food Strategy with participants in JP and broader array of relevant actors affected and stakeholders. Inspiring and informing further TAR collaboration and interventions in the following semester. Informing further results reflections for academic papers
Master thesis document (Master thesis 2) Details in references list	3.4–6	Master Thesis Student 2, research coordinators as supervisors and Key Stakeholder 2 as reader	Reflecting about learnings about the role of Leuven2030 in governance innovation in Leuven. Connecting research with broader academic debates on (governance of) sustainable transitions	Master Thesis student 2 and readers and scholarship on collaborative governance, governance of food systems and sustainable transitions	Achieving a Master Degree. Consolidating collaboration and mutual enrichment trajectory with Key Stakeholder 2 (reader) sharing the work conducted, the reasoning and methodological framework behind results. Contributing to academic debates and informing further results reflections for academic papers

Being transparent about the interests, expectations, resources and potential contribution of researchers and stakeholders to the process was crucial to frame the TAR trajectory and to engage (or discourage) participants along the way. As the team increased—integrating IASP, IMSDP and UGADI researchers and a broader array of stakeholders from Leuven's food system during the LeuvenGymkhanas—so did the international, cultural and academic diversity of the research team and the expectations and practical interests of stakeholders involved. Furthermore, during the broader joint problematization among researchers and practitioners, participants had to deal with evolving and hybrid roles, and combine their individual multi-dimensional interests and experiences with the perspectives and logics of the organization(s) they represented. This required a continuous reflection and negotiation about the contribution of the TAR both from a long-term and short-term perspective,

and adapting TAR objectives and the collective work plan accordingly. Some TAR activities and approaches aimed to contribute to broader governance transformation, such as documenting and recognizing alternative food practices that were not being valorized in academic and political arenas, finding the way to empower critical voices by reaching decision-makers, and strengthening relations among actors and facilitating further collaborations. Meanwhile, other activities and practical decisions dealt with specific concerns and needs of stakeholders involved, like setting the spotlight on alternative practices to extend their outreach among citizens, identifying and voicing their specific obstacles and needs, or paying for time and resources invested by stakeholders in the TAR trajectory with labor in BoerEnCompagnie's farm or contracting catering services from gymkhana partners.

Reflecting on our experience, we realize the relevance of setting up an Editorial Board that performed as steward of the whole TAR process and as "coordinating team" managing the resulting complex network of stakeholders and researchers. The Editorial Board was in itself a negotiation platform between research and practical action and played a key mediating role in co-defining courses of action and managing engagement and communication of and among participants. It also placed leading researchers and key stakeholders in a privileged position to identify and guide the catalyzing potential of each individual stakeholder and the evolving collective research and action.

Maximizing Stakeholders' Engagement and Trust-Building Through Incremental TAR Interventions

In line with the mainstream discussions in AR literature (Kindon et al., 2007), our TAR in Leuven evolved as a series of often simultaneous stages of analysis, joint problematization, collective action and reflection moments. The strategic decision to integrate two academic courses within the TAR trajectory allowed us to incrementally build our research through a series of TAR cycles and to increase the number of researchers and stakeholders contributing to it. In each cycle, a group of students took ownership of previous work and designed and implemented a TAR intervention that enriched the collective understanding, increased the action outreach of the research and involved a broader array of stakeholders, i.e., citizens, experts and academics, alternative food practices, coordinators from Leuven2030, and local politicians and civil servants.

Our approach resulted in a virtuous combination of project-based short-term interventions and potential contributions to long-term governance transformations that progressively increased participants' level of engagement. For students, not only was their participation a valuable learning-by-doing experience about planning and TAR processes, but also the feeling of contributing to something "real" and seeing direct impact and further application of their work increased their commitment. For stakeholders, the possibility to participate in individual activities eased their initial engagement, normally as informants or partners in events. Yet, becoming aware that activities were part of a longer TAR process connected to academic courses and graduate research projects that opened the door to extend the collaboration, motivated them to increase their commitment in further stages and activities and to imagine future contributions of the TAR to their specific interests and needs. Moreover, the fact that all researchers were new to the research context valorized the contextual and practice-related knowledge and contribution of stakeholders from the beginning, which eased building trust and horizontal and collaborative relations between researchers and practitioners.

The process of upgrading methodologies and results from one experience to the following stage also increased the quality, rigor and legitimacy of the TAR and, thus, the chances to keep engaging relevant stakeholders. The consolidation of the "LeuvenGymkhana" brand—with dedicated logos, website, social media profiles, and even tour guide uniforms- and regular communication of advancements and forthcoming activities to relevant stakeholders and previous participants were key. As a result, the research trajectory was more and more recognized and taken seriously by stakeholders, which raised interest from new ones to join.

We acknowledge, however, that our engagement among citizens, decision-makers and the most powerful actors in Leuven2030, the local administration and the food system in Leuven has been slow and limited. We might just have managed to engage the "pioneers" or enthusiastic stakeholders within each actor network. Still, we hope that facilitating an arena for trustful and secure exchange and building collective outcomes will empower and increase the legitimacy of each of these actors in their networks.

Navigating Uncertainty Combining Individual and Collective Learning in TAR

Continuous integration of participants and adaptation of our work added complexity and uncertainty to the process, and required time to allow each participant to connect their background and perspectives with the work already advanced to empower them in further joint problematization. While flexibility and codesign are core for TAR, this methodology could be frustrating at times, since it did not have a pre-determined agenda or framework to develop. This was specially challenging for participants—both stakeholders and students—that were not used to navigating uncertainty through collective negotiation and preferred having a set target and framework. Within each TAR stage, the research coordinators performed as project managers, responsible for guiding group dynamics, managing uncertainty and combining facilitation of common understanding with engagement of every participant.

In terms of group dynamics, both IASP and IMSDP teams started with collective sessions to build a collective understanding of TAR and the issues at stake, then split in thematic research teams and then rearranged according to practical tasks required to conduct the TAR intervention. In this process, research coordinators juggled with their stewardship, mediating and catalyst roles as they planned each working session. One of the biggest challenges was to combine personal and collective learning trajectories with the urgency of reaching valuable

outcomes, and to manage ambitions of the process accordingly. The main struggle was to find the balance between enabling sufficient spaces for collective discussions, using Editorial Board meetings between sessions to discuss advancements and define further steps, and keeping everyone on board by continuously sharing such decisions and the rationale behind them. In an adaptive trial-and-error experience, some sessions were more exploratory and discursive, investing the time to let all voices be heard, and others were more directed and executive in order to reach agreements and get things done.

The intensity of mediation between individual and collective learning was at its highest when time was pressing to design an intervention for the IMSDP workshop. Then, while students in Leuven attended a live workshop, research coordinators and online participants had an extra session where they managed to build on previous discussions and design a prototype of gymkhana. However, in the next session, offline students only partially grasped the reasoning behind the prototype. As a result, only some managed to integrate and upgrade the learnings about IMAC trajectories in Leuven, understand the TAR intervention and perform as *convinced* tour guides, while others resigned to follow instructions hoping that they were contributing to whatever was occurring. IASP students that attended the tours shared a similar feeling, recognizing that only then did they realize the meaning and contribution of their work. This illustrates that the reflection and learning processes of participants follow different rhythms and extend further than their involvement in particular TAR moments. Yet, when time presses, research coordinators and early adopters have to push forward taking decisions hoping that the team will trust and follow them. This affects the enthusiasm of some individuals, with the risk that only those participating in such decision-making moments remain convinced about the collective work.

In terms of managing personal roles and responsibilities within the IASP and IMSDP teams, this was based on negotiations of personal resources, skills and interests. The hybrid nature of the IMSDP team also affected task allocation. Eventually, students in Leuven managed on-site practicalities and guiding and documenting the tours, while online students became both "content experts," improving the Gymkhana scripts, and the "collective consciousness" of the group, as they reviewed and synthesized all pictures, videos and audio chronicles from live participants to share what was happening with the broader community through the gymkhana diaries. These group negotiations and personal commitments, for example when students became "experts" in certain topics and tasks, professionalized the work within the team, while causing each personal experience within the TAR was "unique" even among students.

The Agency of Interaction: Questioning Standards and Ensuring a Fair and Flexible Collaborative Framework

As we have illustrated, TAR is based on joint problematization, collaboration, and negotiation, and the whole trajectory is built and shaped through the interaction among participants, building on previous steps. Thus, interaction has an agency in TAR, molding and guiding the collective learning and cocreation processes. As such, TAR interactive activities and interventions cannot be replicated from previous experiences but need to be deliberately designed and implemented in each TAR trajectory (and stage). In our experience, the Editorial Board designed each IASP and IMSDP session building on previous work and interactions with stakeholders. Neither are LeuvenGymkhanas "methodologies" that can just be replicated elsewhere. Instead, they are the outcome of the institutionalist analysis of the case under study and the several cycles of interaction among stakeholders and researchers involved in the TAR process.

As stewards of the TAR, and aware of these complexities, the research coordinators kept discussing the ethics, rigor and procedural appropriateness of the collaboration process and the impact and further possibilities of its outcomes. Not only was this required by the university and academia, but a responsibility implicit in TAR. This included reflecting about and questioning academic research integrity, ethics and authorship standards and carefully designing the infrastructure set in place to ensure a fair and collaborative framework.

An outcome of this process was the continuous adaptation of "information and consent letters" provided to participants of research activities and the development of a "collaboration agreement," discussed and signed by all researchers and key stakeholders before each TAR cycle.[10] Through this protocol, all team members acknowledged the actors involved in the research and the ethical implications of research in general and of TAR in particular. It also set a clear collaboration framework regarding collective authorship and rights to use and build on cocreated knowledge and outcomes. This was essential to ensure that participants in new stages could access and edit previous outcomes, grant adequate acknowledgment of all participants in subsequent publications and allow stakeholders to take over the gymkhana materials. The development of the protocol was in itself challenging for the Ethics Committee from KU Leuven, with whom we established a discussion on how to adapt standard procedures to new types of collaborative and action research in which the dichotomy between researchers and participants is blurred while knowledge is cocreated.

Interactive Mediation in TAR: The Governance of Communication (in COVID Times)

Apart from its implications in the stewardship of the TAR process just discussed, the agency of interaction also guides the work of actors in charge of mediation among participants. In our work, the research coordinators were the first ones taking this role as they set up specific collaborative tools, facilitated group sessions and led meetings with stakeholders. Comprehensive active listening, translation and mediation among and between students and stakeholders were core tasks under this role. Later, when students codesigned the TAR interventions, they did so aware of the different types of participants, knowledge and

[10] A template of this research protocol is included as **Supplementary Material**.

interactions that were expected. Learning from our experience, we share some challenges related to the facilitation of interaction and the governance of communication in TAR processes.

First, due to the incremental nature of our TAR, the whole process was an experiment on managing *asynchronous discussions* among students or stakeholders, between stakeholders and students, and then with participants in the interventions. As the only members involved all along the process, the researchers of the Editorial Board became the "knowledge experts" responsible of translating and transferring learnings from one group to another. They were also responsible for managing stakeholders engagement in different stages of the TAR and, since the connection between key stakeholders and researchers was mainly conducted by the research coordinators, this positioned them as "gatherers of perspectives" and story-tellers from one stakeholder to another. Comprehensive active listening, translation and mediation among and between students and stakeholders were core tasks under this role in order to integrate everyone's expectations and facilitate the cocreation of new knowledge that emerged from different interaction moments. In addition, researchers needed to be creative and invest a lot of time trying to overcome time limitations of stakeholders to enhance their participation. This required, for instance, discussing issues individually, adapting to stakeholders' schedules instead of holding group discussions, visiting them in their working place or using research activities as excuses to trigger conversations.

Second, the fact that *English* was the common language both in research and actions conducted—but no one's mother tongue- was sometimes a barrier for researchers and stakeholders to get their messages through and to fully understand each other. Besides, language was a limitation acknowledged from the beginning in terms of engaging stakeholders in our activities and setting, which affected the definition of our target audiences and outreach expectations. Combining spoken, written and visual communication in discussions and using visual representations of our work were tools to overcome misunderstandings and to try to be more integrative.

Third, we had to deal with *hybridity*, navigating between offline and online communication, relations and encounters. During IASP sessions, we got to discover and value the possibilities of online communication and collaborative work tools. Simultaneous contribution to a same "artifact"—i.e., schemes in the Miro board or collaborative texts—by people in different locations smoothed facilitation and engagement in the cocreation process, with the added value of easing tracking and documenting the process and outcomes. Nonetheless, the use of these tools required specific time for planning and setting-up, and ensuring that participants had adequate access to technological means and software skills—or time for learning and experimenting with them—to be able to fully participate. When interactions became hybrid, combining online and offline participants simultaneously (e.g., the LeuvenGymkhana treasure hunt, the IMSDP workshop and the UGADI seminar) new disturbances in communication and challenges for team-building arose that threatened the integrity of the group and the coherence of our work, with the risk of creating two separate groups. Consequently, the coordinating team and students designing interventions had to dedicate special attention, premises, equipment and time to ensure familiarity with online tools and a smooth simultaneous integration of online and offline modes of interaction and participation.

Although these challenges could be regarded as consequences of the COVID context, we consider them intrinsic aspects of contemporary communication and collaboration, characterized by an increased use of information and communication technologies, international relations, multi-tasking, and collaboration and participation fatigue. Subsequently, our interventions—treasure hunt, webinar and small group guided tours—were adaptations to COVID times, but also relevant and inspiring experiments for civic engagement in action research practice in general and IMACs in particular.

The Agency of Collective Artifacts Mediating and Catalyzing TAR Collaboration

Mediation also required negotiating and managing tensions between heterogeneity and intermittency of stakeholders, diversity of understandings and efficiency and rigor of the TAR. Documenting the TAR process was as important as dealing with these issues. Also the cocreation of artifacts during stages of joint problematization and in the organization of each research activity was key to mediate among actors and perspectives, capitalize the collective knowledge, and learnings and catalyze the impact of the collaboration. Eventually, collective artifacts were both a means and an end in each stage within the TAR process, while setting the foundations for the following stage.

To start with, the development of posters, narratives and presentations was relevant to develop shared understanding among researchers and to transfer these to participants of subsequent stages. Also discussions and collective texts in the UGADI Seminar helped the whole team consolidate IASP learnings about Leuven and build a collective understanding of governance innovation to frame further work. It also permitted us to collectively reflect about the relevance of TAR and the cases we were studying in the broader academic landscape.

Another challenging and enriching process was the translation of reflections and findings from researchers into artifacts that could be self-explanatory in layman terms to integrate citizens and stakeholders in the discussion during interventions. This process of continuously translating and adapting learnings and results in different formats and registers—such as posters, graphs, videos, web texts, policy recommendations, academic communications and articles- was valuable both during the "making" process of the outcomes, and during their presentation and discussions with their target audience. The LeuvenGymkhana timeline, for instance, was a key artifact to help stakeholders and researchers situate the TAR trajectory within the evolution of IMACs in Leuven and identify themselves as protagonists of both processes. It became a key tool to illustrate the "split of the IMAC" and trigger discussions during and after the LeuvenGymkhana tours.

CONCLUSION

This paper examines transdisciplinary action research (TAR) as main epistemological and methodological approach in the analysis of governance innovation in the city of Leuven. The analysis of the Leuven2030 public-civic-private partnership and the parallel development of a food strategy for the city served as case study. While these initiatives were questioned as socially innovative multi-actor collaborations (IMACs) in a parallel publication (Medina-García et al., 2022), this methodological paper specifically addresses our experience with TAR between 2020 and 2021, the involvement of different layers of researchers, stakeholders and participants, the challenges that the specific COVID context posed on our work, the innovation in terms of tools and approaches under such circumstances, and how our TAR trajectory contributed to the ongoing IMACs in Leuven.

To enable our methodological analysis, we refer to the literature on action research, and more specifically the literatures on social innovation and transdisciplinary action research and on facilitative leadership. This combined literature explains how a transdisciplinary approach connects researchers, practitioners and stakeholders outside academia through a process of joint problematization, in which participants collectively define and address uncertain and complex social problems. In TAR, stakeholders are actively involved in the co-design and co-creation of the problem definition, research questions, the research methodology and methods, data analysis, and dissemination of results in different formats and languages that are meaningful for the actors involved. The approach further draws from an institutionalist perspective to social innovation and facilitative roles in governance transformation processes.

Crucial for transdisciplinary action research on social innovation, is that the research process itself is socially innovative, implying that a TAR trajectory to some extent leads to solutions to the problem investigated and manages to question existing power relations and empower vulnerable actors. In our case study of researching presumed IMACs in Leuven, we jointly problematized and raised questions on the IMACs themselves, especially on the way a split between more powerful actors and alternative food practices emerged due to insufficient attention for facilitative roles and the growing influence of the project logic and mainstream economic-oriented perspectives to sustainability and participation within Leuven2030. We argue that our TAR trajectory became a mini-IMAC in itself, which informed and shaped the collective understanding of IMACs in Leuven and tested new ways of civic engagement to "recover the IMAC." As such, our TAR process became a facilitative tool to strengthen ongoing governance innovation in Leuven.

During the various stages of the TAR process we have experienced how research and action enriched each other and were mutually dependent. On the one hand, the combination of project-based interventions and potential contributions to long-term governance transformations allowed us to progressively engage different groups of researchers and relevant stakeholders and increased the relevance and interests of our findings, critiques and debates both in academic and practical terms. As a result, not only did we provide evidence for stakeholders' critiques on governance innovation and illustrate the "split of the IMAC," but during our interventions we also developed and tested participatory ways to "recover the IMAC." On the other hand, the increasing involvement of students, citizens and practices in our research and activities raised interest from relevant decision-making stakeholders about our work and collective outcomes. This enhanced the possibility that stakeholders will further internalize the results, and the collaboration mechanisms that enabled reaching them, as well as the potential impact in transforming the course of action of the IMACs investigated.

In the discussion of our experience we also reached valuable learnings for action research literature and future TAR. Regarding the TAR process, we discussed and gave insights on how to deal with: the need for both researchers and non-researchers to position themselves and negotiate all aspects of the process; the work needed to construct engagement and trust among the increasing number of participants; the agency of interaction and the need for openness in the design of the TAR trajectory to welcome all participants in joint problematization and negotiate between common and individual interests; and the many layers of the learning process, individual and collective, and the complexities in connecting those. From the specific focus of enabling facilitative leadership within TAR, we discussed: the role of interactive mediation and the relevance of asynchronous and hybrid communication and language bridges and barriers in the governance of communication; the important role of collective artifacts in mediating and catalyzing the TAR collaboration; the role of researchers in the collaborative action research trajectory; and different ways in which a coordinating "Editorial Board" can play a key role ensuring all facilitative leadership roles are being tended to.

Finally, through the TAR, we could experiment with mechanisms and roles that enable multi-actor collaboration, both in action research and in urban governance innovation, which are relevant for both bodies of knowledge. Moreover, due to the socially innovative nature of TAR, our TAR trajectory in Leuven became a case study of IMAC, and so the aforementioned learnings directly dialogue with and inform our empirical analysis of the performance of IMACs too. The resulting process of trust-building, adaptability and collective learning developed through TAR was surprising and enriching both for the actors involved and those following from outside that gradually got involved in our activities as the TAR kept gaining relevance as a mini-IMAC in the governance landscape of Leuven. Actually, neither stakeholders nor the main researchers can see the TAR trajectory as finished, and found the way to continue collaborating in a new cycle of TAR in the following semester.

AUTHOR'S NOTE

To learn more about the research activities, process and outcome, go to the dedicated INSIST Cahier on Governance available at https://insist.earth/.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/**Supplementary Material**, further inquiries can be directed to the corresponding author/s.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Sociaal-Maatschappelijke Ethische Commissie (SMEC) from KU Leuven, n. G 2019 12 1891. The patients/participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

AUTHOR CONTRIBUTIONS

CM-G and PV coordinated the action research trajectory, building on preliminary research conducted by CM-G. CM-G and PV with the support of SN coordinated research activities and analysis of data with students. CM-G and SN drafted and visualized results. All authors revised and approved the submitted version of the article, drafted by CM-G.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fsufs.2022.746974/full#supplementary-material

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Reflections on Reconfiguring Methods During COVID-19: Lessons in Trust, Partnership, and Care

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This paper is a set of reflections from researchers in the Center for Sustainable Communities, University of Canberra, drawing out emerging lessons from the process of re-configuring research methods during COVID-19. The pandemic has presented new spaces of negotiation, struggle, and interdependence within research projects and research teams. It has left researchers often uncertain about how to do their work effectively. At the same time, it has opened up opportunities to re-think how researchers undertake the work of research. In this paper we reflect on several current research programs that have had to undergo rapid design shifts to adjust to new conditions under COVID-19. The rapid shift has afforded some surprisingly positive outcomes and raised important questions for the future. In our reflections we look at the impact of COVID-19 at different stages of designing research with partners, establishing new relationships with partners and distant field sites, and data collection and analysis. We draw on Participatory Action Research (PAR) methodological ideas and highlight ways in which we have adapted and experimented with PAR methods during the pandemic. We reflect on the aspects of PAR that have assisted us to continue in our work, in particular, how PAR foregrounds diverse ways of knowing, being and doing, and prioritizes local aspirations, concerns and world views to drive the research agenda and the processes of social or economic change that accompany it. PAR also helps us to reflect on methods for building relationships of mutual trust, having genuine and authentic collaborations, and open conversations. We reflect on the potential lessons for PAR and community engaged research more generally. Amidst the challenges, our experience reveals new pathways for research practice to rebalance power relationships and support local place-conscious capacity for action.

Keywords: COVID-19, qualitative research methods, relationality, reflexivity, trust, ownership, care, place

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INTRODUCTION

Participatory Action Research (PAR) is an umbrella term for a set of approaches that builds research around the needs and aspirations of participants, enabling a research process that is inclusive and empowering, and that challenges "the dynamics of inequalities by furthering the struggle for social justice" (Gill et al., 2012). The work to enable inclusive and empowering research processes

is far from simple, and, as we discuss below, requires continued effort to reflect on methods—interrogating assumptions, questioning power imbalances inherent to the research process, and engaging reflexively. This paper is the product of one such process of methodological reflection that was imposed by the travel bans and lockdowns associated with the COVID-19 pandemic in 2020 and 2021. The rapid shifts required to allow research projects to continue and our international partnerships to be maintained have enabled new insights into ways our projects had been falling short of our intentions to be inclusive and empowering. Through a series of reflections on the projects we were in the midst of when the pandemic hit, we explore the question of what can be learned about PAR from the experience of rapidly adapting our methods as required by COVID-19 lockdowns.

Time spent in the field has been a core element of our methods in the past, with stints of fieldwork being relied upon not only to gather data but to build relationships, enable co-design of projects, and develop mutual understanding. However, COVID-19 forced us to reconsider our reliance on face-to-face fieldwork. In early 2020, as COVID-19 first began to appear in the news all the authors of this paper were engaged in ongoing research programs that had been designed to be undertaken through field-based research, in partnership and close collaboration with stakeholders in a range of Asia-Pacific communities: Laos, the Philippines, Papua New Guinea (PNG), Solomon Islands and Australia. Katharine, for example, was on one such trip to Laos in January 2020 when COVID-19 first began to appear in the news. As is typical of such fieldwork trips, her work was squeezed into a 2-week period between family commitments at home and the commencement of the teaching semester. It was her third such visit to northern Laos, and followed a long chain of email communications, WhatsApp messaging, and exchange of documentation, all leading to the intense period of time during which the Australia-based and Laos-based team members would be face-to-face, conducting workshops and training sessions at communities in the mountains. While regular communications between visits were important, the feeling in the team was that neither the collaborative partnership between Australian and Laos team members, or the workshops themselves, would be possible without the interpersonal relationships and exchange that were cultivated during time spent together. The opportunity to be together, sharing not only the purposeful work time but also sharing "down time": delicious meals, taking walks, and squeezing together into 4WD cars for long and uncomfortable road journeys, all contributed to a sense of connection, mutual trust and respect. Strong relationships built through these periods of fieldwork had been essential for sustaining the research. As the COVID-19 pandemic took hold and Australia closed its borders to almost all international travel, it was clear that a different way of working had to be found for this type of project.

As we were forced to shift our research practice to a "remote research" format, we were unsure if PAR could be conducted remotely and still enable diverse ways of knowing, being and doing to come to the fore. We were uncertain if the relational approach that underpinned our work could be maintained effectively while we were physically absent from people and places. Being together through purposeful research activities and the informal shared "down time" was what we relied upon to enable meaningful conversations to take place, relationships to develop, and ensure projects were oriented to local aspirations, concerns and world views. Building relationships of mutual trust, having genuine and authentic collaborations, and open conversations were integral to the approach, especially given that a desire to build research around the needs and aspirations of participants does not mean that the process unfolds smoothly—it rarely does.

The shift to remote research process has taught us about different ways to build and maintain research relationships. It provided new opportunities through which to learn about strengthening self-reflexive practice and disrupting the relations of power so often embedded in the research process. For us, this highlights further opportunities to extend what Lauzon (2013) identifies as the opportunity for basing development work with farmers on intimate, empathic and connected relationships rather than didactic information transfer. Lauzon (2013) challenges us to consider how "we, as professionals who aspire to work with others and to assist them in living full and rich lives must also enter into intimacy—intimacy with the people and contexts in which we work—and do so with an openness and freedom where we are willing to be changed too." In this paper, our reflections on the ways we adapted research methods during the COVID-19 lockdowns highlight experimentation with ways to achieve such intimacy in spite of distance, and offer some hopeful insights.

In the paper we discuss four projects, in each outlining the adaptations to method that were attempted and the lessons learned. In these sections each project leader presents a COVID-19 research "moment in time" that challenged and then deepened her PAR practice and relationship with the in-country researchers/participants. First, however, we collectively situate ourselves and our research in relation to the range of approaches and methods that come under the umbrella of PAR.

SITUATING OURSELVES, SITUATING PAR

We are researchers located in the Center for Sustainable Communities at the University of Canberra, Australia. Our common interest is in understanding and supporting processes of community learning and transformation, whether it is with farming families in Melanesia, urban gardeners in the Philippines, or the teaching and learning we do with students. Our disciplinary backgrounds are broad: from adult learning and education (Barbara and Margie) to human geography (Ann and Katharine) and linguistics (Deborah and Jo). However, we share a privileged position in the Australian context, as white women with (fairly) secure employment in the university sector. The privilege of this position has been especially clear during the pandemic as we have experienced effects of COVID-19 very differently to our research partners elsewhere.

From this position, we all conduct research in and across specific settings in the Asia-Pacific region. We use a place-based approach that begins with the assumption research agendas

should be informed by participants' deep understandings of their context (Genat, 2009). We seek to embed ourselves in place-consciousness that recognizes that the "rooted experience of people has both a spatial and temporal dimension… and therefore must include consciousness of the historical memory of a place, and the traditions that emerged there, whether these have been disrupted or conserved" (Gruenewald and Smith, 2014). As researchers who live and work in Australia, this consciousness is apparent in efforts to acknowledge with gratitude our relation to place as Country, the Aboriginal English term that denotes an understanding of Country as an interconnected, interdependent and entangled co-becoming in place (Country et al., 2015). While we seek to honor Country, begin from place-consciousness, and be directed by the research participants, in practice the institutions and funding models with which we work sometimes make this difficult, as the examples below will elaborate. Nevertheless, PAR, especially PAR that emphasizes place conscious engagements with power (Gruenewald and Smith, 2014; Mason, 2015), provides a recognized framework through which to work toward research that is led by people in place.

PAR as a general set of approaches emerged from the work of Freire (1970) and Fals Borda and Rahman (1991) in Latin America in the 1960s and 1970s. Shared across the field is a commitment to research agendas driven by social justice concerns, and to methods designed to harness the transformative and performative potential of the research process in order to enact change during research, rather than just relying upon research findings to inform future change (Carr and Kemmis, 1986; Chevalier and Buckles, 2013). Some of the common elements to PAR are that it involves learning cycles of engagement and reflection that are place-based and informed by an emancipatory ethic.

The examples we discuss below fit within this tradition but are also informed by critical and post-structural feminism, post-colonialism, and the growing area of decolonizing methods. Both feminist and postcolonial thinking provide direction to an approach that resists the universalizing impetus of much social science and seeks to deliberately uncover the heterogeneous knowledge and experiences that sit outside dominant ways of knowing, being and doing (see for example Gibson-Graham, 2006; de Sousa Santos, 2014). It is an approach that resists a simplistic emancipatory framing of PAR and the paternalistic overtones that come along with the idea that some people in the world need emancipation, while others are equipped to grant it to them. In contrast, we prefer to align our approaches with the idea that any such movement toward transformation must be mutual, using knowledge and solutions co-created by researchers and participants. As Askins (2018) notes, in valuing the voices of our participants and pursuing an understanding of shifting and complex subjectivities, we are enacting an ethics of care as researchers.

Enacting such an ethic involves de-centering Eurocentric modes of thought and making space for diverse ways of knowing being and doing, and is far from easy (de Leeuw and Hunt, 2018; Cammock et al., 2021). As Smith (2012) reminds us, the very institutions that enable our work to take place also impose expectations and processes that continue to privilege dominant epistemological and ontological norms. Research practice thus inadvertently continues the process of colonization because it remains based in Eurocentric principles and values (Wright, 2011). While PAR has become widely accepted as "an inquiry paradigm that engages local insiders' perspectives and affirms the local cultural context" (Blodgett et al., 2011), this is different from decentering Eurocentric epistemologies. However, the learning cycles of PAR do make space for researchers to learn and be challenged in and through our relationships with partners and participants.

The examples discussed below offer insight into one moment in this learning cycle. Each example adds a new layer of complexity to the ethics of care that we aspire to in our research. Each summary presents new understandings that emerged in which our previous practices or procedures may have fallen short of our aspirational ethics of care and/or offered opportunities to shift methods that more closely matched our intentions.

In structuring our reflections, we look to Genat (2009) who proposes a practice framework for PAR that puts in the center the nature of the partnership between researcher and participant. Genat framework Genat (2009) consists of seven key considerations:

1. Establish reciprocity and an equal relationship of trust with the key group of research participants,
2. Collaboratively develop a research project that is valued and of benefit to the key group of research participants,
3. Build solidarity around a research question significant to the key group of research participants,
4. Acknowledge, respect, value and privilege local knowledge,
5. Facilitate learning and develop local capacity,
6. Bring a self-reflexive component to practice by consistently interrogating standpoints and use of power along the dimensions of gender, race and class, and
7. Ensure emergent representations are credible with the key group of research participants.

As COVID-19 forced us to reconfigure our place-based research, one of the major emerging concerns was how to maintain relationships. In the examples below, we use Genat (2009) framework as a touchstone, guiding our reflection on the challenges to participatory practice during COVID. The reflections were gathered in conversation with each other, through email, phone or internet conversations with in-country partners and in Margie's case, by a survey of research participants. A set of shared themes emerged, showing us that as relationships were reconfigured at a distance, what also had to be reconfigured was power, positionality, and capacity within those relationships. As the process unfolded, each researcher learned more about how to enact the kind of participatory research they aspired to—one based in reciprocity and trust, shared ownership, collaborative, and self-reflexive learning.

Each of the reflections and PAR insights below has been written by the researcher leading the project. In the first section, Deborah reflects on the role of transparency in building and maintaining relations of trust; in the second section, Jo discusses the rewards of transferring ownership and leadership

to in-country partners; in the third section, Ann focuses on the capacity to extend connection, care and collective action at a physical distance; and in the final case study section, Margie explores the place of self-reflexive co-creation of knowledge through collective interrogation of stereotypes and bias.

RECONFIGURING RELATIONS OF TRUST AND TRANSPARENCY

Our first example from Deborah's research in the Solomons Islands shows how the design shifts needed to negotiate research at a distance enabled new ways to increase the depth of trust and relations of reciprocity. The project, "Improving agricultural development opportunities for female smallholders in rural Solomon Islands", explores opportunities to improve agricultural livelihoods and sustainable food systems for subsistence and semi-subsistence farmers. In collaboration with three Solomon Islands partners, the project assesses how to adapt the Family Farm Teams approach (Pamphilon, 2019; CSC, 2021) to the Solomon Islands context. The Family Farm Teams approach was developed through action research for development in PNG to develop the business acumen, skills and knowledge of semi-subsistence women farmers and their households to build sustainable agricultural livelihoods in a gender equitable and effective way.

The pre-COVID design of the Solomon's project relied on frequent international travel to spend time with partner non-government organizations (NGOs) in Honiara and support the development of relationships between community-based team members and the NGO project officers. Significant levels of trust existed between community members and Deborah because of decades of linguistic research and time she had spent in their community. This provided a level of confidence, but not certainty, that as a research team they could work well together, develop trust, and respect and value local knowledge.

At the same time, as a funded project in its initial stages, some aspects of the project lacked transparency. These issues may have been overcome through time spent in the field, but COVID-19 created a different kind of opportunity to work collaboratively and increase levels of understanding about the interconnection of project activities, and the importance of different voices, during various project stages: planning, training, evaluation, and reporting. The shift to a remote research format required greater reflection on how to ensure that all team members could contribute to as many aspects of the project as possible. To achieve this, the project needed to make transparent how the voices of all team members play a role in the success of the project.

One adaptation was the development of a "living document" addressing all aspects of evaluation and collection of research data that the project team (including NGO partners and community members), could think of. The document included information about who collected or contributed the information. For example, community team members were asked to record their thoughts on a mobile phone during the training week so that the team could identify challenges and successes from their perspective. The document describes how information may be used, letting contributors know that their comments may be included in a report to the funding body. It outlines different communication channels, actors, and processes of providing feedback that can contribute to the sustainability of the program (Servaes et al., 2012).

The document also sets out the relationships between activities. For example, a daily evaluation activity that collected gender-disaggregated information by asking participants to drop stones into a culturally significant basket to indicate their preferred activity was then recorded in a written report. The written report, along with photographic evidence of the activity, was incorporated into a report to the funding body. By writing everything down in one shared document, the project team had to consider numerous ways that information can be collected. For example, a checklist was used to ensure that different languages were included in data collection and evaluation. It provided a way to make visible to all that different modalities are used, e.g., culturally appropriate activities like counting with objects (stones) as opposed to numerals (1,2,3), and made explicit the workflow and connections between project stages. The document speaks particularly to Genat view of PAR Genat (2009) as something that provides "clarity about the form of the data, how it will be evoked, recorded, analyzed, interpreted and written up, and by whom."

The document also highlighted and encouraged the use of different languages in the project. It specifies that participants should be able to use their preferred language and that written and oral activities and feedback are valued. Working within PAR should demonstrate a commitment to valuing and supporting local knowledge. As Bearth (2013) notes, it is important to use the "appropriate" language in development projects. The "appropriate" language does not need to be the local language, but the local language cannot be ignored. Although English is one of the official languages, and the language of education, in the Solomon Islands, it is not the language through which people express their culture and beliefs.

Developing and working with this document impacted aspects of the project workflow. It initially required time to write down a guide to training in workshops, how training activities can be evaluated, and how participants and project team members could provide feedback and contribute to the research. Without COVID-19, these things would still have happened, but we would have relied much more on discussions in the field. Instead, many things that would happen in the field had to be considered and planned for ahead of time.

An evaluation of the document by two capital city-based project officers was undertaken on completion of the Family Farm Team training modules in late 2021. The feedback confirmed that the working document was a useful tool for capacity building of trainers. Of note, the document was used differently by the two project officers, reflecting their roles. One said that the document was not used in the planning stage and the other more senior officer said it was important in the planning stage. Their feedback included suggestions about what could be added to the document and how it could be used by the community-based team members. The final document, then, will

reflect a collaborative process, leading to something that can be used in future training, regardless of whether all research team members are in the field. The use of the document by all research participants demonstrates our relationality and further supports our trust in and understanding of the roles and voices of all research participants.

Lessons to Take Forward

COVID has shifted the responsibility of the day-to-day logistics of the project firmly to the project team in the Solomon Islands. Deborah summed up her experience by saying that while she could not be in the place, she knew what the place was like and, together, they developed interdependent ways of working that reflected their place, its richness, and constraints. The introduction of the living document offered new ways to incorporate and encourage the knowledge, voices, and language of the community in the processes and outcomes of the project—extending the capacity to privilege local knowledge in the way Genat (2009) advises.

Because of COVID-19, and the design shifts required as a result, we are learning more about the inequities embedded in the research process and the administration of projects. Deborah's reflections on her project in the Solomons show how communications strategies can support the work of establishing "reciprocity and an equal relationship of trust with the key group of research participants" (Genat, 2009). COVID-19 is revealing the extent to which there is still more room to give ownership of projects to partners and participants in country. In the example below, Jo explains how complementary learning has emerged from her work in PNG, in this case as the changes made in response to the pandemic increased local ownership of the project.

SHARING CO-DESIGN, OWNERSHIP AND TRUST

The project, "Gender equitable agricultural extension through institutions and youth engagement in Papua New Guinea", began just 4 months before the COVID-19 pandemic restricted international and national travel. To help build sustainable local farm food systems, this project was designed to strengthen PNG women farmers' and youth engagement in managing equitable workloads and decision-making on their family farm.

The project also explores challenges and successes in building gender equitable approaches within PNG churches and aims to further understand the agricultural aspirations of PNG youth. The project applies a PAR process that uses youth participants' own knowledge, lived experience, concerns, language and culture to, as much as possible, build a genuine and authentic research collaboration (Anyon et al., 2018; Bettencourt, 2020).

Jo is the Australian-based project leader and the project team includes an in-country project leader based in Port Moresby and two provincial project coordinators in East New Britain (ENB) and in Western Province. Like the Solomon Islands project discussed above, the original co-design of the project included frequent international travel for training and research but during 2020 the team had to make rapid project design shifts to ensure the project could continue. The in-country team took on aspects of the project that were going to be conducted by Jo, learning new skills required to do the bulk of the research and training, as well as the monitoring and evaluation required by the funding body. Below Jo discusses the process through which the project team co-created a new way to undertake the planning, preparation and delivery of a fundamental project activity and the challenges they faced in doing so.

The project is trialing an adaption of the Family Farm Team approach (referenced in Deborah's discussion above) with youth and their families in ENB as well as developing a "Youth as Change Agent" program to help further engage youth in the future of agriculture in a manner that is appropriate for them and their families. A Youth Advisory Committee, co-chaired by two youth (one female and one male) was established to inform and guide the project team and to ensure the project's activities are grounded in local customs, language, and practices. The community expectations were that the committee would meet regularly with the ENB project team, with a formal annual meeting held during which the committee would advise the project team of project adaptions, challenges and successes. The committee requested that Jo facilitate the annual meeting as the project leader. However, COVID-19 travel restrictions prevented her travel to PNG for the 2021 annual meeting. Through much team discussion and consultation with the committee members, it was agreed that the in-country project leader and ENB Coordinator would facilitate the meeting and collect the relevant data and advice from the committee members. A new date was arranged, and new materials were jointly prepared. Unexpectedly, PNG implemented a State of Emergency, which meant the in-country project leader could not travel from Port Moresby to facilitate the meeting, so it had to be postponed again. Once the travel restrictions eased, the team set a new date, but the week before the planned meeting, the in-country project leader contracted COVID-19 and could not travel. At the same time, government restrictions that no more than ten people could gather meant that the whole committee could not come together in one place. The project team agreed they could not postpone the annual meeting for a third time, so the Australian and ENB team co-designed a new delivery method so the meeting could go ahead.

Through much discussion, *via* email, Zoom, phone and WhatsApp, Jo and the ENB coordinator designed a meeting format that would satisfy the communities' expectations and meet the project's requirements. Due to the restrictions on numbers of people allowed to gather, they decided to meet with the committee members in their own districts, which meant holding four separate meetings. Their negotiations relied upon a sense of trust and support of one another, and on the ENB coordinator being willing to take on more responsibility and leadership.

Whilst the ENB coordinator agreed that she would facilitate the meetings and collect the necessary data, she was nervous as she had not led a meeting like this before. She needed support and

training on how to facilitate such a participatory meeting. Jo and the coordinator worked together in an intensive and collaborative manner online, over several days to develop appropriate meeting materials and videos and to ensure the coordinator felt confident and prepared for her new role.

Finding a solution to allow Jo to "take part" in the meetings was a further challenge as internet access was limited. After much discussion and negotiation between the ENB coordinator and Jo, they created videos in which Jo "spoke with" participants at the meeting, as the participants expected. This included Jo speaking directly to the committee about the project's activities, progress, and outcomes to date. These videos were embedded in a PowerPoint presentation so the ENB coordinator could play the videos/slides as if Jo was speaking directly to the participants and included a conversational component in which Jo would say something in the video, and the coordinator would offer a live response. This required joint planning and design through online discussions and practice so the coordinator could facilitate the meeting in a confident, constructive and participatory manner.

The outcome of the design shift was that the meetings were held in four remote districts of PNG with no internet connection; the necessary advice to progress the project was received; and the communities' expectations of an annual general meeting were met, all whilst abiding by the COVID-19 restrictions. In the process, the ENB project coordinator took on a greater sense of ownership of the project, expressing a sense of empowerment and importance.

Lessons to Take Forward

The COVID-19 adaptions co-designed for this project helped the research team to reconsider the role of the project leader and that of the in-country project team. During the initial project design, Jo and the in-country project team planned to do much of the research together, whilst having distinct roles. However, COVID-19 travel restrictions meant that they had to let go of some of their research preferences and learn new skills whilst finding new ways to maintain and strengthen the relationship of mutual trust. The in-country project team rapidly learnt new skills, including leadership, data collection and training, so they could undertake more of the role that Jo would have fulfilled if travel had been possible. Jo had to shift to more of a project management role, rather than researcher, whilst building the team and supporting a process of building mutual trust with new staff. In the process the whole project team became invested in a core component of Genat (2009) framework through facilitating learning and developing local capacity founded on a strong collaborative, trusting relationships.

Through the process the in-country project team has been able to take more ownership of the project, make decisions on the go and adapt the project to suit the place, language and culture of the people they are working with, and all know and trust that the decisions made on the fly are respected by the wider team. The relationship they all had built prior to the COVID-19 challenges was strengthened in ways that they did not predict or realize was needed, and as such illuminated the importance of working within the spirit of negotiation and interdependence.

In the next project example, Ann further explores how an online environment can foster relations of care and nurture moments of collective action.

BUILDING CONNECTION, CARE, AND COLLECTIVE ACTION AT A PHYSICAL DISTANCE

Ann has been partnering with Philippines-based researchers and neighborhood-based food provisioning projects in Manila and Mindanao since 2008. In 2018 she began working with Filipino colleagues in The Global Garden Project which was established as a research collaboration promoting peer-to-peer links between neighborhood food provisioning efforts in Mindanao, The Philippines, and Canberra and the Capital Region, Australia. The vision of Global Garden is to be a research space across time and place where ideas, resources and skills are shared and learning across socio-cultural and economic difference occurs. Global Garden is also about working "in place" to enhance food security and nutrition through promoting vegetable production and consumption. It aims to create opportunities for community learning, for reconnecting people with their food and with sustainable agroecology practices, and for improving livelihood and health outcomes. These opportunities had been structured around targeted face-to-face workshops, for example, to map urban food production sites. When COVID-19 first started to take effect globally and severe lockdowns began in Mindanao, Global Garden researchers paused to take stock and reconfigure the project's research design considering the pandemic. This has meant an ongoing and evolving effort to shift the research design. Below, Ann explores one design shift of the Global Garden Project, namely, using social media to extend capacity for connection, care and collective action at a physical distance.

Prior to 2020, Global Garden had been using Facebook as a way of tapping into existing networks and education efforts across government, non-government and community sectors in Mindanao. Facebook Messenger was also used by the project for communication between the research team members in Australia, Ethiopia and the Philippines, and among the core group of stakeholders that formed a group in 2019 in Mindanao. However, COVID-19 restrictions to working in place physically prompted reconsideration of how Facebook and Messenger might be used more strategically to grow new practice in vegetable production, consumption and marketing while at a physical distance.

In the Philippines, communication through smartphones using Facebook and other social media networking platforms is ubiquitous. Things go viral quickly and effectively. On the 14th April 2021, for example, a bamboo food cart stocked with vegetables, and other gifted foods was placed on a street corner in Manila with a handwritten sign in Tagalog: "*Magbigay ayon sa kakayahan, kumuha batay sa pangangailangan*" which translates as: "Give according to one's ability, get according to one's need", a sentiment inspired by the writings of Karl Marx. News of this food provisioning cart was posted and re-posted online and dubbed a community pantry. Three days later, over 44

similar community pantries had sprouted up across Manila and as far south as Mindanao. A month later there were over 800 pantries across the Philippines and a crowd sourced digital map that helped people locate them (Mongaya Global Voices Blog, 2021). In a context where social media is already widely used, community initiatives like this prompted the Global Garden team to consider how they might better utilize it as a conduit for supporting food systems innovations at a physical distance.

Ann struck up a Messenger conversation with Global Garden team member Jimboy Eugenio who works for the Department of Education promoting food and nutrition security in Cagayan de Oro. Jimboy identified several things. First, social networks enable a globally connected community of practice across difference to coalesce around what Jimboy described as "common advocacy". Jimboy has had the opportunity to travel to see food systems innovations in Cuba and The Netherlands and to work with researchers from Australia, Canada and Germany, and he has prioritized staying connected to the global research community he has met along the way. He maintained knowledge sharing with this community through Facebook and he was motivated by being connected to it, as something bigger than his own efforts. Second, Jimboy and other Global Garden researchers are champions of the project vision and use Facebook and other social media platforms to promote food security activities like vegetable gardening in the belief that their advocacy will lead to new practice. Third, specifically in response to the pandemic, Jimboy saw his promotion of food gardening and provisioning as a mental and physical health strategy that could help divert people away from their sense of hopelessness and the dire situation they found themselves in economically (personal communication, Jimboy Eugenio, 28 May 2021).[1]

The work undertaken by Jimboy and others in the Philippines to utilize social media for knowledge-sharing linked together a geographically distant network of urban food producers at a time when the Philippines was hit hard with economic impacts of the pandemic. Many companies, factories, and business establishments had to close, and unemployment levels had hit a new high. COVID-19 heightened existing challenges among people already politically, economically, socio-culturally marginalized. Sadly, places like Cagayan de Oro saw a rise in suicide and suicidal attempts. Jimboy reflected that in the previous year, Mindanao had experienced frequent cases of suicide and suicide attempts:

This might be because of the effect of the pandemic. A lot of people were displaced from work and were affected by the economic impact of COVID-19. I used the social media, in my own effort, that maybe I could share some motivations to the people. I would like to stress to them that by doing gardening at home and rearing some livestock and poultry animals would help them divert their hopelessness during the pandemic. I would like to emphasize to them that by getting busy with the backyard garden and raising backyards animals for food and income generations, that would help them stay at home with a purpose rather than going outside risking themselves be infected with the virus.

For Jimboy and the Global Garden Project work in Mindanao COVID-19 presented new opportunities to facilitate learning and local capacity to grow food at home. PAR at a physical distance entailed helping people stay at home with a purpose and supporting their wellbeing. Social media networks provided a conduit for support and collective wellbeing so that even when people were physically isolated, they were virtually connected, and felt as though they were part of collective effort, generating a sense of empowerment beyond the present challenges.

Lessons to Take Forward

The pandemic has shone a different kind of light on working "in place" and the importance of place-based participatory action in fostering interdependence and relationships of care. The community pantries and the promotion of home and neighborhood food provisioning during COVID-19 played an important role not only in sustaining people's mental and physical wellbeing, but also connecting people through collective action. Facebook and social media communication have become a mechanism by which, in Genat (2009) terms, acknowledging, respecting, valuing and privileging local knowledge and action has occurred and developing local capacity for action has been enhanced by connectivity online to an international network. In response to COVID-19 restrictions to face-to-face gathering social media tools came into their own to fulfill the aims of the Global Garden Project and support urban food provisioning.

Below, Margie reflects on how the shift to online engagement carried additional, unexpected benefits as a result of the sense of solidarity and accompanying opportunities for collective self-reflexivity.

ENABLING COLLECTIVE SELF-REFLEXIVITY

This research differs from the examples above as it is a project not directly engaged in work on sustainable food systems, but around broader issues of cross-cultural understanding and intercultural dialogue, both concerns central to PAR as we understand it. Margie's project is in education research and is part of a PhD working with Australian-based pre-service teachers to explore what culturally responsive practice looks like following a cultural immersion trip to China. The focus of the work is on how to widen the capacity for an openness toward the diversity of doing, being and thinking aligned to culturally responsive teaching and critical pedagogy (Freire, 1970). In line with the action and reflection cycle of PAR, the original design was intended to facilitate transformation through the research process for both the participants and researcher. The original design involved semi-structured interviews with 22 participants who had traveled to China on immersion tours. Face-to-face focus groups using participatory photo elicitation were planned to continue the students' in-country dialogic reflection, when local cases of COVID-19 led to the closure of the university campus. This

[1]Jimboy was given the opportunity to review his comments in this paper and has given his full permission to be quoted here.

required a swift move online, and a steep learning curve as Margie attempted to create an online space that would still provide a platform for authentic relationship-building dialogue.

Surprisingly, holding the focus groups online via Zoom worked well to establish reciprocity and an equal relationship, as Genat (2009) recognizes is a priority in PAR research. This was confirmed by a short survey with participants in which all respondents rated the experience "good" or "excellent" in terms of effectiveness and ease of communication. In the interviews, participants spoke about how the shared experience of lockdown enhanced the sense of solidarity felt by the group. As this was at the beginning of lockdown, participants were missing their normal day to day human contact and had not yet experienced the exhaustion from continuous online conferencing, now known as "Zoom fatigue" (Fauville et al., 2021). This shared experience of isolation and disruption to normal routines was an easy introductory discussion topic that quickly established rapport and reciprocity. It was evident from the level of engagement that the group leaned into the sharing of different experiences of frustration at being restricted in their movements or conversely, the relief at having time to slow down. In common with the participants, Margie too was finding it hard to adjust to the "new normal," (working from home, teaching online) and feeling apprehensive about the future. The solidarity that had been initiated within the group on their trip to China was therefore reinforced during the focus groups by the shared experience of the isolation and frustration associated with the pandemic.

The use of photo elicitation was a significant contributing factor to the enthusiastic communication which quickly developed in the focus groups as well as the opportunity for critical reflexivity. Photo elicitation, a participatory visual methodology which utilizes images to generate discussion, was chosen for its ability to enrich data due to increased communication and collaboration (Pain, 2012). Visual methodologies have been shown to enhance relationships in qualitative research due to rapport building, expression of emotions and to encourage reflections. These benefits were evident in the rich conversations and reflections focused on the images presented in the focus groups which proved to run smoothly online. Participant generated images were used, with each person selecting two photographs from their trip to illustrate something they felt was surprising and something that was challenging during their immersion experience in China. The use of the photo elicitation method was able to recreate a level of informality which is often available with face-to-face meetings through storytelling, a meaning making mechanism, allowing people to express ways of knowing and being (Lewis, 2011). Each narrative initiated free-flowing conversation, adding both depth of understanding and added information to the data from previous interviews. As the participants ruminated on the photos, Margie felt able, as the researcher, to relinquish control, which served to help eliminate the power imbalance which she strives for as a critical researcher (Gomez, 2020). She was able to sit back and witness the participants take advantage of the opportunity to hear both alternative or confirmatory viewpoints on similar experiences.

During the focus groups, the sharing of stories provided an opportunity for critical reflexivity and an opportunity for both participants and researcher to reflect on and shift previous assumptions and biases. This was intentional as part of decolonizing research that encourages recognition of power imbalances and attitudinal change (Young, 2016; Thambinathan and Kinsella, 2021). Participants examined their pre-existing assumptions and biases as they reflected on their experiences in China, and, as in Genat framework (Genat, 2009), participants displayed this self-reflexive stance as they contemplated their changing assumptions about race. These conversations added layers to what they had learned on the trip and to how they were applying that knowledge to their lives and teaching back home. The self-selected photos and lack of coercion involved in this method created a relaxed environment where participants could be open to alternative points of view and acted as a trigger for reflection and transformation.

Surprisingly, conducting the focus groups online turned out to offer benefits and possibilities for both the researcher and participants. The first of these advantages was evident in terms of the temporality through which the research unfolded, and understandings were built. The convenience of organizing a time to conduct the groups was expediated by the time saved on travel and the irrelevance of geographical location. Participants were able to locate and share their digital photos quickly while narrating their story and parents with young children found the online meeting to be an easier commitment. Another unexpected benefit of the online platform was the opportunity for Margie to view body language and facial expressions during analysis of the recording. Although interpreting body language was identified by participants as one of the challenges of the online platform, conversely, one participant claimed the relative ease of concealing body language when disagreeing to be one of the benefits.

Lessons to Take Forward

Despite the fact that all participants rated the online focus groups highly in terms of practicality and ease of communication, the majority would have preferred to meet face-to-face. The drawback of the prospect of missing social cues online and the less natural flow of communication were challenges cited by participants in the post research survey, as well as their concern with talking over the top of others. Notably, one participant preferred the online space, as they were more comfortable with vulnerability at home than in an unfamiliar space during a face-to-face meeting. The ease of communication when transitioning online was certainly assisted by the fact that participants and researcher came from similar cultural backgrounds and were fluent English speakers.

The relative ease and speed of the transition online and the quality of the conversations with participants in the online space was both surprising and a powerful learning experience and demonstrated the potential of online photo elicitation for critical participatory research. The foundation of solidarity provided by shared experiences of COVID-19 lockdowns reinforces how

important solidarity remains in enabling a collective self-reflection process (Genat, 2009), and teaches us that it can be achieved in an online environment.

CONCLUSIONS AND NEXT STEPS

As we alter research designs in response to travel bans and the loss of face-to-face relationships and connections, we are learning a great deal about what we might want to retain as the pandemic recedes: ways of enacting the research process in solidarity, practices that build transparency, and actions that can engender deeper relations of trust and productively displace the control of project leaders over research procedures. We are aware that further learning awaits us as the projects in which we are engaged reach the stage of generating results, and we grasp for new ways to engage our partners in critical conversations around making sense of what has been learned.

We remain concerned about the degree to which PAR at a distance can enable collaborative and socially critical reflection. The iterative learning cycles of PAR in principle provide a productive communicative space in which all members can contribute their various knowledge and expertise however this does not happen by simply inviting a group to share and affirming their contributions, important though that is. Given the dominance of "deficit-based" understandings of disadvantaged communities and the concomitant inequitable hierarchies of knowledge (Chilisa and Ntseana, 2010), the many types of situated knowledge (Haraway, 1988) need to be made visible and conceptually accessible to all. The productive sharing of stories and reflections, as demonstrated with Margie's participants, provides hope that PAR at a distance can still create an opportunity for reflexive dialogue (Ripamonti et al., 2016). However, we remain unsure how well such tools will work across the cultural and language divides that exist between researchers based in Australia and partners elsewhere. A concern is that without strong collaborative analysis, in-country contributions to a project may become an indigenous "additive" that does not harness the power of indigenous knowledge systems as critical and relevant in their own right (Rasool and Harms-Smith, 2021).

The reflections shared in this paper highlight some of the significant learning that is happening as we adapt methods to the conditions of travel restrictions and regional lockdowns, shifting engagement to telephone and online communications while striving to enact an ethics of care informed by critical feminist PAR. For us, face-to-face encounters and shared learning through conversation and relationship building *while in the same place* has, in the past, been essential. Relationships have been strengthened and nurtured most during the time we could be physically present alongside our co-researchers, partners, and participants. While the disadvantages of shifting to remote modes are apparent, in this paper we have highlighted some of the benefits to our understanding of how to do PAR, structuring our reflections around the PAR framework suggested by Genat (2009). In Deborah's case the inability to maintain synchronous communications prompted increased use of documentation that provided new opportunities for transparency and strengthened relationships of trust. In Jo's case the inability for project leaders to be with partners in the field made space for them to take greater ownership of the research. Both these examples highlight an aspect of research practice missing in Genat framework, that is the governance of research and the methods by which research processes and procedures are managed. Here lie opportunities for enacting solidarity with research participants that we had not been so conscious of in the past.

In Ann's case connecting more with social media networks in partner countries has shed new light on place-based innovations, resourcefulness, and capacities of people to care for each other and to take action in whatever ways they can, in and across place. In Margie's case being forced to move to online platforms created new spaces for more equitable exchange. In both these examples, access to internet-based communications reveals the value of a new set of tools and their potential to offer reprieve from the power dynamics of face-to-face interpersonal communications, and a different conduit for offering support and care within the research relationship. At the same time, such online methods throw up new technical and ethical conundrums (Roberts et al., 2021) that must be given serious consideration against the backdrop of a PAR ethics of care. Genat framework, while useful, does not prompt the detailed methodological questions that ought to be addressed in light of these concerns.

While a place-based approach has been important in all the projects we have discussed, the experiences of COVID-19 have prompted us to reconsider the importance of our being "in the place" and instead to consider how we continue to *engage deeply* with people in place when we are at a physical distance. Our sense of what it means to work in and across place through relationships and our sense of place-consciousness has had to be re-configured. Although we have always sought to work with our local colleagues to understand their place, their strengths and needs and to identify place-based knowledge that could be harnessed in our collaborative work, the pandemic has helped us see some of the limitations of this. As Gruenewald and Smith (2014) highlight, our own privilege as Western white knowledge-makers inevitably inflect our interactions in and across place, and we carry that privilege with us when we are present "in the place". Regardless of our intention, this brings with it an imbalanced set of power relationships and privileges certain ways of knowing, doing and being. Whilst the co-construction of knowledge with partners and participants is for the express reason of building power with/by people, we can now more clearly see the complexity of the relational dynamics and the need to be constantly alert to the pervasiveness of colonizing relationships (McGregor et al., 2018). Whilst our COVID-19 research adaptations have indeed helped to reconfigure these power dynamics, we are challenged to consider further how we can support our partners in critical PAR that is more deeply "place-conscious".

Overall, one of the most significant outcomes is that COVID-19 travel restrictions have enabled (forced) a greater degree of control over the research to be handed to in-country partners and participants. It has also highlighted some of the key challenges that remain for research that

is more radically participatory. While the university-based researchers are the ones in charge of reporting, managing the research grants, and finalizing research outputs, there will continue to be considerable limitations to how inclusive or emancipatory PAR can be. Our COVID-19 adaptations have revealed new options for working within the current institutional constraints as we seek to undertake research that will serve local interests and provide research leadership opportunities to local people, particularly in relation to how it is undertaken, and the process of analysis. Our reflections have highlighted that PAR research relationships are complex and dynamic and as such they demand on-going reflexivity, especially in times of challenge. We believe that working within an ethics of care enables mutual learning and reciprocal relationships to develop—essential foundations for research that will make a difference.

DATA AVAILABILITY STATEMENT

The datasets presented in this article are not readily available because of the ethics conditions.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by University of Canberra. The participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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Let's Do It Online?! Challenges and Lessons for Inclusive Virtual Participation

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Within the broader framework of the EU-H2020 EdiCitNet project—a large-scale collaborative project with a multi-stakeholder approach—there is the opportunity to observe participatory planning approaches to mainstream nature-based, edible solutions to solve specific social urban problems in an international group of six cities—Berlin (Germany), Carthage (Tunisia), Sant Feliu de Llobregat (Spain), Letchworth (United Kingdom), Šempeter pri Gorici (Slovenia), and Lomé (Togo). One year after the project started, the COVID-19 pandemic made it necessary to transfer most participatory planning processes to online platforms. This new format presented challenges to planning and voluntary stakeholder engagement due to different capacities regarding technical requirements as well as location-specific social circumstances. In this paper, we aim to shed light on the potentials and trade-offs in shifting to online participation and who gets to participate under digital Participatory Action Research (PAR) circumstances. We used a mixed-methods approach to evaluate the planning progress and the transition to working online in the six cities during the first wave of the pandemic. The study identifies critical implications of COVID-19 on participatory planning processes, the challenges for online participation, and the effectiveness of measures applied to tackle those challenges. The transition to online participatory planning described in this paper emphasizes organizational rather than technical remedies. While the planning progress in all cities was delayed, some faced significant challenges in the transition to online due to the lack of technical or community capacities. This was fostered through the diverse and new realities of the stakeholders ranging from meeting existential needs to adapting to alternative forms of working and caring. The reflections in this paper offer learnings from the disruptions caused by COVID-19 to better understand how participatory planning processes can be managed online along the lines of equity, access, and participation. The findings demonstrate how participatory processes in the ongoing crisis can be maintained, with relevance to future waves of this and other pandemics.

Keywords: co-creation, COVID-19 pandemic, local food systems, participatory planning, social engagement, transdisciplinarity, virtual participation, digital equity

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INTRODUCTION

Participatory planning, as an inclusive and empowering approach, brings people together and integrates different knowledges, experiences, and interests to solve a specific problem (Foth, 2017). For this reason, citizen participation has become an essential aspect of (urban) planning (Arnstein, 1969; Willness et al., 2019). The COVID-19 pandemic posed new challenges for citizen participation: first, the associated social distancing measures made traditional face-to-face participation methods impossible, challenging the value of in-person relationships of participation; and second, the adverse socio-economic consequences of COVID-19 hindered citizen engagement, raising questions about who is able to participate. Overcoming these challenges is essential as citizen participation is pivotal to the creation of just and sustainable cities (Shuib et al., 2015; van der Jagt et al., 2017).

Edible Cities Network (EdiCitNet), an H2020 project, allowed us to observe, while also actively engaged in resolving, the disruptions to participatory planning processes as a result of COVID-19—particularly from March to October 2020. In this project, six cities are developing contributions to urban masterplans to anchor the fostering and implementation of Edible City Solutions[1] (ECS) and its co-benefits in urban planning: Berlin (Germany), Carthage (Tunisia), Sant Feliu de Llobregat (Spain), Letchworth (United Kingdom), Šempeter pri Gorici (Slovenia), and Lomé (Togo). ECS are part of, and go beyond, the concept of Nature-based Solutions (NbS) that focus on shared production, processing, consumption, and distribution of food (Säumel et al., 2019). ECS are used as instruments in the planning process to tackle specific social challenges, for instance, to increase the quality of life in disadvantaged neighborhoods, promote intergenerational exchange and communication, or integrate refugees. This transdisciplinary approach, involving participants from different sectors in each city, including city administrators, NGOs, and residents' groups, as well as researchers from a range of disciplines, was initially designed as face-to-face planning. COVID-19 made it necessary to shift those activities in to the virtual space as the pandemic disrupted the process prior to the commencement of the face-to-face activities. An exploration of available online collaboration and communication tools became a priority to maintain the participatory planning processes.

Even without such disruptions, participatory approaches can prove challenging in practice, requiring specific considerations to succeed (Shuib et al., 2015; Tornaghi and Van Dyck, 2015; Raymond et al., 2017). To engage stakeholders, respectful interaction, trust between participants and the creation of a shared understanding of the goal are required (Umemoto, 2001; Höppner et al., 2007; Gordon and Manosevitch, 2011). Facilitated face-to-face interactions between stakeholders are seen as crucial in enabling people to share ideas, build trust and create plans, for instance, during workshops and focus group discussions (Fitze, 2006; Bachour et al., 2010).

During the pandemic, online tools have been widely applied in business, administration, and education to enable management, planning, and teaching. They are now often seen as a suitable and cheaper way to manage former face-to-face activities (Norman et al., 2010; Sidpra et al., 2020). In cases where infrastructure is equally accessible to all participants, online participation has the potential to widen access by enabling more voices to be heard; while face-to-face interactions creating in-person relationships between the participants may allow a greater depth of understanding, depending on the goals sought (Piatkowski et al., 2017; Glaas et al., 2020). However, it is also acknowledged that maintaining virtual interactions in teaching (Adedoyin and Soykan, 2020) or management (Caligiuri et al., 2020; Van Assche and Lundan, 2020) during COVID-19 remains challenging. Concerns include questions of capability (of users and organizations) and of accessibility and infrastructure, potentially excluding "individual learners and citizens and… whole populations" (Resta and Laferrière, 2008, p. 766). Given the nature of participatory processes and the particular importance of trust-building, it is crucial to be aware of the obstacles that online participation might represent for planning processes that engender inclusivity. Designing online participatory processes and selecting the appropriate online tools remains an important consideration throughout implementation and progress monitoring (Afzalan et al., 2017).

This paper aims to share how we identified and responded to the challenges of implementing participatory planning processes online and how we observed and facilitated this shift. We further evaluated the planning process in the cities, each of which faced different technical and social challenges prior to and during this shift. Some cities managed the transition with comparably minor problems, for instance, Berlin with a high level of participants' digital literacy and motivation. Other cities needed time to navigate the new situation, as in the case of Lomé with unstable digital infrastructure, or even withdrew from the project, as in Letchworth, due to economic pressures posed by the pandemic. Although this paper focuses on rather organizational and technical elements, we demonstrate that technical and organizational hurdles have important social dimensions. We reflect on digital equity, a concept that has gained traction during the pandemic. Here, we focus on access to hardware, available connectivity and bandwidth, and the quality of time to participate (Solomon, 2002). This is of specific relevance for this study as community engagement, and equitable relations is a core component of the project itself (Resta and Laferrière, 2008; Aguilar, 2020). Within this debate, our reflections challenge the often underlying assumption—seen in the concept of "Smart Cities" itself, which sees digital technologies (and with them their accessibility) as being key to fostering equity—that citizens have equivalent

Abbreviations: ECS, Edible City Solutions; EdiCitNet, Edible City Networks; hub, Research and small and medium enterprise; NbS, Nature-based Solutions; TPM, Transition Pathway Methodology; PAR, Participatory Action Research.

[1]ECS as definied through the EdiCitNet consortium "amplify benefits provided by Nature-based Solutions from supply of regulating and cultural ecosystem services… that address food security, poverty alleviation, and inequality in urban areas… ECS are promising to sustainably contribute to reducing socio-economic and environmental problems..." (Grant Agreement No. 77666). Furthermore, ECS can foster environmental and economic co-benefits associated with NbS, in addition to supporting regional food production including local food networks and promoting a high variety of other social benefits (Säumel et al., 2019).

access, skills, and time to participate in digital activities (Batty et al., 2012).

In providing insights on how we transitioned from a face-to-face to an online Participatory Action Research (PAR) process during COVID-19, we:

I identify the most relevant impacts of COVID-19 on the participatory planning process in the six cities;
II describe the measures taken to mitigate the effects of COVID-19 on the planning process;
III evaluate the participatory planning progress for each city;
IV discuss the challenges of transferring participatory planning processes to an online format;
V reflect on the aspects of digital equity observed in the transition process.

DESCRIPTION OF THE CASE STUDY

Rapidly growing cities have become centers of resource consumption and environmental pollution (Rees and Wackernagel, 2008; Carta et al., 2017) and face increasing pressure to act upon these (Kahn, 2007). ECS stimulate the promotion of sustainable management strategies for addressing socio-environmental challenges by, for instance, supporting circular economies and providing social benefits for citizens (Faivre et al., 2017; Lafortezza and Sanesi, 2019; Säumel et al., 2019).

A growing body of research on city-level initiatives such as food policy councils, food strategies, food networks, and food hubs proves the relevance of the concept of ECS, rooted in the long history of urban agriculture, alternative food networks, and other urban nature initiatives (Goodman et al., 2012; Grasseni, 2013; Santo et al., 2017; Corsi et al., 2018; Moragues-Faus and Sonnino, 2018).

To tackle COVID-19-induced food insecurity and inequalities—with the most vulnerable carrying the worst impacts—more resilient local food systems are needed (Lal, 2020; Bellamy et al., 2021). Here alternative models of food production and social organization, for instance, as found within the agroecology movement, are gaining ground within this societal debate to advance an innovative "post-COVID-agriculture" (Altieri and Nicholls, 2020).

Introducing such concepts and ideas at the level of urban planning became an essential component of social acceptance and ownership (Allam and Jones, 2020). This manifested particularly as the pandemic highlighted the need for recreational areas and public green spaces and the inclusion of key stakeholders such as citizens, amongst others (Galimberti et al., 2020; Sharifi and Khavarian-Garmsir, 2020).

Participatory Planning Approaches for More Sustainable Cities: Transition Pathway Methodology

Firstly, urban agriculture initiatives, as one form of ECS, are often established as a grassroots approach initiated, led, and maintained by local volunteers. Simultaneously many ECS depend, at least partially, on support from city administrations for their continuation, further promotion, and scaling out—including connecting different food territories and initiatives (Edwards et al., 2018). Secondly, many pressing urban social challenges, such as crime or deterioration of neighborhoods, are wicked problems that are ill-defined and involve many uncertainties (Churchman, 1967). Because of the limited problem-solving capacity of single disciplinary perspectives, solving such complex challenges requires the integration of many different stakeholders' perspectives e.g., citizens, initiatives, city administration, academia, and NGOs (Frischknecht and Schmied, 2002; Mittelstraß, 2005; Checkland and Holwell, 2007; Lang et al., 2012). The mutual dependencies found in wicked problems, therefore, call for a transdisciplinary approach to planning.

The Transition Pathway Methodology (TPM) used in the project sits within the tradition of transdisciplinary research—an approach that integrates perspectives from different disciplines and stakeholders (Mittelstraß, 2005; Lang et al., 2012). Transdisciplinary research was introduced in the 1970's to recognize the societal responsibility of research institutions and mainly aims to tackle complex, real-world problems by integrating knowledge from all stakeholders. This includes sectoral and academic specialists to co-create research and co-develop solutions through iterative cycles involving action and reflection (Hadorn et al., 2008a,b). The ownership and active collaboration promoted in this planning process follow transdisciplinary criteria, including reflexivity, and inclusion (Strydom and Puren, 2014; Belcher et al., 2016). Following the transdisciplinary case study approach of Scholz and Tietje (2002), TPM depends on a high level of multi-stakeholder participation with the aim of transferring decision-making power to the participants (Arnstein, 1969).[2] It centers on the concerns of those with the everyday experience, treating stakeholders' perspectives and their feedback on researchers' input as core elements of a planning procedure.

Citizens in the project under discussion thus became co-creators of transdisciplinary research and planning processes for the co-generation of knowledge. This began with reaching an understanding of the current situation in order to formulate pathways toward positive change (Jarke, 2021). The resulting outputs of the TPM application are masterplans for ECS representing collectively agreed and desirable shared futures of the involved stakeholders and the pathway to achieving these futures.

Increasing recognition of participatory processes in urban development reflects a change in the emphasis of urban planners. No longer are citizens simply seen as residents or consumers, but rather as participants in planning processes and co-creators of urban spaces (Foth, 2017). ECS initiatives are more effective at targeting social challenges if participation embraces the principles of inclusivity and empowerment of previously disempowered voices and is not co-opted to create a

[2]The TPM aims to truly delegate decisions to the stakeholders and put them partly into control (Arnstein, 1969).

veneer that outcomes are the result of what people want (Cooke and Kothari, 2001).

To organize this inclusive and empowering participation in the planning process of ECS, we apply the TPM (see **Figure 1**; Freyer et al., 2005; Manderscheid et al., 2019). TPM was developed as a methodological approach to structure and operationalize complex planning processes, including three steps, in which involved stakeholders co-create the transition pathways in three phases (**Figure 1**; Manderscheid et al., 2019):

1. System development—city-teams create a system model to better understand the status quo of the city
2. Scenario development—city-teams create different scenarios to overcome the chosen societal challenge using ECS
3. Transfer development—city-teams evaluate the scenarios, select the most beneficial one and develop an implementation plan.

Prior to COVID-19, many methods that enable participation have relied on face-to-face interactions (Hadorn et al., 2008a), which have been seen as crucial enablers of transdisciplinarity (Olson and Olson, 2000; Stokols, 2006). Furthermore, the TPM has sought to bring together the following stakeholders in each city in the form of city-teams[3]:

- **Representatives of the city administration and various local stakeholders** relevant to the establishment of ECS (ECS owners,[4] representatives of relevant NGOs, small and medium enterprises, engaged citizens, etc.)
- **Local researchers** organized as research hubs supporting the city-team in the facilitation of the TPM
- **Researchers from the University of Natural Resources and Life Sciences, Vienna (BOKU)** mentoring the TPM—while constantly reflecting and adapting to the local needs.

Table 1 shows the different constellations of the city-teams indicating the diversity, variation in size, and organizational affiliation. This diverse representation of stakeholders is strongly linked to the local requirements and goals articulated by participants in each city, as well as to the underlying PAR approach and project internal ethical guidelines. Additionally, the table indicates how many city-team members are employed through official partners of the EdiCitNet project.

Prior to COVID-19 restrictions, each of these city-teams was meant to hold a multi-day face-to-face workshop—in each phase of the TPM—developing core content in various work steps. City-teams were scheduled to start the planning process in early 2020 and to complete the task in late 2021. The first (TPM) phase was due for completion in September 2020 (**Figure 1**), including several steps:

- **Definition of social problems**: City-teams discuss urban challenges and select and define a social problem they would like to tackle with ECS
- **Documentation of relevant ECS**: City-teams document existing ECS in their cities to understand what solutions are already available
- **Identification of relevant fields of action**: City-teams define the major areas to be considered to successfully foster suitable ECS toward addressing the defined social problems.
- **Identification of influence factors:** Based on the collected information, city-teams define and describe influential factors that, in turn, play an important role in fostering ECS.

Disruption Through COVID-19

At the beginning of the first phase of TPM, COVID-19 disrupted the EdiCitNet project. To better understand the different levels of severity of COVID-19 in the cities and its implications on the city-teams, **Table 2** briefly describes the restrictions in each city. This shows that all cities have been affected at different levels by infection control measures.

As the Letchworth Garden City Heritage Foundation (LGCHF)—the official partner of EdiCitNet in Letchworth—was hit hard by the pandemic, the only option was the immediate withdrawal from the project. Therefore, as we specifically seek to understand the constraints of converting the process to online platforms, our reflection of the Letchworth case, which did not undergo this transition, will be limited.

Mitigation Measures

With the need to transition the PAR process online, the following categories developed by Afzalan et al. (2017) proved valuable when considering the potential barriers to the adoption and effective use of online tools:

- the organizational capacity of the planners, i.e., the skills, attitudes, and resources of the planners to implement online planning tools and to manage and monitor the process.
- the community capacity, i.e., the skills, attitude, and resources of the participants to actively participate.
- the norms and regulations in place that could affect the use of online tools.
- the scale and complexity of the planning problem and the goals of the participation.
- the technical capabilities of the planners and the participants, i.e., if the skills and IT infrastructure needed are available.
- the tool capacity, i.e., the efficiency of the tool and the ability to foster the decision process, leadership, and the creation of a good atmosphere and conflict management.

However, in our case, detailed assessments of these categories were not possible as COVID-19 forced us to act quickly. The most immediate mitigation measure was to transfer face-to-face interactions to virtual platforms to secure the continuation of the planning process. This included the provision of online communication and collaboration tools and training for all city-teams to conduct all activities of the first phase of TPM (system development) online. Adaptation strategies included:

[3]According to the projects' governance guidelines one city-team coordinator (part of the consortium) is organizing a city-team of different stakeholders. The city-team coordinators and the respective research hubs are key people for knowledge creation connecting the project consortium to each city, in addition to hosting the implementation of the TPM. These city-teams are open to new members along the process (Edwards et al., 2018).

[4]The term ECS owner refers to the persons or organizations that are running the ECS and have decision-making power.

FIGURE 1 | Overview transition pathway methodology—initial schedule (Manderscheid et al., 2019).

TABLE 1 | Number of participants of the participatory planing process as initally planned (*Schools, supramunicipal managerial entity, **incl. public, community, network, association, cooperative, foundation, ***not represented in other category) and employed city-team members through the EdiCitNet project.

City	Berlin	Carthage	Letch-worth	Lomé	Sant Feliu de L.	Šempeter pri Gorici
City council	5	3	–	7	11	3
Public institution*	–	–	–	–	4	3
Researchers	2	4	3	5	–	1
SMEs	2	–	1	–	1	7
NGO**	5	–	2	–	18	5
Citizens***	–	6	1	–	1	-
Total number of participants	**14**	**13**	**7**	**12**	**35**	**16**
Employed through EdiCitNet project	**4**	**5**	**3**	**3**	**6**	**3**

- **Online course platform**—A Moodle course for each city was created, guiding the cities through the four steps of the first phase (see Section Participatory Planning Approaches for More Sustainable Cities: Transition Pathway Methodology) of TPM.
- **Online communication tools** such as chats, forums, or tools for videoconferences (mainly, Zoom, Skype, WhatsApp, MS Teams, and Blue Jeans) were offered to the city-teams.
- **Online collaboration tools** (such as Google Docs, Mindmeister, Mural, and MS Teams) were offered for documentation or brainstorming platforms to better integrate all ideas, thoughts, and work within each city-team).
- **Extension of deadlines** was granted project internally and by the funder to enable the city-teams to reschedule their tasks and organize online engagement while taking pressure from city-team coordination.
- **Increased support** by BOKU, project coordinator and supporting hubs for the participatory planning process. Individual strategies were developed to ensure the participation of city-team members in support of the overall project goals. This was also provided through information material and guidelines on the introduced tools and the adapted process, such as a masterplan template including all steps to fulfill the TPM.
- **Splitting up tasks** was introduced to divide the process into smaller units that could be achieved online over a longer period.

After the initial attempt to roll out the same software-based tools in all cities, modifications have been necessary for response to the preferences expressed by each city-team. Besides these mitigation measures provided by the project, some cities also developed their own strategies to adapt the participatory planning process (e.g. holding outdoor meetings or limited participant numbers in workshops).

METHODS FOR DATA COLLECTION AND ANALYSIS

The impacts of COVID-19 on the participatory planning process were investigated in six EdiCitNet cities. After the process transitioned to online platforms, we conducted an analysis of the progress of implementing the TPM in the given timeframe (March to October 2020) in each city. This included data on participation in meetings with city-teams during the study period

TABLE 2 | COVID-19 restrictions.

City	Measures active	Restrictions
Berlin[a]	March—May 2020	• Lockdown including closing of shops, schools, universities, sports, and culture • Meetings with more than 50 people were prohibited • Individual, organizational, and institution-wide restriction measures were stricter
Carthage (and wider Tunisia)[b]	March—May 2020	• Lockdown including all non-essential travel and closing of shops, schools, universities, sports, and culture • Locally adapted measures (e.g., meeting restrictions, night curfews) depending on the infection rates after May
Lomé[c]	March—June 2020	• State of emergency including a night curfew, the launch of a cash transfer program and free water and electricity for the most vulnerable, and support measures to sustain agricultural production and to ensure self-sufficiency[d] • Closure of shops, schools, universities, sports, and culture
Sant Feliu de Llobregat[e]	March—June 2020	• Closure closing of shops, schools, universities, sports, culture, public network centers, and several services • Higher infection rates brought new infection control measures such as night and day curfews.
Sempeter pri Gorici[f]	March—May 2020 and October 2020	• State of emergency prohibiting movement between municipalities and meetings • May till October 2020 traveling, and meeting was allowed in accordance with infection control measures (i.e., wearing of masks, distancing and disinfection rules) • Meetings remained possible under restrictions and with a maximum number of six people

[a] *Christliche Demokratische Union Deutschland (2021)* and *Senatskanzlei Berlin (2021).*
[b] *A3M Global Monitoring GmbH (2020)* and *Auswaertiges Amt (2021).*
[c] *World Health Organization and Republique Togolaise (2020).*
[d] *This safety net is remaining from the recent Ebola pandemic in Lomé and helped to respond faster to COVID-19.*
[e] *Generalitat de Catalunya (2021).*
[f] *Republika Slovenija Gov.si (2021), Sledilnik (2021),* and *TriTim Spletna Agencija (2021).*

(March to October 2020), the internal and external project reporting and documentation, and the activities of the online platforms. The external project reporting consisted of project deliverables [e.g., Deliverable 4.3—Documentation of ECS in Follower Cities (Manderscheid et al., 2020)]. Internal reporting consisted of meeting minutes and monthly presentations in the Executive Board meetings of the project. Additionally, this includes protocols and reflections from meetings between BOKU, the project coordinator, and members of the city-teams tasked with setting up, adapting, and supporting the transition of the participatory planning process to the online format. All measures listed above were first piloted in Berlin—as this fitted with the city-team activities schedule—to understand better the applicability and potential to support the online transition. To adopt the measures to the local needs of all cities, 23 individual city meetings took place between the city-team coordination, the facilitation (BOKU), the respective research hub, and the overall project coordination (**Table 3**). These meetings were essential to design, set up the TPM within EdiCitNet, discuss what mitigation measures to take, and reflect and adapt the measures in place according to the usability (including the question of digital infrastructure and its availability), acceptance, and benefits.

Reflecting on project activities, we also analyzed the state of progress for the online platform providing an overview of the different online and offline activities that each city-team had undertaken to move forward in the planning process. We then identified the planning progress of each city within the given timeframe (i.e., what working steps were completed using which methods). The analysis of the online planning progress and reflections from the coordination meetings provided insights into the challenges experienced during the planning process under COVID-19 restrictions. This data faced limitations regarding participants' challenges on the individual level.

Complementing this analysis, key members of each city-team and connected research hubs were asked to assess the impacts of COVID-19 on the city-teams and the planning process in both an online survey and semi-structured interviews conducted between August and October 2020. While these were sent to all city-team members, one representative per city was appointed by each city-team to complete the online survey resulting in six surveys. Survey respondents were asked to rank from one (low) to five (high; Bortz and Döring, 2006): How strongly COVID-19 affected their city; the city-team members; and the work of the city-team. Survey respondents were also asked to identify in open questions the three most relevant impacts of COVID-19 on their city and the work of their city-team. They were then asked to rank from one (low) to five (high): these impacts of COVID-19; the usefulness of the mitigation measures; and the potential of ECS strategies to serve as potential solutions to negate the COVID-19 impacts identified. In five cities, semi-structured qualitative interviews were conducted (Berlin, Lomé, Letchworth, Šempeter pri Gorici, Sant Feliu de Llobregat). These were transcribed and coded using the constant comparison and saturation approach (Rivas, 2012). The combined data provided insights into how COVID-19 affected the city-teams and the participatory process. Given the number of participants involved in each city-team these data and resulting insights proved representative and valuable to the PAR process as COVID-19 unfolded.

To better understand the following sections of the paper, we point out some of the significant limitations here. The assessment

TABLE 3 | Coordination meetings to transition the participatory planning process to online from March—October 2020 (Letchworth withdrew before any transition of the participatory process to an online format).

City	Berlin	Carthage	Letchworth	Lomé	Sant Feliu de Llobregat	Šempeter pri Gorici
Number of coordination meetings	8	6	–	3	2	4

of COVID-19-related impacts on the city-teams only represents the perception of the city-team coordinators or connected hubs after the first wave of the pandemic. One limitation of our research was that many potential interviewees were not available to participate due to the general uncertainty posed by COVID-19. Working with the city-team coordination provided us with insights into the planning processes and differences between cities but has not offered a deeper analysis of the dynamics within the city-teams. City-team constellations have been changing over time, especially in the COVID-19 crisis. Since the first wave of the pandemic, city-team members and coordinators have been shifting. On the coordination level, there were changes, for instance, due to new institutions taking the lead or partners dropping out, some of our interviewees in 2020 have since then left the project. We were, therefore, unable to collect complete demographics and unravel how gendered and other social dynamics might have impacted the city-teams and the transition process, especially in the long run. Therefore, any analysis of digital equity, based on the interviews and observations, was done at the city-level as a comparative analysis of socio-technical aspects between the cities.

RESULTS—ANALYZING COVID-19 IMPACTS AND CHALLENGES ON PARTICIPATORY PLANNING

This section highlights the challenges for the participatory planning process that emerged due to COVID-19 and the resulting shift to online participation. We present data on COVID-19 impacts as experienced by the city-teams collected during observations, interviews, and the online survey. We then describe each city-team's planning progress during COVID-19 in response to the mitigation measures taken. Finally, from a facilitator's perspective, we reflect on the issue of digital equity as a precondition for such participatory online processes.

Perceived COVID-19 Impacts on the City-Teams

Table 4 illustrates the survey respondents ranking of the severity of COVID-19 on their city-team and the types of impact of COVID-19 on the city-team. The data shows almost all city-teams being (highly) affected, with imposed restrictions such as curfews and quarantine inhibiting economic activities. This limited planning meetings (e.g., regulations to meet at all or limited number of allowed people) and imposed strict hygiene protocols that required, for instance, hand sanitizers and face masks.

The impacts of COVID-19 on the city-teams of Berlin, Šempeter pri Gorici, and Lomé were ranked *moderate,* where these teams faced communication and collaboration challenges affecting the planning progress. In Berlin, for example, city-team members were challenged due to the closure of schools and kindergartens, mentioned by the interviewee as the main reason "because they [the city-team members] suddenly had to deal with completely different things…" (Interview[5]). In Lomé, the *high* ranking of the impact on the city-team members is in line with the strict local restrictions. In Šempeter pri Gorici, the city-team members experienced economic pressure, whereas the continuation of the TPM has only been *mildly* affected. As one interviewee stated, "[the impact of COVID-19] … wasn't so hard because… life in our municipality goes on not very affected." (Interview[6]).

In Sant Feliu de Llobregat, city-team members dropped out, and no meetings were possible to continue TPM as "beginning March to beginning July (2020), it has been COVID-19, 100 percent… [for the city administration]" (Interview[7]). The economy was impacted, resulting in unemployment, and citizens of Sant Feliu de Llobregat demanded alternative food supplies such as local markets and food cooperatives to stay accessible while initially being prohibited under the infection control measures. With the disruption to food distribution, the need to stabilize supply, and the urge to support local producers' alternative food networks were increasingly viewed as multi-beneficial solutions. For Lomé, due to economic pressures, such as job loss or precarious, short-time work, and reduced business operating hours, citizens were challenged to cover their basic needs such as food. Therefore, a state of emergency was announced, immediately activating support measures (**Table 2**).

Experiences With (Online) Mitigation Measures

As discussed in the methods, the mitigation measures adopted by the project included three digital pathways (online course platform, online communication, and online collaboration tools) and three non-digital organizational measures (extension of deadlines, increased support, and splitting up tasks). Overall, the organizational measures were considered immediately helpful in providing the space to take on the online tools. Consequently, all cities applied these management measures offering more time and flexibility to introduce the online measures.

[5]Interview 26.08.2020.
[6]Interview 26.08.2020.
[7]Interview 14.10.2020.

TABLE 4 | Assessment of the severity of COVID-19 impacts (ranked by city coordination or hub during the survey 1 = low; 5 = high) and most relevant COVID-19 impacts on city-team members.

Cities	COVID-19	
	…impact ranking	…reported impacts
Berlin	4	Hindered communication between city-team members; delays in contributions
Carthage	3	Limited physical meetings; delays in decision meeting; loss of efficiency due to uncertainty
Letchworth	5	Suspension of the planning process
Lomé	4	Curfews; no physical meetings; hygiene protocols
Šempeter pri Gorici	4	No large events; negative economic effects on city-team members; digitalization of municipality
Sant Feliu de Llobregat	2	No physical meetings; no new city-team members; exhaustion of staff

In **Table 5**, the survey respondents ranked the digital and non-digital measures to aid and facilitate collaborative planning under COVID-19 restrictions. Most measures were considered very useful, except for the online platform and collaboration tools by Carthage, Sant Feliu de Llobregat, and Šempeter pri Gorici. Independent of the evaluation of the mitigation tools, all cities indicated that they faced challenges in continuing the process online during the crisis.

Online measures and tools were trialed in Berlin but needed additional adaptation along the process in each city individually. It became clear that time to pilot and introduce the transition is a crucial component to accustom to the modes and tools of online collaboration. For instance, as the city-team of Sant Feliu de Llobregat started later with the TPM in general, the team struggled with the online process as "...it [the (online) TPM] was not launched… that was the problem, and they [the city-team] have to learn" (Interview[8]). The piloting in Berlin shows that even under ideal conditions—good infrastructure and a high rate of digital literacy and motivation—the planned transition could not be transferred one-to-one to online collaboration as designed but required individual adaptations. For instance, the Moodle, rather than being a space for active interaction amongst city-team members, was used as a steering platform for the city administrations and research hubs, leading the city-teams in all cities that underwent the transition to online through the different steps of the TPM. As the ranking of the usefulness indicates, all cities (except Šempeter pri Gorici) introduced online communication tools successfully. To ensure this, the frequency and duration of online communications were under constant review and adaptation to meet city-team capacities.

The online collaboration tools were the most challenging mitigation measure applied. In Berlin and Carthage, these were found to be useful, and after an initial introduction explaining usability and functionality, the city-teams used the tools, for instance, for the brainstorming on the social challenges to be tackled in the respective cities. Šempeter pri Gorici explored different means of exchange and interaction by choosing instead to host outdoor meetings. Lomé and Sant Feliu de Llobregat paused the city-team activities until, in Lomé, face-to-face meetings were possible again. Sant Feliu de Llobregat restarted their activities once the so-called "new normal" was established, including, amongst others, hygiene and home-office rules, childcare facilities, and school reopening.

The Progress of Participatory Planning During COVID-19

As seen above, COVID-19 affected the continuation of TPM in each city, putting pressure on citizens and forcing city administrations to focus on crisis management. **Table 6** provides an overview of the planning progress of the city-teams as the most stringent COVID-19 measures were imposed. It illustrates the discrepancy between the planned and actual working steps of the first TPM phase. None of the cities was able to start steps 3 and 4 until September 2020—due to the COVID-related delays, which were rescheduled with the extension provided. We, therefore, focus here on steps 1 and 2. Some cities were unable to finish all tasks in working steps 1 and 2 due to the new modes of working or the general interruption of the activities. This indicates that the impacts of COVID-19 on the TPM could not simply be mitigated by transferring the tasks to online platforms and tools. Furthermore, it became clear that despite the provision of online tools and their indicated usefulness, these tools might not have been used, for instance, because in Lomé due to unstable internet connectivity and low bandwidth.

The cities that faced the most significant delays in the planning progress were Lomé and Sant Feliu de Llobregat. The process had to be put on hold for several months due to severe pressures on the municipalities caused by COVID-19. The less affected city-teams of Berlin and Carthage continued the planning activities with adapted means and frequency of interaction. However, as one interviewee stated:

> "I [city-team coordinator] wrote a lot of e-mails because only Moodle would not have worked… I always communicated in between until the point where we lost the participants... but at some point, my capacities were simply exhausted." (Interview[9]).

[8]Interview 14.10.2020.

[9]Interview 26.08.2020.

TABLE 5 | Evaluation of the usefulness of mitigation measures from 0 (not helpful) to 5 (very helpful).

Cities	Usefulness of mitigation measures for planning process						
	Online course platform	Online communication tools	Online collaboration tools	Extension of deadlines	Increased support	Splitting up tasks	Own measures
Berlin	5	4	4	4	5	5	5
Carthage	1	3	3	4	3	3	4
Lomé	5	4	2	5	5	4	4
Šempeter pri Gorici	4	5	–	2	4	4.5	5
Sant Feliu de Llobregat	0	3	1	5	4	2	5

TABLE 6 | Evaluation planning progress.

Steps	Tasks	Berlin	Carthage	Lomé	Sant Feliu de Llobregat	Šempeter pri Gorici
Step 1: Identification of	Brainstorming social problem	Online	Online	–	–	Offline
social problem and geographical area	Description social problem	Online	Online	–	Offline	Offline
	Discussion problem and area	Online	–	Online	–	Offline
	Finalization	Online	Online	–	–	Offline
Step 2: Identification of	Brainstorming existing ECS	Online	–	–	–	Offline
relevant ECS	Informing about data collection methods	Online	Online	Online	Online	Offline
	Documentation of ECS	Online	Online	–	–	Offline/ Online
	Discussion of relevant ECS	Online	–	–	–	–

Table 6 also shows which participating city-teams conducted different steps online or offline. The transfer to virtual space proved to be the only option for some city-teams to continue the planning process and to provide the opportunity for participation. Within these city-teams, comparable numbers of people were employed through the EdiCitNet project (**Table 1**). With varying sizes of city-teams, this correlates with the higher or lower intensity of support given. The deduction that city-teams with higher shares of employed staff progressed more in the online transition—Šempeter pri Gorici and Letchworth form exceptions in this regard—needs to consider the multicausal and complex circumstances of crisis.

A notable exception is Šempeter pri Gorici, which was able to continue some planning offline in the outdoors while progressing the most in the TPM during this period. This was necessitated by city-team members being unfamiliar with the IT infrastructure in general, with less restrictive infection control measures allowing people to meet outdoors. This was also the case, although to a lesser extent, for Carthage, where the city-team completed some tasks face-to-face, and online tools were used less frequently for collaboration.

Digital Equity—A Facilitators' Reflection

We reflect on and challenge the assumption by Batty et al. (2012) that all citizens have the same playing field when it comes to digital use and interaction. Transitioning to online tools in the diverse group of international cities and city-teams required that the specific local context regarding available infrastructure, and citizen preferences, needs, and interests be taken into consideration. While some of these aspects in different cities and contexts were often thought to be on the same or at a similar level across all city-teams, this led to wrong assumptions regarding the starting points of each city, neglecting the existing (infra-)structures and dynamics of digital inequity between the cities, if not in the city-teams themselves. This section describes our learning process of the cross-sectional issue of digital equity, taking into consideration differential access to hardware, available connectivity and bandwidth, and the quality of time to participate (Solomon, 2002).

The online transition of the TPM was centered around the following questions: how can we move the different participatory steps of TPM to online formats; which tools can support this process? In Lomé, the internet connections—mainly provided

through mobile phones—of city-team members failed, and collaboration with digital tools was impossible as working, for instance, with interactive whiteboards consumes a lot of bandwidth. Therefore, the question of participation was focused on access and connectivity. To address this, the first step for an online transition was to establish a stable internet infrastructure. In Berlin and Carthage, on the other hand, where connectivity was stable and bandwidth good, city-teams were able and engaged with the online process shortly after the outbreak of the pandemic. This suggests that access to hardware and available connectivity may be central (localized) limitations. However, in all cases, we must critically ask who the involved city-team members were.

In Šempeter pri Gorici, as stated by an interviewee, the city-team was on average older and reported having little experience with computers, the internet, and online tools. Thus, the lack of digital expertise proved to be a major challenge. The city-team of Sant Feliu de Llobregat faced the same challenge. As one interviewee stated, city team members were eager to learn how to use these digital tools, but to do so, physical meetings would have been necessary. In terms of digital equity, according to these examples, we saw new sets of marginalized groups arise, varying from people without online access, parents taking over care duties and lacking time to participate, and those who are older and unfamiliar with digital activities and tools. This shows the necessity to put more emphasis on the city-team members' realities in terms of their preferences, needs, and interests as well as skills.

The online transition process was piloted in Berlin. Compared with the other cities, this was piloting for an (under the circumstances) best-case scenario wherein volunteers were committed and had the necessary time and resources to contribute. Even in the relatively successful example of Berlin, one female city-team member in Berlin could not be part of the team anymore as "I just have to take care of the home-schooling of my children now" (Interview[10]). This underlines the challenges for marginalized groups and, at the same time, highlights the importance of digital equity in terms of the quality of time to participate. Here and in other cities, city-team members were seen as representatives of particular stakeholder groups, for example, NGOs, SMEs, or city administrations. This being of higher priority for the process than the equitable representation of society opens the question of structural marginalization regarding the diversity represented in city-teams.

Even though the city-team coordination and hubs co-designed and continuously adapted the online process, there are limitations according to the individual dynamics at the level of the city-team members. Some of them were confronted with taking care of existential needs, such as finding alternative food sources in Sant Feliu de Llobregat or coping with rising unemployment rates in Lomé. Others had to adapt to alternative forms of working and caring. Further, the quality of exchanges and collaboration was limited by reverting to online tools.

Therefore, it became clear that to ensure digital participation to the most inclusive level possible, the transition process needed city-team tailored approaches, including, for instance, meeting frequencies and durations as well as tools and formats to use. These adaptations focused on those city-team members who were able to participate under the circumstances rather than on those who found themselves unable to continue providing their time. This resulted in the latter group being marginalized and leads to the question of how to segregate and integrate these groups again. At the same time, it demonstrated the various levels of depth this online TPM could reach in the different cities—while exchanging *via* digital whiteboards was possible for the city-teams in Berlin or Carthage, others were challenged by any participatory online activity as Šempeter pri Gorici or Lomé.

DISCUSSION—CHALLENGES FOR PAR DURING THE COVID-19 CRISIS

Our experiences in the participatory planning processes have enabled us to identify several challenges for transitioning PAR processes into an online format in the face of the COVID-19 crisis. The challenges reflect different—not only technical—capacities and capabilities to use the selected online tools (see Afzalan et al., 2017).

Capacities for Digital Transition

An essential prerequisite for online tools to function is IT infrastructure. Cities in the Global South are more affected by extreme weather events, which, combined with fragile infrastructures, can severely affect communication (Heeks and Ospina, 2013; Birkmann et al., 2016). As the team in Lomé was highly dependent on face-to-face interactions, this, alongside the instability and quality of broadband, meant that all planning activities were forced to pause. As in Šempeter pri Gorici, not all city-team members had access to IT infrastructure, and fewer restrictions made outside meetings possible and rendered online collaboration obsolete. In all other cities, the digital infrastructure, or lack thereof, was not a limiting factor for the online process.

Moreover, the expertise and experiences with digital tools and methods varied considerably between the different city-teams. Janssen et al. (2013) suggest a new set of competencies is required to interact digitally. The case of Berlin shows the success of an online participation process being strongly dependent on the digital literacy and openness of both the participants (city-team) and the facilitator (city-team coordinator).

Even though studies show the potential of older participants in digital processes (Bergström, 2017; Reuter et al., 2021), this was not the case for Šempeter pri Gorici, with a higher average age of the city-team members who had little experience with digital formats. However, these challenges resulted in the team calling on other capacities, seen in the adoption of different ways of working according to permitted outdoor meetings that enabled their continued participation as a team.

The online tools offered were overall rated as "useful." Thus, in the sense of what function a tool can provide for a participant or an interaction, tool capacity was not the most significant challenge in our case. While a tool can serve the anticipated

[10]Interview 26.08.2020.

functionality, it nonetheless needs to be used. However, our findings showed that different tools were used by different city-teams. The reasons for that vary from the norms and regulations of various institutions (for instance, restricting the use of specific country-based servers) to—in our case, more relevant—challenges related to technical, organizational, and community capacity and preferences.

Capabilities for Organizational Adaption

To support a participatory process, hurdles for participants' contributions need to be minimized. However, as found in our study as well as suggested by other scholars (Janssen et al., 2013), the coordination, preparation, and support of such an online participatory process require additional workload on the administrational side. Initially, all city-team coordinators and research hubs were part of the setup of the online transition. The transfer of a face-to-face process to online, resulting in a multi-step process, demands intensive preparation in aligning the new tools and the process requirements with the stakeholders' needs and capacities. This, in all cities, proved challenging, including extensive preparatory efforts to achieve all desired outcomes.

Although COVID-19 caused a decrease in community capacity in most cities regarding the participatory process, Carthage, Sant Feliu de Llobregat, and Šempeter pri Gorici witnessed an overall increased interest in both ECS in general and its embeddedness in the communities. In Carthage, residents' attention increased regarding the potential of ECS to address urban (social) problems, for instance, urban agriculture on family-owned archeological sites of world heritage protection that support local food supply. This helps neighbors and citizens reconnect to food and offers job alternatives in economically pressing times, but it also inspires others to engage in ECS practically or in its planning. Meanwhile, in Sant Feliu de Llobregat, citizens were requesting food supply alternatives (e.g., food coops or farmers' markets) to reopen, indicating a valuing and strengthening of local alternative food networks and creating localized practical solutions to answer the global crisis. The citizens of Šempeter pri Gorici demonstrated a strong motivation to find new leisure activities increasing home gardening activities, improving mental and physical wellbeing. Even though these examples might draw city-team members away from the planning process, they strengthen the cause of ECS and its inclusion in the urban environment. A general assumption might be that the higher the share of volunteers in such a process, the more volatile its progress in times of crisis (Cameron, 2021). As described by Ejrnæs and Harrebye (2021), we witnessed that the crisis has the potential to activate and paralyze engagement. This is a phenomenon that has been studied in other times of (economic) crisis evolving from initial response to a permanent activity, for instance, in Nigeria during COVID-19 (Gbadegesin and Olajiire-Ajayi, 2020), Barcelona during the financial crisis, and post-crisis 2007-2008 (Calvet-Mir and March, 2019) or famously the cases of Detroit (Colasanti et al., 2012) and Havana (Novo and Murphy, 2000). Citizens becoming agents of change, together with the previously described increase in city administrations' attention to the COVID-19 crisis, can open a critical window of opportunity for systemic transformation of the (urban) food system while addressing interconnected social challenges (El Bilali, 2019; Zhongming et al., 2020).

Precarity to Disruption

The city-teams, being based on the voluntary engagement of citizens, faced many challenges, as the economic and social impacts of COVID-19 led to a shift of priorities for some members, such as new responsibilities for parents to home-school, as seen in Berlin. Even though not assessed in this research, this example points out the importance of gender equality in care work and its commodification, especially in volunteerism. Care responsibilities and food provision or economic security have also shifted the focus from voluntary participation. These dynamics became most apparent in Sant Feliu de Llobregat and Lomé. Various forms of safety nets have been established in different cities to cushion the worst consequences, such as the immediately proclaimed state of emergency in Lomé. As the safety net in Lomé aimed at the poorest of society, other states introduced, for instance, short-time work, paying a percentage of the former salary. Safety nets like this benefit the higher-income earners, much less NGO employees, and not at all volunteers.

At the city-team level, many members were overworked due to the additional workload of transferring to online formats and the pressures and uncertainty of COVID-19. Following the findings of this research, it can be argued that city-teams with higher shares of staff employed through the EdiCitNet project (**Table 1**)—equaling increased support—had better chances to progress in the online process. The results support this with two exceptions—Letchworth, with the highest proportion of EdiCitNet, employed staff, withdrawing, and Šempeter pri Gorici, with a low share and one of the most advanced progresses. Nevertheless, we point out that such an online participation process in times of crisis is complex and multicausal. It can only be supported and not singularly carried by the employed city-team members. This feeds the question of which city-teams and potential members were structurally disadvantaged through relatively less support while having comparable numbers of employed city-team members but higher shares of volunteers.

To cope with this, we have seen additional professionals being employed in Berlin, Sant Feliu de Llobregat, and Carthage in the aftermath of this research to welcome new volunteers and assist the guidance of and within the city-teams. Additionally, in some cases, for example, in Berlin, many volunteers are employed in the government where staff can address EdiCitNet tasks as part of their duties. All this helped to cope with the workload, and the continuity yet raised other questions of equal representation across the community, available resources of volunteers such as time or energy to contribute to edible activities, and equal funding schemes (Submitted manuscript Edwards et al., 2018).[11]

[11]Submitted manuscript: Edwards et al. (under revision). Terms of Engagement: Mobilizing Citizens in Edible Nature-based Solutions.

IN CONCLUSION—LESSONS LEARNED FOR PAR FROM THE COVID-19 CRISIS

In this paper, we set out to assess the transition process of a participatory planning process to online formats, its potential, and hurdles while facing the COVID-19 pandemic. We have seen that this transition goes beyond the matter of technical infrastructure, knowledge, and skills but incorporates various social aspects, including the ones of equity and representation of stakeholders. The cases of Sant Feliu de Llobregat and Šempeter pri Gorici taught us how ECS stabilize local communities and food systems. We have seen the resourcefulness of communities in times of crisis adapting in digital ways, for instance, in Berlin and Carthage, and non-digital ones as in Šempeter pri Gorici. At the same time, the risk of overloading and losing participants underscores the importance of a flexible planning process like TPM, even more within a closed project structure.

Adapting to the changing circumstances through COVID-19, non-digital rather organizational mitigation measures (extending deadlines, increasing support, and/or splitting up tasks) proved to be the most effective requirement to continue planning with the online formats offered. These measures take pressure from vulnerable, unstable systems and their stakeholders, such as cities and their citizens, provide time to reorient and find a so-called "new normal."

Regarding the digital measures, the discussion highlights the skill-sets and capacities of the participants as one crucial consideration associated with digital equity concerns. This shows that the switch to online tools needs to consider the specific situation of the stakeholders within a participatory process and is not only a question of digital literacy or motivation. Consequently, adding to the challenge of maintaining (voluntary) stakeholder involvement, the prerequisites for digital participation (access, connectivity, and quality of time to participate) carry the risk of excluding stakeholders independent of their will to engage. Therefore, discussing who can participate in a (digital) process, under which circumstances, and including which support measures is vital in an early stage of a transition. We conclude that digital equity is relevant on many levels implying a variety of impacts on the participatory process and means—from the loss of participants to unbalanced representation(s)—and methods of participation need continuous evaluation and adaptation.

In contrast to these challenges, the examples of Carthage, Sant Feliu de Llobregat, and Šempeter pri Gorici show the mitigating potential of ECS and its potential to increase community capacity. In part, these learnings can help foster the robustness of participatory online processes, including effective communication and pioneering activities.

Reviewing the framework of Afzalan et al. (2017) indicates a lack of social indicators enabling or disabling a transition to online. In our case, it proved, to a certain extent, helpful in identifying obstacles during times of crisis, albeit only on a technical level. According to the experiences from the EdiCitNet project, we argue that such a framework can be enhanced to incorporate and anticipate the social effects of a crisis to ensure that online participatory processes are more robust and take into consideration the equity of access and participation from the outset. The skill is to see the different aspects of the framework contextualized to the local circumstances and adapted to the participants' needs, including a responsiveness to change and crisis. It is not enough to offer online tools and expect volunteers to use them as there is no one-fits-all solution. To ensure equity, access, and participation, city-team members, city-team coordinators, and researchers need to co-develop the process' frame, including the suitable modes of interaction, rhythms, and durations for their teams. Most important, however, is to support the city-team members, not only with digital infrastructure but also by tailoring interaction opportunities to their needs and capabilities and balancing the changing group dynamics that new members may bring. This overlaps with other participatory research frameworks responding to the challenges of COVID-19, such as "co-research" by Paganini and Stöber (2021), including participants in the setup, selection, and implementation of tools and modes of collaboration. Within this framework, the co-generation of the challenges, solutions, and objectives with participating teams continues the PAR ethics. Incorporating these insights creates an opportunity to improve contingency for more resilient strategies in PAR. In three out of six cities, this was demonstrated to have led to teams' adaptations to participation and strategic aims as their circumstances changed.

Within these dynamic project structures, the question of whose voices are heard is an issue of continuous reflection within the TPM, including the project team and the city-team members themselves. Organizational measures, in our case, enabled city-team members to continue as, for instance, the extension of deadlines in the light of digital equity provided time for city-team members to learn the necessary tools and get used to the new formats of interaction. The acknowledgment and funding of these necessary—sometimes time- and effort-intensive—steps to enact digital equity may, however, quickly meet the structural project boundaries. These steps are often perceived as indirectly contributing to project outcomes and easily overextending deadlines. In this research, we have seen the importance to embed digital equity along the lines of participation and ownership. To do so, it needs technical infrastructure and skills to use the tools offered and open project structures that allow for organizational adaptations, but first and foremost, it needs locally adapted support mechanisms for volunteers to facilitate and ensure equity, access, and participation.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

AUTHOR CONTRIBUTIONS

MM and VF: conceptualization, methodology, validation, data curation, formal analysis, visualization, and writing—original draft preparation. MM: investigation and project administration. FE, BF, and IS: writing—review and editing. BF and FE: supervision. All authors have read and agreed to the published version of the manuscript.

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Learning Agroecology Online During COVID-19

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Since March 2020, the COVID-19 pandemic propelled the "stay-at-home" policy worldwide under public health uncertainty, resulting in increased individualization, as well as an increased reliance or dependency on digital communication technology. Based on a review of existing literature alongside a reflection on personal fieldwork experiences, we aim to: (1) describe major elements of agroecological pedagogy, (2) explore adaptation pathways to combine digitalization and participatory action-learning, and (3) briefly discuss opportunities and challenges for agroecologists beyond COVID-19. Agroecological pedagogy is deeply embedded in the *praxis*, the *scientific* knowledge and ways of knowing (academic or not), and in the politics and agency of food *movements.* In line with Freire's liberation pedagogy, *seeing* what already exists (e.g., in: ecosystems, home-gardens, fields, farms, and watersheds) through participation and volunteering. Alongside a critical *analysis* to explain and explore certain phenomena, causes and consequences will likely result in the *act* leading to the implementation of transformative practices and novel designs that improve the state of any situation being addressed. Participatory action research/learning methods are strategic in agroecological pedagogy. Overall, the lockdown period led to increased societal digitalization of human interactions. During lockdown, however, the implementation of strategies for remote agroecology participatory action-learning were hampered, but not vanquished. Key changes to agroecology education projects "before" and "during" lockdown include an increased reliance on digital and remote strategies. Creative adaptations in the virtual classrooms were designed to nurture, deepen, and foster alternatives in favor of diverse knowledges and ways of knowing for food system transformations.

Keywords: agroecological pedagogy, digitalization, remote education, distance learning, self-isolation, actionable knowledge, decolonial agronomy

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INTRODUCTION

Since March 2020, the COVID-19 pandemic propelled the "stay-at-home" policy worldwide. Consequently, most shops, restaurants, schools, and universities closed to reduce the spread of the virus. Online work meetings became the norm, and remote study and teaching methods were inevitably adopted. However, online learning/teaching is not the same as in person. The delivery of usually in-person practice-based trainings such as those related to agriculture, agronomy, animal sciences, soil ecology, and agroecology were hampered due to the physical distancing restrictions. Although many of the theoretical elements and foundational readings can be transferred digitally, the sudden shift from practice-based to online training caused a disruption in the research

and education systems worldwide. Moreover, implementation of remote education strategies was challenging since faculty, administrative personnel, and students often lacked training on how to properly conduct and respond to online teaching. Lockdown conditions and public health uncertainty at the beginning of the declared emergency due to the COVID-19 pandemic increased already-existing social inequalities (Timmermann, 2020). This translated into increased individualization, as well as an increased reliance or dependency on digital communication technology over the lockdown period. Traditional knowledge sharing and the diversity of ways of knowledge co-creation were certainly disrupted.

While everybody was "at home", the lockdown conditions were not the same for all (Altieri and Nicholls, 2020; Gordon, 2020; Ramos-Gerena et al., 2020). On social media (i.e., Facebook, Twitter) it was indeed common to encounter phrases such as "*We're all in this together*" while others stated, "*We're all on the same sea but not on the same boats*", illustrating the complexity and the disparity between personal situations. Access to stable internet connections or to calm study-areas was nearly impossible for a group of university students, most of them in the early 20's and interested in the ways of agroecological food production. Inequalities were indeed exacerbated, although some creative opportunities emerged from this global public health crisis and the abrupt shift to a different mode of knowledge-sharing. The challenge for agroecology educators was particularly important since learning agroecology is rooted in theory, fieldwork, peer-to-peer exchanges, and *in situ* implementation. Based on a review of existing literature alongside personal reflections while conducting fieldwork and/or facilitating learning processes[1], we aim to:

(1) describe major elements of agroecological pedagogy,
(2) explore adaptation pathways to combine digitalization and participatory action-learning, and
(3) discuss opportunities and challenges for agroecologists beyond COVID-19.

We expect that our analysis will catalyze further discussions and innovations on how to effectively support and implement experiential and reflective participatory online action-learning strategies that can positively stimulate and transform higher education through modules that would "normally" require on-site field visits and outings.

[1]Based on four online facilitation processes: (1) an undergraduate-level training in Agroecology (TPAG 3019, 3020) and Agroforestry (TPAG 3017, 3018) within the Sustainable Agriculture BA program at the University of Puerto Rico at Utuado (UPRU), Utuado, Puerto Rico [GF in 2019-2020; AS in 2020-2021]; (2) an adult certification within the El Josco Bravo Agroecology School at Utuado, Puerto Rico (GF in 2020); (3) a youth summer training in Plant Sciences, offered by the Nature Team at Scout Camp Guajataka, Quebradillas, Puerto Rico (GF in 2020); and (4) a graduate-level module in Stabilisation Agriculture (7058 EXQ) within the Agroecology, Water and Food Sovereignty MSc at Coventry University, Coventry, England, UK (GF in 2020).

AGROECOLOGICAL PEDAGOGY

Becoming an "Agroecologist" at the University

Amid concomitant environmental and social crises, food production is increasingly globalized and industrialized, and, since the Green Revolution (late 1950s through early 1970s), numerous are the examples of failed technological packages for cultivation which relied on external inputs, an over-simplification of farming systems, and a concentration of food chains in the hands of few commercial intermediaries (Holt-Giménez, 2009). In this context, the agroecological approach to food and farming has gained worldwide recognition as an important vehicle to counter climate variability, to by-pass external market dependencies, and to transform social injustices into a situation of social equity, particularly in times of COVID-19 and other pandemics (Altieri and Nicholls, 2020).

Agroecology is a key building block for food sovereignty (Nyéléni, 2007). The core design principles of agroecology include diversity, recycling, synergy, interactions, and efficiency (Nicholls et al., 2017). These synthesized principles are based on farmer practices, also known as farmer innovations, and are useful to characterize and re-design sustainable and resilient food and farming systems as whole, dynamic, and complex systems. Learning the skills to become an agroecologist requires both theory and hands-on experience. As a transdisciplinary scientific field, agroecologists have a wide variety of backgrounds, from agronomical sciences to social and political approaches, to soils, biodiversity, food and farming systems. The goal of any agricultural producer is certainly to produce plant and animal products of economic and nutritional value. The goal of an agroecologist is to support transformation of food and farming systems, so that these can simultaneously benefit and nurture people, communities, and nature. Agroecology, as a systemic approach to food and farming systems, supports farmers, technicians, and researchers to take advantage of the complexities of food and farming systems and optimize them with ecological principles (Méndez et al., 2013). As "agents of change", agroecologists often mobilize participatory action-research and action-learning tools that can support the transformation of food and farming systems. High self-reliance and low external-input dependency, at the various scales of the food systems (i.e., plot, farm, landscape, and territory), often characterize desired outcomes from agroecological training activities and implementation initiatives.

Based on insights from students having completed the Agroecology MSc program at the Norwegian University of Life Sciences (NMBU), the process of training as an agroecologist seems strongly rooted in experiential and reflective learning (Francis et al., 2016), through the stimulation to acquire key agroecological competencies and skills such as:

a. observation,
b. reflection,
c. participation/immersion,
d. dialoguing, and
e. visioning.

Observation is central to understand the world as it is, reinforcing objectivity and attention to detail. *Reflection* allows to critically analyze, assess, and evaluate the outcomes of given processes, across local and international scales. *Participation/immersion* is key to stimulate cooperative group dynamics that are horizontal (non-hierarchical) and that foster conviviality and community-building, through volunteer action, full immersion in farm activities, and participant observation. *Dialoguing* is a skill that will be beneficial to share ideas, knowledge and wisdoms through effective communication that encourages receptivity, sensitivity, and empathy. *Visioning* refers to the capacity of dreaming, whether individually or collectively, of planning, of deciding and of implementing it after having assessed potentials, limitations, and risks. "*Learning by doing!*", as the old saying goes, is a good way to start developing key agroecological competencies and skills.

Facilitating Diverse Ways of Knowing in Agroecology

Agroecology as a more holistic perspective than Agronomy inherits from both the natural and the social sciences, with the concept of "systems thinking" as a base (Tittonell, 2013). In the past 30 years, the term has evolved from the mere observation of agricultural systems at the plot level with an ecological standpoint toward participatory action-oriented research, and an explicit acknowledgment of the diversity of knowledges, perspectives, and landscapes throughout food and agricultural systems (science, practice, and social movements). Thus, facilitating ways to learn the practices, principles, scales, methods, and acquiring the skills and competencies required to accompany and transform the ways of producing and consuming food globally, requires local territorial anchorage (Dogliotti et al., 2014).

In the Americas, farmer-to-farmer, or peasant-to-peasant, as a knowledge-sharing methodology, was effective to expand agroecological *praxis* and *ethos* across farmer groups, often in collaboration with local technicians and researchers (Altieri and Toledo, 2011). For example, the impact of participatory farmer-to-farmer methods on the expansion and intensification of agroecology knowledge has been well documented across Cuba (Rosset et al., 2011), Mexico (Toledo and Barrera-Bassols, 2017), Uruguay (Dogliotti et al., 2014), and other regions (McCune and Sánchez, 2019). The IALAs (*Institutos de Agroecología Latinoamericanos*) and the *Escola Campoense* of MST across several countries of the Caribbean, Central and Southern America, have been propelled by the popular education pedagogy of Paulo Freire and the need for political organization in rural and marginal areas (Rosset et al., 2020).

Agroecological pedagogy is indeed, deeply embedded in the *praxis*, the *scientific* knowledge and ways of knowing, academic or not, and in the politics and agency of food *movements* (Wezel et al., 2009). It is transdisciplinary in nature and requires strong bases in a variety of fields, both in the natural sciences (agronomy, landscape ecology, entomology, biology, and chemistry), and in the social sciences (economics, anthropology, political sciences, and philosophy). Strategically, the movement, science and practice components of agroecology become actionable through (1) volunteering, (2) theory, and (3) implementation. These components also loosely resemble Paolo Freire's experiential and reflective learning processes: See-Analyze-Act (Freire, 1968). First, *seeing* what already exists (e.g., in ecosystems, home-gardens, fields, farms, and watersheds) can be achieved through participation, volunteering, and knowledge sharing. Alongside a critical *analysis* to explain and explore phenomena, causes and consequences will likely enable the *act* leading to the implementation of transformative practices and novel designs that improve the state of any situation being addressed. Thus, participatory action research/learning methods are strategic in agroecological pedagogy. In this sense, transformative agroecology education can be reinforced through critical toolkits of participatory action-research and action-learning methodologies, as used by social movements to advance food sovereignty, based on four key characteristics or qualities (Anderson et al., 2019):

- horizontalism,
- *diálogo de saberes* (wisdom dialogues, peer-to-peer),
- combining practical and political knowledge, and
- building social movement networks.

According to Pimbert (2006), knowledge transformation could/should lead to: (1) Democratization of science and technology research, (2) De-institutionalization of research for autonomous learning and action, and (3) Enabling contexts for social learning and action. In **Table 1**, we propose an introductory agroecology curriculum that showcases key topics for agroecological training and integrates Freire's pedagogy (see, analyze, and act) with the main dimensions of agroecology (movement, science, and practice). Key topics can be facilitated in any order provided that the training stimulates experiential and reflective learning outcomes. While the implementation of such a program is relatively straight-forward when in-person, the sudden shift from practice-based to digital ways of learning and communication represented a major challenge. In this case, creative adaptations of PAR methods to remote learning were indeed invaluable to both the learning process and the co-creation of module content for territorial anchorage, especially remotely. In the next sections, we explore adaptation pathways to digitalization and online learning of agroecology during COVID-19 lockdown, based on the authors' facilitation experience between March 2020 and January 2022.

LEARNING AGROECOLOGY IN TIMES OF COVID-19

Digitalization and Remote Ways of Knowing in Agroecology

Due to the COVID-19 lockdown restrictions to self-isolate, the agroecology participatory action-learning projects that were active before March 2020 needed to suddenly shift from practice-based to online training methods and/or hybrid modes (combining face-to-face and remote teaching). For example, assessing soil quality requires touching the soil, identifying

TABLE 1 | A proposal of methodologies and course contents for an online (or hybrid) introductory agroecology curriculum that integrates Liberation Pedagogy by Paolo Freire and the dimensions of agroecology: movement, science, and practice.

Dimension	Movement	Science	Practice
Seeing	Food sovereignty movements Local ecological knowledge	Healthy diets Global family farms Food sovereignty Ancestral practices	Cooking your harvest Co-Innovation/PAR Having your garden
Analyzing	Farm labor Collective action Policies and institutions	Agroecology principles Soil quality Plant/animal health Food sovereignty values	Composting Plant biology/physiology Intercropping Crop production Seed conservation Animal husbandry
Acting	Culture and traditions Farmer aspirations Co-Innovation	Indicator-based agroecological performance assessments Farm planning tools Computer and participatory modeling	Systems Design Participatory-Action Research (PAR) and learning Extension services Communication Experimentation

the flowers and observing the biophysical landscape features. Assessing plant health entails evaluating the crop condition and dialoguing with farmers. However, in-person dynamics are not equivalent to remote strategies. The challenge in times of COVID-19 to fostering acts of cognition, otherwise said, of generating actionable knowledge in the field of agroecology, whether synchronic or asynchronous, was indeed significant.

Fortunately, several pathways to obtain information that improve the quality of knowledge dialogues remotely are available. For example, video conferences and online presentations were held in a variety of platforms including Zoom, Skype, Microsoft Teams, Google Meet, YouTube, amongst others. In the case of specific online learning and folder sharing platforms for schools and universities, Blackboard, Moodle, Canvas, and Google Classroom excelled. In the case of group discussions, the chats available through mobile platforms such as e-mails, WhatsApp, Signal and Messenger were also employed as tools to increase information availability and communication throughout higher education, school curricula, and community-led workshops.

During lockdown, the implementation of strategies for remote agroecology participatory action-learning were hampered, but not vanquished. Stable internet access or availability of adequate communication hardware was challenging for some, but strategies to overcome were creatively found, especially with the extent of possibilities that smartphone mobiles provide. This said, frustration and un-easiness with remote communication technologies for agroecology education were not uncommon amongst trainers and trainees. One of the PAR methods that was very successful for students to simultaneously learn the process and the content was the semi-structured dialogue with local farmers and animal breeders. The students were able to call over the phone (or any other digital communication platform) to have an open dialogue about their farm activity and other related subjects. Reporting back to the classroom with a few images or a quote often provoked lively and timely conversations about the study-cases amongst the students. Other PAR methods such as landscape and farm management characterizations, social network analyses and SWOTs could all feature in the process of participatory action-learning. More importantly, each student was prompted to develop a simple food production project at home. This catalyzed a myriad of innovations that, from a research perspective, build up databases, and from a learning experience, knowledge is co-produced and shared amongst peers (see **Figure 1**).

The face-to-face *theory* study sessions were converted into either live streaming or recorded presentations made accessible through various online platforms, to facilitate asynchronous facilitation. To stimulate group discussion, a selection of essential readings and key recorded presentations, provided the members of the learning circle time to do their "home-work", in groups or individually. The lockdown period also fostered opportunities to share dialogue spaces directly with regional and international actors, through remote video conferencing tools. The possibility of inviting speakers to the virtual classroom was important to map-out local and over-seas experiences. In short, the lockdown period came with an opportunity to explore cases across a variety of latitudes without necessarily moving from home.

The pandemic created space for developing virtual farm visits, as well. For example, novel tools such as virtual reality (VR) have made accessible "digital transportation" for self-isolated persons to, not only explore world-famous museums,[2,3] but also to "visit" farms worldwide[4] as well as locally. The historical moment fostered unprecedented availability and accessibility to

[2]Facing Challenge with Resilience: How Museums are Responding During COVID-19 (2020): https://www.imls.gov/blog/2020/04/facing-challenge-resilience-how-museums-are-responding-during-covid-19.

[3]Museums worldwide react to COVID lockdown by offering virtual tours (by Riccardo Biancchini, 2021): https://www.inexhibit.com/marker/museums-worldwide-react-to-covid-lockdown-by-offering-virtual-visits/.

[4]*Farm Lighthouse Project*, led by Dr. Rogier Schulte and Dr. Vivian Valencia at the Farming Systems Ecology Group, Wageningen University, The Netherlands:

TABLE 2 | Changes and opportunities to participatory action-learning strategies before and during lockdown and self-isolation due to COVID-19, based on authors' fieldwork and facilitation experience.

Action-learning	Before lockdown	During lockdown
Seeing • Volunteer • Describe • Diagnose • Participation • Observation • Immersion	Field visits to neighboring farms, alongside trainers. Support to local farming projects by periodical visits undertaking farm and labor activities as needed.	Not possible, physically. Opportunity for video call and remote interviews with local and international farmers/projects, including "virtual farm tours", QandAs, and group discussion.
Analyze • Theorize • Explain • Explore • Reflection	Presentations, Key readings, Invited speakers and classroom discussion	Remote presentations, videos, readings. Possibility to include local and international speakers, with Q and As and groups discussion
Act • Implement • Plan • Design • Visioning • Dialoguing	On-site management of low-external input cropping system. Collective work, in collaboration with trainers.	At-home implementation of theoretical skills, including maintenance and/or creation of home-gardens and food recipes with local products, by taking into account design principles and individual resources, opportunities, and limitations (i.e., urban, rural, and coastal).

international webinars alongside a wider understanding of locally anchored food producers. Other than a considerable risk of screen over-saturation and reduced physical mobility, the added value of remote platforms lies in its capacity to share considerable volumes of information "just a click away".

Innovations on Remote Volunteering and Implementation

Overall, the lockdown period led to an increased dependence on digital tools for human interactions that can lead to over-reliance on communication technology when people work at home, using videos, online resources, social media, for remote learning, networking, and working (Timmermann, 2020). The need to minimize physical contact in times of COVID-19 opened space to increase at-home food production, particularly in the case of agroecology learning modules that discussed and implemented the processes for low external input food production. Key changes to agroecology education projects "before" and "during" lockdown include an increased reliance on digital and remote strategies (**Table 2**). Creative adaptations of participatory action in the virtual classrooms were designed to nurture, deepen, and foster alternatives in favor of diverse knowledges and ways of knowing for food system transformations (see **Figure 1**).

Field visits and on-farm immersion experiences were restricted yet opportunities to interact with farmers or food movements was possible through video calling apps. For example, having a "virtual farm tour" with questions and answers, as well as collective group discussions were relatively successful, and this, despite long-distance frontiers and time-zone differences. Participating in farm activities as volunteers was, however, limited to individuals visiting farms and following all COVID prevention recommendations. The need to observe sanitary measures at all times (in the case of COVID-19: to sanitize hands frequently, to wear face covering in closed spaces, and to maintain physical distancing), allowed individuals to eventually co-create hybrid learning strategies (i.e., combination of remote and in-person learning strategies).

The *volunteering* component was the most challenging for facilitators to propose remote experiential learning on-farm. In the case of face-to-face practical agroecology design modules, the training would be accompanied by mentorship from a more experienced trainer in elements such as soil quality, plant health, plant reproduction, and crop harvesting on-site. Because COVID-19 restrictions did not allow collective gatherings, the students were encouraged to assess the opportunities and limitations of their surroundings, as well as their existing resources for food production.

Maintaining a home-garden, a family farm and/or creating a new space to increase at-home food production was a central commitment to achieve learning goals throughout the modules. This presented itself as an opportunity to, despite lockdown, multiply an array of well-informed actors in home and community gardens amongst the different learning spaces. Once again, not everybody had "all" adequate resources at their disposal, which is indicative of underlying social differences (e.g., capital, space, time, and labor), yet key competencies of empathy and risk mitigation were fostered during self-isolation across the globe. Student immersion in the food production processes through individual implementation of agroecology and agroforestry farm design frameworks at-home were important outcomes of remote action-learning at each of the students' households, especially when sharing their experience with the rest of the group. The great variety of scenarios fostered by students working from home presented a suite of different agroecological

https://www.wur.nl/en/Research-Results/Chair-groups/Plant-Sciences/Farming-Systems-Ecology-Group/Lighthouse-project.ht.

FIGURE 1 | Creation of new food production areas at home during COVID-19: photo examples from student assignments in the "agroecology in practice" module at the University of Puerto Rico at Utuado, May 2020. **(A)** Rural planting beds in terraces (Corozal, Puerto Rico). **(B)** Urban home-garden in planting pots (Toa Baja, Puerto Rico). **(C)** Implementation of soil erosion-mitigation practices on steep terrain (Utuado, Puerto Rico). **(D)** Re-designing urban areas and implementing agroecological urbanism (Caguas, Puerto Rico). **(E)** Recycling egg boxes as germination plates (Cidra, Puerto Rico). **(F)** Exploring the ethnobotany of native agricultural diversity (San Juan, Puerto Rico). [Reproduced with authors' permissions].

systems to all class participants by the presentations from peer students.

Remaining an "Agroecologist" Beyond COVID-19

In the context where trainers and trainees missed out on the opportunity for collective in-person activities, the implementation of remote learning modules and independent application of agroecological principles fostered a unique learning situation that supported training activities to become an agroecologist. By observing, reflecting, and sharing different dimensions of knowledge, agroecologists develop capacities in empathy and dialogue that are essential to contribute as "agents of change" (Reynolds et al., 2014; Francis et al., 2016). Horizontal (non-hierarchical) and participatory methodologies with students, farmers, farm workers, and field technicians often get inspiration in participatory action-research and action-learning toolkits. An outcome to consider from agroecological training, is the change of attitude in the trainee that embraces diversity and inclusion rather than homogeneity and exclusion (Geilfus, 2009). Additionally, much can be learned through dialogue with and by becoming practitioners and informed consumers. Indeed, many of the participatory action-research methodologies that are implemented by agroecologists in the field are adaptations of the "farmer-to-farmer" strategies (Rosset et al., 2011). For example, on-farm experimentation was applied by students by considering one change at a time in their home-garden or farm, and at small scales before extending to larger areas. Creative adaptations of the participatory "farmer-to-farmer" tools were great additions to university modules through combinations of synchronous and asynchronous activities.

There are numerous experiences in agroecological higher education across the globe, ranging from formal university degrees to top-down workshops and bottom-up community-driven strategies. MSc programs and other learning processes in agroecology and food sovereignty are well-documented for Europe (Francis et al., 2016; Wezel et al., 2018), the

BOX 1 | Non-exhaustive list of higher education agroecology programs in Europe, Latin America, and North America.

Europe

- Aarhus University (Denmark): Agroecology Bachelor, Master, and PhD programs, https://agro.au.dk/en/education/bachelor-and-master-degree-programmes/
- Coventry University (England, UK): Agroecology, Water and Food Sovereignty MSc and PhD programs, https://www.coventry.ac.uk/course-structure/pg/2021-22/eec/agroecology-water-and-food-sovereignty-msc/
- ISARA-Lyon: MSc in Agroecology, https://isara.fr/en/how-to-apply/international-msc/msc-in-agroeology/
- Norwegian University of Life Sciences (NMBU, Norway): Master of Agroecology, https://www.nmbu.no/en/studies/study-options/master/master_of_science_in_agroecology/programme-structure
- Swedish University of Agricultural Sciences (SLU, Sweden): Agroecology Master's program, https://www.slu.se/en/education/programmes-courses/masters-programmes/agroecology/
- Universidad de Internacional de Andalucía (UNIA, Spain): Inter-University Master in Agroecology focused on Rural Sustainability, https://www.unia.es/estudiantes/actividades-academicas/todos-los-cursos/item/master-oficial-en-agroecologia-un-enfoque-para-la-sustentabilidad-rural-2
- Università di Scienze Gastronomiche di Pollenzo (UNISG, Italy): Master in Agroecology and Food Sovereignty, https://www.unisg.it/en/programs-admissions/master-agroecology-food-sovereignty/
- University of Natural Resources and Life Sciences, Vienna (BOKU, Austria): Master Organic Agricultural Systems and Agroecology, https://boku.ac.at/en/studienservices/studien/master-en/uh066500?selectedTypes=group
- Wageningen University (WUR, The Netherlands): Organic Agriculture MSc with focus on Agroecology or Sustainable Food Systems and PhD programs in Farming Systems Ecology, https://www.wur.nl/en/Education-Programmes/master/MSc-programmes/MSc-Organic-Agriculture/Specialisations-of-Organic-Agriculture.htm
- WUR-NMBU-UNISG-ISARA (European Master): Agroecology double degrees, https://www.wur.nl/en/Education-Programmes/master/MSc-programmes/Msc-Agroecology-European-Master.htm

Latin America

- ECOSUR – Unidad San Cristóbal de las Casas (Mexico): Máster en Agroecología, https://posgrado.ecosur.mx/posgrado/maestrias/maestria-en-agroecologia/
- Tropical Agricultural Research and Higher Education Centre (CATIE, Costa Rica): International Master's and Phd programmes in Agroforestry and Sustainable Agriculture, https://www.catie.ac.cr/en/education-programs/posgrado/masters/academic-masters
- Universidad Nacional de Colombia – Palmira (UNAL, Colombia): Agroecology PhD programme, https://www.palmira.unal.edu.co/DoctAgroecologia/

North America

- University of California – Santa Cruz (UC Santa Cruz, USA): Undergraduate Agroecology major and Environmental Studies PhD programs, https://casfs.ucsc.edu/education/undergraduate.html
- University of Nebraska – Lincoln (USA): Agronomy/Horticulture MS and PhD programs with Agroecology minor, https://www.unl.edu/gradstudies/academics/programs?interest_area=Allandfield_location_tid=Allandfield_department_tid=61andterm_node_tid_depth=Allandcombine=andsearch=Search
- University of Vermont (UVM): BS Agroecology, https://www.uvm.edu/agroecology/learning/uvm-courses/
- University of Wisconsin – Madison (UW Madison, USA): Agroecology M.S., https://agroecology.wisc.edu/

United States (Gliessman et al., 2017), and Latin America (Rosset et al., 2020). These include university-level degrees (undergraduate, graduate, and post-graduate), capacity-building curricula (schools, international and local NGOs, and governments), and community-driven workshops (often informal knowledge exchanges). In these spaces, participants can develop a variety of skills and key capacities that are useful to become an agroecologist, which usually include environmental, economic, and socio-political factors in their curricula.

To go beyond, there are a variety of options for students that want to pursue higher education degrees, thereby expanding networks and multiplying job opportunities for the future (see **Box 1**). Many study programs have evolved to either fully online or hybrid formats, which facilitates university-level training in agroecology while studying remotely. Remote and participatory action-learning of agroecology can be a good place to start for many who cannot travel but want to become knowledgeable in the analysis and design of low external-input sustainable farming systems.

CONCLUDING REMARKS

Today we see a mixture of agroecology scholars and students that are inclined to either the social or the natural sciences, but for the most part these scientists are situated in a "gray" area where research and education processes take biophysical and social-political issues into account. Simultaneously, others may have extensive knowledge of many farming contexts across regions and even across latitudes. Hence, becoming an agroecologist *per se* needs to be grounded on extensive practice, whether by gardening at home, or by frequently visiting farmers across territories to engage in transformative dialogues and actions (McCune and Sánchez, 2019; Rosset et al., 2020). Otherwise said, in Paulo Freire's words, "*liberating education consists in acts of cognition, not transferal of information*". As a consequence, agroecological pedagogy triggers actionable knowledge through participatory action-research (Geertsema et al., 2016) and transformative education (Anderson et al., 2019). During lockdown periods, it was challenging for all persons involved in the learning process to have access to necessary resources in order to undertake remote education. However, instances

for participatory action-learning can be created to motivate students to engage with learning material by observing, analyzing and applying knowledge. This was accomplished by organizing modules where elements of volunteering, theory and practice are systematically implemented. As discussed here, agroecology curricula integrated the theoretical and the practical components of the module through digital communication, online media, and remote self-study. While far from perfect, during the lockdown period it was still possible to facilitate agroecology trainings through the adaptation of remote participatory action-research and action-learning activities in the virtual classroom. The learning outcomes are implicit in the process: "See, Analyze, Act".

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

AUTHOR CONTRIBUTIONS

GF and AS contributed to conception and design of the manuscript. GF organized the database and study-cases and wrote the first draft of the manuscript. AS contributed with analytical and conceptual frameworks. Both authors contributed to manuscript revision and have read and approved the submitted version.

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Fieldwork without the field: Navigating qualitative research in pandemic times

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More than ever before, the COVID-19 pandemic has required qualitative researchers to develop open-ended, flexible, and creative approaches to continuing their work. This reality includes the adoption of open-ended research goals, a willingness to continually adapt to unpredictable and changing (viral) circumstances, and a commitment to opening toward and adhering to participants' preferences. This ethos is entrenched in a web of moral responsibility and a future anteriorized ethics. We reflect on pandemic-era ethical and methodological considerations in light of Fortun's studies of toxic contamination, research conducted in conflict settings, and researcher experiences during the early stages of COVID-19. Drawing from our own experiences and bearing in mind our own entangled web(s) of moral responsibility, we explore the future anteriorized ethics and methodological landscape of the "new normal" pandemic (potentially endemic) era. We reflect on what data we are able to gather and what data we dare to gather in the context of COVID-19, ultimately asking how qualitative researchers can maintain a safe and ethical environment for conducting research. To this end, we emphasize a recognition of our obligations to our research partners and ourselves in order to reduce risk by turning doubts and concerns into opportunities during project development and fieldwork and transforming participants into collaborators in spaces of uncertainty. Through targeted reflections on our processes of adaptation in research, we examine how scholars can perform relatedness, knowledge, reasonableness, and care in the midst of a risky, compromised research context.

KEYWORDS

qualitative methods, community-based participatory research, pandemic, COVID-19, fieldwork, methodology, fermentation, geography

Introduction

The COVID-19 pandemic unsettles the world as we know it, disrupting our personal and professional lives in innumerable ways. This disruption extends to scholarly research, making face-to-face and field-based methods difficult. While the primary mode of adaptation in everyday life has been a move to virtual interactions, key

interpersonal aspects of participatory and qualitative methods, like building trust and close collaboration (Hall et al., 2021), do not always easily translate to virtual life. Previously-challenging components of in-person interaction are suddenly put into stark relief with COVID: the difficulty of developing rapport with interlocutors, an absence of shared sensations, barriers to conveying the nuance of a question or perceiving the full meaning of an answer during an interview, and reduced or non-existent opportunities for observing social environments. Some of these methodological hurdles had the potential to disturb research processes and outcomes even prior to the pandemic, particularly in conflict settings like humanitarian crises, among war-affected populations, or in regions with endemic or pandemic diseases. Yet the overarching globality of the COVID-19 crisis demands further, wide-ranging reflection on our obligations and approaches as researchers.

In this paper, we discuss how the context of COVID-19 calls for a research ethos rooted in open methods and entrenched in a web of moral responsibility and ethics (Fortun, 2003, 2011, 2012). To explore this imperative, we connect participatory action and community-based participatory research to our geographies of fermentation framework, offering vignettes that highlight the challenges of doing "fieldwork without the field." Drawing inspiration from existing qualitative research on toxic contamination as well as previous studies conducted in conflict and pandemic settings, we describe how we navigated COVID-related barriers virtually and in-person in our research projects to explore potential methodological adaptations for research conducted in "pandemic times."

A future anteriorized ethics for risky business: Recognizing emergent risks in research

COVID-19 has become an ordinary feature of our everyday existence since early 2020, with myriad impacts to lives and livelihoods. This pandemic is socially and geographically uneven, adversely affecting marginalized groups at disproportionately-high rates. The pervasive, persistent nature of this pandemic makes it difficult to see beyond the present moment. However, we can understand the risks of disease contamination as extending across time and space; in this way, the past and present are folded into our obligations for the future. Writing about toxic contamination—the condition or process of certain materials, like heavy metals, plastics, pesticides, or chemicals causing harm or death to organisms and environments—in late industrialism, Fortun (2012, p. 450) argues: "The future is anteriorized, which folds the past into the way reality presents itself, setting up both the structures and the obligations of the future." Similarly, COVID-19 inhabits both the present and what is to come, knitting a "lace of obligation" that binds the ethics of today together with an unfolding tomorrow (Derrida, 1992, p. 329).

Consequently, scholars face increased uncertainty in the process of conducting research and a sense of continuous risk to bodies, with impacts potentially extending into the future. Some of these struggles are not new, as similar methodological hurdles hinder research conducted in war zones, humanitarian disasters, and regions with endemic or pandemic diseases. Yet, the material conditions of the COVID-19 pandemic bring risk nearer to the bodies of interviewers, participants, community stakeholders, and volunteers in many settings, even relatively-privileged ones. As Fortun suggests, bodies "are not conceived as enclosed properties," but rather "recognized as subject to trespass, as open systems" that can be contaminated (2011, p. 242), an ontological reality we suggest applies to the swift, viral contamination of COVID-19. Despite our attempts to wall off our bodies from possible harm with protective equipment and vaccines, we remain vulnerable, as viruses and other microbes are difficult to keep out. Fortun (2011) suggests health and disease are processes, which is illustrative of how COVID-19's global and local epidemiological contexts constantly evolve[1]. As such, potentially compromised healthy bodies engaged in research and facing a mutating viral disease become yoked with collective responsibilities to safeguard individual and communal health, necessitating collaborative, ethical research. Applying insights inspired by extant literature chronicling research in conflict settings, environmental health sciences, and emergent literature on participatory research conducted during COVID-19, we endeavor to add our own experiences as early-career scholars to the ongoing conversation about the conduct of qualitative research in pandemic times.

Literature on methods in crisis settings

An enduring pandemic presents challenges to conducting fieldwork akin to other crisis settings. Ford et al. (2009, p. 1) suggest "the instability of conflict-affected areas, and the heightened vulnerability of populations caught in conflict, calls for careful consideration of the research methods employed, the levels of evidence sought, and ethical requirements." A lack of infrastructure, taxed human resources, and the presence of violence can limit access to populations over time and restrict researchers' capacity to conduct research, so that studies in conflict settings may be conducted suboptimally

1 Painting a scene evocative of COVID-19 variants, Fortun (2011, p. 237–8) writes: "Toxics also change, refusing stable identity." Toxics are also embedded in and attached to other agents, similar to the pesticide cocktail effect: "They [toxics] change as conditions change, often creating byproducts through interaction with elements in new contexts. Their "fate," as exposure scientists refer to it, is hardly straightforward" (Fortun, 2011, p. 238).

and sometimes abandoned altogether, justifiably taking "second place to the provision of live-saving assistance" (Ford et al., 2009). Mackenzie et al. (2007, p. 300) argue that research with refugees is rife with significant ethical challenges, including the "difficulties of constructing an ethical consent process and obtaining genuinely informed consent," and counsel researchers to "seek ways to move beyond harm minimization as a standard for ethical research and recognize an obligation to design and conduct research projects that aim to bring about reciprocal benefits for refugee participants and/or communities."

Afifi et al. (2020, p. 381) agree that "research in humanitarian crises is complex, both ethically and methodologically," but they suggest that practices of community-based participatory research (CBPR), such as "prioritizing knowledge of partners or centering power with community members, [can] provide the potential to reverse power imbalance and recalibrate equity." CBPR affords researchers opportunities to build on the "strengths and resources of community members," foregrounding their lived experiences by sharing knowledge with all participants and committing to partner communities for the long-term (Afifi et al., 2020, p. 382). In addition to conducting a detailed feasibility analysis before commencing research, scholars should carefully consider the risk-benefit ratio for potential research participants (Ford et al., 2009).

Fears of infection inform research participants' willingness to engage in research projects in the context of the COVID-19 pandemic. Personal decisions and public behaviors in pandemic settings are based on a variety of factors, including risk perception (for the individual or for their family's health), perceived severity of the disease, and perceived effectiveness of the suggested infection control strategies (Seale et al., 2012). Given this lace of obligation, researchers should prioritize communal health to embody a future anteriorized ethics. Scholars must serve as a bridge between various actors and influences, making active communication essential in terms of promoting safety measures. In addition to garnering consent from research participants, Smith et al. (2012) advocate for the need for proactive communication during pandemics. In high-risk situations, Marshall et al. (2008) also suggest problem-based learning for improving pandemic preparedness for emerging and senior ethical researchers. Consequently, a multitude of actors should support and offer guidance to researchers in situations of duress, including COVID-19.

Emerging literature on qualitative research during COVID-19

Hall et al. offer a literature review on participatory approaches during COVID to show how "distance-based participatory methods may be used in wider contexts where face-to-face interaction may not be appropriate, or fieldwork may be disrupted due to logistical reasons" (2021, p. 1). These methods include remote photovoice and interactive videoconferencing for photo and video diaries (Liegghio and Caragata, 2020), discussions that take place alongside interactive activities (e.g., knitting) during videoconferencing to counteract performative anxieties in the midst of virtual ethnography (Nelson, 2020), auto-ethnographies via engagement with social media (e.g., Twitter, Facebook), cross-platform messaging applications (e.g., WhatsApp, Facebook Messenger), and voice over IP services as platforms for debate, knowledge exchange, and participation (Jones, 2020). Others have also relied on distanced methods, using videoconferencing, telephone, email, WhatsApp, or epistolary exchanges to lead virtual or text-based interviews or focus groups (Dube, 2020; Hinkes, 2020; Strong et al., 2020; Woodward, 2020; Maycock, 2021). Notably, Nguyen et al. present an excellent case of conducting fieldwork remotely with the help of local research assistants, which they argue should be "embraced as a way of reimagining knowledge production" (Nguyen et al., 2022, p. 1). Overall, researchers stress the importance of "creative, sensitive and therapeutic methods" (Lazarte et al., 2020:3) by being mindful of access and inequality (Lourenco and Tasimi, 2020) while focusing on knowledge exchange and equal power relationships for successful projects conducted at a distance (Marzi, 2020).

Contribution and argument

Drawing from insights within the literature on qualitative methods in conflict settings and during the early stages of the COVID-19 global pandemic, we describe how lessons from toxic contamination research can inform research methods in the time of COVID. Fortun's (2003, 2011, 2021) interventions on toxic contamination are applicable to qualitative methods in the context of the novel coronavirus due to its time and space sensitivity. One major difference between toxic contamination and the COVID-19 pandemic is that viral coronavirus contamination arrives abruptly, requiring swift, global, and holistic changes to collective and individual practices. In contrast, toxic contamination moves more perniciously, such that harmful impacts can be slow to accumulate and manifest. Similar to insights from community-based participatory research (CBPR) and participatory action research (PAR) methods, we argue that we are embedded in geographical and social contexts that are constantly evolving over time. This situatedness invokes a lace of obligation to personal and communal health that extends into the future, as ultra-local viral situations and people's caution and willingness to abide by safety measures fluctuate.

In other words, literature on toxic contamination helps elaborate the complexity of this pandemic and situate participants and researchers as agents whose powerful acts will help safeguard—or exacerbate—communal health, namely by

demarcating expressive and performative contamination. Viral contamination, like toxic contamination, is both *expressive* (i.e., a state of affairs we express or acknowledge) as well as *performative* insofar as it is produced through acts we do or do not commit (Fortun, 2011, p. 246–7). Because research in a global pandemic is similarly expressive as well as performative, researchers, in accordance with participants, must take sensible actions now in hopes of extricating our future from the present pandemic.

Given the presence and emergence of viral variants, we have had to experiment with methodologies and epistemologies rooted in open communication and inherent flexibility in order to adapt to the changing epidemiological situation as well as participants' availability and preferences in times of duress. Health is spectral, and participants' and researchers' bodies are open systems vulnerable to contamination (Fortun, 2011; Mokos, 2021). COVID-19, especially in its asymptomatic forms, is thus an important part of the context in which participants and researchers alike are entangled on the ground. How then, should qualitative scholars respond?

In the face of a mutating viral disease, we propose that qualitative research methods should remain open-ended to adapt to COVID-19's epidemiological evolution, finding ways to make this disease legible in research ethics, methods, and writing. While reshaping plans as projects unfold is hardly foreign to researchers, we promote the notion of *processual* research methodologies, wherein scholars become more virus-like themselves, adapting to ever-changing conditions and contingencies while finding openings for advancement, however miniscule, when and wherever possible. By drawing from our own experiences while bearing in mind our entangled web of moral responsibility, we explore the future anteriorized ethics and methodological landscape of this pandemic era, specifically addressing the following questions:

- How can qualitative researchers maintain a safe and ethical environment for conducting research?
- What data are we able to gather in the context of COVID-19, and what risks are we willing to assume?
- How do methodological adaptations favoring remote and virtual methods affect the power imbalances between participants and researchers?

Through targeted reflections on our processes of adaptation in research, we four early-career academics based in the West examine how scholars can perform relatedness, knowledge, reasonableness, and care in ways that are conscious of how researchers and participants are both contributing to expressive and performative contamination in the COVID-19 pandemic. While much of our work is not explicitly PAR, we draw inspiration from its broader aims and tenets, suggesting that a community-based participatory research (CBPR) approach helps navigate the unpredictability and non-stable identities of bodies and viral contexts alike. In this paper, we offer a discussion of ethical and practical challenges to reorienting participatory research that we faced in the context of the pandemic, delving into how the various methods and research plan adaptations we mobilized were able—or not—to circumvent issues of power, vulnerability, or stigmatization and advocating for flexibility in research design to foster trust, build rapport, and engender feelings of safety.

Methodological panoramas: Community-based participatory (action) research and fermented landscapes

Participatory action research (PAR) can be described as a cycle of planning, acting, and observing (Walter, 2008). More of an approach than a method or technique with an exact procedure, PAR embodies the collaboration of an organized collective to set a research agenda, collect data, engage in critical analysis, and design actions to improve people's lives or effect change (Hale, 2001; Walter, 2008; Breitbart, 2010). PAR seeks to democratize research design by fully engaging those affected by the issue studied, promoting diversity, and sharing power to avoid exploitation (Breitbart, 2010).

PAR embraces an explicit value-laden approach that recognizes the essential worth of power sharing between the "observer" and the "observed" (Walter, 2008). This presents a learning opportunity for the collective of researchers and participants, which can uncover tensions, contradictions, and ethical dilemmas to improve research and social outcomes (Hale, 2001). In other words, PAR strives to create deeper, more thorough, and better situated empirical findings while co-producing knowledge and action (Hale, 2001).

Though our explicit commitment to PAR varies, we uniformly promote collaborative work as an adaptive approach to working with participants in times of uncertainty like COVID-19. Collaborative partnerships in community-based participatory research (CBPR) seek to balance unequal power relations through equitable community participation at each stage of research (Charania and Tsuji, 2012; Muhammad et al., 2015). In our projects, the inclusion of participants in research design differed along a continuum, but each moved beyond tokenistic engagement, with commitments to ethical consent, equitable and just data collection, as well as community capacity-building (*Ibid.*, Parker et al., 2019). For instance, we engaged in pre-fieldwork dialogue as well as ongoing check-ins around participant schedules to allow "people to ask questions about commitments and to define their boundaries and make requests" (Mokos, 2021), notably with regard to COVID precautions. During such encounters, we aimed to follow Fortun's suggestion of turning doubts and concerns into

resources, engaging with, rather than shunning "amendments, elaborations, and critical response" from participants (Fortun, 2003, p. 176). As we will discuss later, we were also open about the challenges we faced and our failures, which are not unique to our situations (Davies et al., 2021).

While researchers and participants alike face new difficulties when doing community-based participatory (action) research during COVID-19, transforming participants into collaborators was already a challenge in pre-pandemic times (Marcus and Fischer, 1986; Denzin and Lincoln, 2011). During a pandemic, participants may be juggling other personal commitments while working (or caring for relatives) and have varying technological capacities for online participation. Still, we can think of participants as "organic intellectuals," who with qualitative researchers "are exploring the emergent new worlds about which they have a mutual curiosity" (Marcus and Fischer, 1986, p. xxv; Fortun, 2003, p. 181). To do so, we emphasize power sharing as a major defining factor in building effective academic-community collaborations and suggest that we as researchers and community partners should be reflexive about how research is conducted to "guard against appropriating knowledge, [and] to work toward negotiating co-learning and collaborative knowledge production" (Muhammad et al., 2015). By foregrounding how researchers and participants act and make decisions amidst uncertainty and by positioning participants as "collaborators in the production of critical analyses" (Marcus and Fischer, 1986; Fortun, 2003, p. 176, 181), power sharing is a way to account for the virus in our methods and subsequently in our writing. We acknowledge not all participants may be available to be involved in the co-management of the research project; collaborative partnerships designed around the participants' schedules and constraints may sometimes be more appropriate. Hence, instead of requiring full involvement of participants at each step, collaborative research integrates the participants' perspective in the knowledge production phase led by the researcher (Morrissette, 2013, p. 46).

Fermented landscapes

The topical framework of fermented landscapes, which Myles (2020, p. xix) defines as the "shifting patterns of land use and management as well as cultural changes related to the production and consumption of fermented beverages in a variety of contexts," unites our work. Fermented landscapes is both a body of work and an approach to research that examines how fermentation—both literal and figurative—influences landscape change. These influences can be in terms of actual material or metabolic change(s) or can be more symbolic in terms of shifts in values, meanings, or perceptions. Foregrounding material-semiotic analysis, fermented landscapes research delves into the "macro consequences of micro(be) processes of socio-environmental transformation" (Myles, 2020). Each of the projects represented in this paper is situated within the Fermented Landscapes Lab at Texas State University, and we are linked by the mentorship of Dr. Colleen C. Myles, the originator of this conceptual frame.

Scholarship on fermented landscapes is characteristically field-based, constituting hands-on, face-to-face, visceral experiences with the people and places in question. The qualitative style typical of this body of work has previously highlighted topics ranging from the social dynamics of local kombucha culture (Yarbrough et al., 2020) to the actor-networks of English cider producers (Furness and Myles, 2020) to farm-to-bar chocolate agrotourism in Hawai'i (Galt, 2020). However, COVID-19 radically altered the feasibility and permissibility of doing this kind of work.

"Fieldwork without the field": Navigating COVID-related challenges to qualitative research

What does fieldwork look like without the field? Scholars have pondered previously the distinctions and interrelations between "fieldwork" and "the field" (Katz, 1994), and the necessity of adapting research plans to local conditions is not new—whether related to political turmoil, environmental hazards, or other socio-environmental disruptions (Laborde et al., 2018). Yet the scope of present limitations merits further reflection, particularly as pandemic-related impacts continue to affect many research participants, even those in relatively-privileged positions.

The onset of the global COVID-19 pandemic harkened swift and sweeping restrictions on direct interactions with others. Following the lead of local, regional, and national governments, institutions of higher education imposed restrictions and modifications to research processes and fieldwork. The numerous challenges of moving research that has traditionally been carried out in-person, in the field into a virtual context require experimental adaptation. Many scholars, ourselves included, have had to put our research agendas on hold indefinitely or review the scope of our research designed in pre-pandemic times, revising plans and protocols so that our work could be conducted feasibly in the context of this "new normal." Over 2 years into this pandemic, this reality continues to unfold.

As this paper details, core elements of our fieldwork have had to be altered, replaced, or abandoned due to the pandemic. The projects represented here were conceptualized prior to COVID-19 and required significant revision to their research methodologies to be viable. The reflexive accounts we share as researcher-practitioners and scholar-activists explore how researchers can adapt to and navigate the entangled geographies of qualitative research, risk, physical distancing, failure,

participant-researcher relationships, and power imbalances. Given the constraints of an uneven global pandemic and our respective funding situations, we explore how, as early-career scholars, we felt pressured to be ambitious in our research, irrespective of global and local public health contexts. Next, we discuss challenges that arose in the context of taking research "out of the field." We conclude with a critical reflection on ethics and principles for undertaking collaborative research in this "new normal" marked by persistent, public health crises.

Navigating the "new normal" as qualitative, fermentation geographers

Four projects are represented in this paper (Table 1). As these projects involved different questions, populations, data, and various stages of completion at the onset of the pandemic, our needs and responses also varied. In the following subsections, we reflect on the realities of doing "fieldwork without the field," including challenges and opportunities linked to pivoting to remote/virtual methods and the modifications required for continued face-to-face approaches. In our research group, the increased prevalence of videoconferencing as a predominant mode of communication had an impact on our work, including the inclusion of geographically-distant partners. Relatedly, one positive outcome of COVID-19 has been greater empathy and mutual understanding for peers navigating a range of work-life responsibilities, including wrangling pets and children in non-traditional workspaces (Myles-Baltzly, 2022).

Chantal Gailloux, a postdoctoral researcher, conducted an ethnographic project on fruit and grain sourcing in the fermentation sector of eastern Quebec, Canada. Planning her project in fall 2019, she initially aimed to conduct comparative research in Texas, California, and Quebec. Starting fieldwork in January 2021, she downsized the scope of her intended work in response to ongoing pandemic-related restrictions, canceling her plans for in-person fieldwork in the U.S. Committed to strict protocols and active communication with participants, she was able to conduct hybrid fieldwork in eastern Quebec (where she lives), both online and in-person when regional and provincial public health agencies granted the situation was negotiable. Given the contemporary context, participants were understandably distracted and ethnographic data collection was repeatedly interrupted, rapport had to be built differently than in pre-pandemic times, and Gailloux had to remain flexible to attend to her participants' needs and constraints and ethically maintain horizontal, collaborative partnerships.

Other lab members also had to adapt and reconfigure their research plans. Doctoral candidate Walter Furness modified his primary data collection strategy due to travel restrictions, turning toward more local interlocutors and secondary sources. In planning his fieldwork shortly before the onset of the COVID-19 pandemic, Furness had relied on co-present sensory observations of yeast and scientists in laboratories along with semi-structured interviews to understand how synthetic biology technologies modulate yeast-human interactions. By necessity, his fieldwork, which was initiated in the midst of COVID-19, had to pivot away from his original approach when these highly-sanitary and controlled environments became unavailable due to quarantine and travel restrictions. With in-person interaction impossible, Furness has conducted interviews and observations via videoconference and turned toward secondary data, analyzing academic literature on synthetic yeast projects.

Delorean Wiley, another member of the Fermented Landscapes Lab who started her doctoral research design a couple of months prior to the COVID-19 pandemic, changed topics and moved in the direction of a more community action-oriented project due to the constraints of the evolving situation. Initially, Wiley wanted to study how gender is represented at craft breweries across five states in the United States. Realizing the pandemic would last longer than anticipated and the travel required for her initial project would be challenging to undertake in the context of a public health crisis, Wiley jumped on a newfound opportunity. With the Wimberley Valley Watershed Alliance (WVWA)[2], she now is working to improve wastewater management and sustainability initiatives in the Texas craft brewery sector by reinvigorating the Texas Brewshed Alliance (TBA) via a participatory action project.

Kourtney Collins remained committed to her community-based participatory thesis work throughout COVID-19. Though aided by her role as an insider to the wine industry (due to her employment) when the pandemic struck, the depth of her master's research arguably diminished due to COVID-19 restrictions. Collins made numerous adaptations to her project in response to her interviewees' constraints, as local, state, and federal mandates regarding capacity limits in tasting rooms, temporary shutdowns, and new regulations consumed winery owners' time and attention.

Results

Negotiating risk nearer to bodies in a virtual and in-person ethnography of fruits and grains as ferments

Relying on active communication with participants and enhanced safety measures, Chantal Gailloux was able to pursue

2 The opportunity emerged when Katherine Sturdivant—a master's student in the Fermented Landscapes Lab—discussed the Texas Brewshed Alliance (TBA) initiative, a water conservation initiative among Texas craft breweries, with the director of WVWA during a work event. Sturdivant suggested Wiley would be a prime candidate to help WVWA relaunch the TBA.

TABLE 1 Summary of research projects presented in this paper with barriers to proposed research and modifications adopted by each researcher.

Researcher	Research topic	Stage of research	Barriers to proposed research	Remote and virtual methods	In-person methods
Gailloux	Fruits and grains sourcing in the fermentation sector of eastern Quebec	IRB: Fall 2020 Data collection: January to August 2021	Travel restrictions, institutional restrictions, and additional IRB-related paperwork for in-person methods	Virtual interviews, virtual meetings with peers of the Fermented Landscapes Lab	Short ethnographic visits, in-person participant observation, in-person interviews
Furness	Human-yeast relationships in laboratory spaces	IRB: June 2020 Data collection: October 2020-present	Travel restrictions, institutional restrictions on in-person activities, difficulty contacting and recruiting participants	Virtual interviews, observation of lab meetings conducted via videoconference, textual analysis of existing literature	In-person interviews and participant observation at alternate, local field sites
Wiley	Wastewater management PAR at Texas craft breweries (topic was changed in response to COVID)	Pre-fieldwork; data collection expected to start in spring 2022	Travel restrictions, business closures	Videoconference calls for planning	In-person interviews
Collins	Socio-environ- mental changes in the Texas wine industry	IRB: Summer 2020 Data collection: May-September 2020	Business operations restrictions; IRB restrictions on in-person activities	Virtual interviews	In-person interviews

her postdoctoral fieldwork online and in-person from winter to summer 2021, when allowed by Quebec's public health agency and the university's institutional review board (IRB). She set the threshold of permitted in-person research when her field sites and her home—the Gaspésie and Bas-Saint-Laurent regions—were not located in "red" areas (highest risk level) on the provincial public health agency's COVID-19 alert map. Still, her six-month community-based and participatory multi-sited ethnography (Marcus, 1995) was repeatedly interrupted with changing public health safety measures, requiring her to stay nimble and virus-like in order for her approach to remain safe, feasible, and ethical in the context of a shifting epidemiological situation.

Gailloux began her postdoctoral fellowship in fall 2020 with funding that ordinarily requires fellows to be on-site at the affiliated institution. Given the pandemic context, the funding agency allowed remote work, albeit with little guidance. Although the U.S.-Canada border was generally closed, it was theoretically open for students and workers. Nevertheless, Gailloux faced a quandary: What data would she dare gather in the context of COVID-19? To adapt, she downsized the scope of her study and abandoned the possibility of doing comparative fieldwork in three sites: Texas, California, and Quebec.

She decided to conduct fieldwork only in eastern Quebec with fruit and grain farmers, brewers, distillers, and other primary processors like maltsters in the Bas-Saint-Laurent and Gaspésie regions. Located north of Maine and the Canadian Maritime Provinces, eastern Quebec is a rural region with a small, aging population spread over a vast territory about the size of Switzerland. By narrowing the scope of her project and not moving to another country where she had anticipated conducting highly-mobile research, she reduced risk to herself and others considerably, acknowledging how her research laced her and participants with obligations because of potential viral contamination. Reframing the research project was thus her way of enacting a future anteriorized ethics.

Still, even this scaled-back research plan was contingent. She prepared additional paperwork[3] (which unfortunately slowed the recruitment process and discouraged some participants) in fall 2020 and strict protocols to make sure she and her participants agreed upon and followed appropriate safety measures when meeting in person. To adapt to the epidemiological situation, Gailloux decided to follow Quebec's public health agency color-coded alert level map and did not visit places[4] in the highest (red) alert level. After a summer of

3 For research ethics approval with Texas State University's Institutional Review Board (IRB): three letters of consent, approval of safety measures, and acceptance of on-site research activities.

4 The unit of this map is the subregion area called "regional county municipalities".

respite in 2020 with fewer cases, she hoped remote areas like eastern Quebec would fare better in 2021 and the red-alert level would be confined to urban areas, like Montreal. She was proven a bit too optimistic and had to adjust to varying caseloads over the following weeks, with eastern Quebec and the rest of the province remaining at high risk during fall 2020, returning to lower risk levels only in February–March 2021, then rising again with a surge of new variants. At the end of June 2021, safety measures were slowly loosening, since the province's vaccination rate (first dose for adults) was over 80 and 27% for two doses (CBC, 2021; INSPQ, 2021a,b). All regions of Quebec returned to lower alert levels in May and early June, re-enabling in-person research. Because of the ongoing epidemiological situation, she continually modified her plans and approaches to working with her interlocutors, embodying flexible and reflexive research design.

Gailloux realized she had to maintain active communication channels with participants to build rapport. She prioritized active communication, reaching out via phone in addition to email and ascertained which means of interaction participants preferred (e.g., in person, phone, videoconference, email, text). By consulting with participants about their fears, Gailloux was able to turn concerns into opportunities by sharing power (Fortun, 2012; Mokos, 2021) over the research design and forging a more ethically-grounded project.

Gailloux conducted 26 interviews, mostly via videoconference. Because participants were dispersed over a large territory with unequal technological savvy and access, holding group meetings to discuss the research design and interpretation of results was not feasible. In this case, she shared power through one-on-one conversations before, during, and after the data collection phase. Farmers, older people, or folks who either were keen to do the interview right away or sought the least cumbersome way to participate tended to prefer in-person or telephone interviews. Gailloux followed the recommendation that the "need to build trust over the phone is magnified, and interviewers should take time to establish rapport by explaining the project and data collection process to participants" while the "lack of face-to-face cues [could make] it problematic to ascertain if the questions are causing participants distress" (Ali et al., 2020; Mani and Barooah, 2020; Hall et al., 2021).

For instance, one dairy farmer whom Gailloux first contacted by phone and recruited through snowball sampling was uncomfortable with videoconference platforms. He seemed curious to meet the researcher and preferred in-person interaction. Living nearby, they met for an interview and a tour of his farm in March, respecting a six-foot distance and wearing masks. As Strong et al. (2020) note, some participants prefer face-to-face interactions and are reluctant to do online interviews; they advise that interviewers should do regular check-ins and remind participants that they are in control of the interview.

Gailloux's first 5-day ethnographic visit in early March was at a micro-distillery. While planning her visit over the phone, the manager admitted that his team of six workers had relaxed some safety measures because there were very few cases in the region at the time, but he guaranteed they would tighten them back with her visit. In addition to these planning calls, Gailloux briefly presented her project to the distillery staff during a lunch to discuss, answer questions, and distribute consent forms, reflecting her commitment to transparent, collaborative research design.

In the semi-industrial production context of the distillery, the three employees she worked alongside wore their face masks at all times. Office workers didn't wear them when she was not around, but would put them back on when speaking with her. Thus, the use of face masks was variable and depended on who was present. Despite initial reassurances that employees would follow restrictions at all times, the participants performed these measures variously according to the sociospatial context. Moreover, specific tasks made it difficult to respect safety measures at all times. For instance, lifting heavy loads with four hands made it difficult to maintain physical spacing of six feet. In addition to masks mediating interactions and concealing facial expressions, certain noisy activities like grinding barley for the mash tun further limited communication, as Gailloux could not read her coworkers' lips. Reflexively moving closer in order to listen, this potentially risked her coworkers' and her own safety. Overall, Gailloux felt it was difficult to respect all safety measures at all times and was not always sure how to react when others, especially company executives, failed to follow safety measures. These experiences underscored that despite acknowledging the epidemiological situation, researchers and participants do not always adhere to safety measures in rational or consistent ways, and bodily affect varies across microgeographies of research sites.

This became even truer as restrictions were gradually relaxed. Moving a few kilometers east within the same province, Gailloux saw how the viral situation—and people's responses to it—varied geographically, mirroring the varying risk perception that Seale et al. (2012) and Davis et al. (2015) described in relation to influenza. She realized that local risk perception and shifting safety measures were additional barriers to building rapport. For instance, when the brewer and owner of a microbrewery presented his arm for a handshake on the first day of a 1-week ethnographic visit, Gailloux felt uncomfortable at first but didn't want to undermine rapport with him and his crew. Thanks to pre-fieldwork conversations, she was aware that brewery employees had received their first shot, so she decided to reciprocate the gesture in a calculated risk, performing relatedness. Reasonableness and care in times of COVID are sometimes in tension with social norms and hospitality in pre-pandemic times.

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Challenges to engaging participants and collaborating remotely in laboratory spaces

Furness had just begun to lay the groundwork for his fieldwork when the pandemic necessitated widespread closures in North America. Initially planning to physically spend time conducting interviews and observing researchers in a synthetic biology laboratory, the pandemic forced a change in these plans. The severity of COVID-19 in his desired field site in New York City led Furness to take his research online, relying on videoconferencing as a medium for accessing geographically and socially-distant spaces. With tenuous preexisting familiarity with his interlocutors and research context, he relied heavily on email to recruit participants, a tactic that had limited success. His initial approach struggled to gain traction, due to both the constant uncertainties faced by researcher and participants alike and the difficulties of building rapport through email alone.

Connecting to new field sites and interlocutors during normal times can be a challenge in itself, and Furness found this to be even more true in the context of virtual meetings. In December 2020, he began attending lab meetings of a New York City lab group via Zoom. Entering these milieux as an outsider and via webcam presented challenges to creating trust and familiarity with participants due to his relative anonymity and disconnection from the group. The structure of these meetings allows for questions and virtual interaction, but is not conducive to meeting new research partners and building rapport with strangers. Despite a brief introduction to the group at the end of an initial lab meeting and several one-on-one conversations over Zoom, Furness struggled to make lasting connections to the larger group, having never met any of them in person. As the pandemic unfolded, Furness worked to navigate persistent travel restrictions to his potential host institution in New York. Part of this uncertainty included the financial logistics of this work: awarded travel funds from Texas State University, he was unable to use them due to institutional barriers and worked to obtain extensions for their use, eventually pivoting toward using the funds to travel to a different site.

However, the virtual modality he gravitated toward also opened new portals for interaction, even from afar. In the early stages of the pandemic, obligations to maintain safety required all meetings to be held virtually anyway. Since lab members based in New York were also meeting remotely from their residences or individual workstations, the pandemic flattened space in a way, creating a cumbersome but more-or-less level plane in which each person had relatively-equal access to the sessions, regardless of their physical location. Furness' project was not designed to foreground PAR, but delays in its implementation created openings for participants to shape its trajectory to become more collaborative and participatory as it slowly unfolded in the midst of COVID. However, lack of participant buy-in was a continuous challenge to this project.

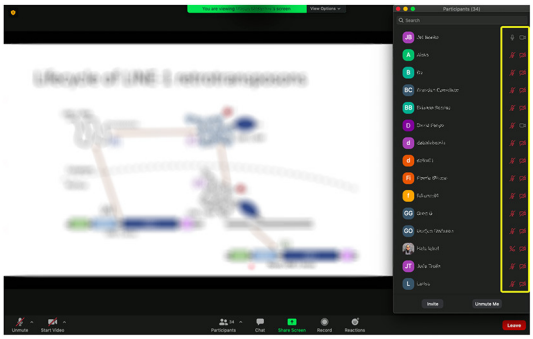

FIGURE 1
Screenshot from a lab meeting held over Zoom, in which Furness participated (image blurred to protect participants' privacy). Note the participant list on the right-hand side of the image (highlighted in yellow), which shows how nearly all attendees kept their cameras off. This dynamic is the norm, except during brief goodbyes at the end of meetings.

In late May 2021, as mask mandates began to lift in the United States in accordance with changing public health guidance, the NYC lab meetings also changed in structure. Lab members (all vaccinated) began meeting in a hybrid format, with a smaller group of eight scientists at first, then 13 in a conference room with little distance and few masks (though pausing their habit of bringing food into meetings), while the remaining dozen members continued to join meetings remotely. Smart cameras and microphones in the conference room facilitated this transition. Those joining virtually have noted reduced audio quality occasionally, especially when multiple people in the conference room speak simultaneously. In this way, microphones have mediated and limited online participants in favor of fully capturing what is happening in the conference room, adding to other technological glitches that punctuate our virtual lives, whether problems accessing an account, sharing a screen, or an unstable Wi-Fi connection. Technology has not only enabled participation; it also has created separation between those participating in person and those joining remotely. Even a high-speed internet connection is not necessarily enough to bridge this divide, since visual cues like body language are less accessible to virtual participants due to fixed camera angles (Pocock et al., 2021).

A result of these virtual and hybrid lab meetings is that the duration of Furness' involvement with this group extended far beyond his initially-proposed timeline, while the quality of the interactions made it difficult to answer his research questions at all. What he had hoped would be intensive, in-person interaction evolved into much more partial, impersonal observations of

Zoom rooms. During the meetings (which are primarily research presentations of lab members' current work), most participants remain muted and off-camera throughout, though interjections and questions are not uncommon (Figure 1). This type of setting allows access to many people at once (through direct chat messages, for example), but insulates participants from more visceral, embodied connections and allows them to simply ignore messages if desired. This ease of opting out has the ethical upside of shrinking perceived power differences between researcher and participant (Newman et al., 2021), but made recruitment challenging. As the potential depth of engagement with the social context of these meetings has been diminished, more casual conversations and observations have been rendered unwieldy. This transition from shorter, more in-depth work to "shallower," longer-term participation is one of a number of challenging COVID-required adaptations resulting from obligations to safety and responsible research. Notably, these adaptations may have negative, positive, and mixed effects.

Flexibility has been paramount in this project, but timelines have limits and Furness has struggled to progress through seemingly-indefinite delays. Though accommodating setbacks to his fieldwork demonstrated this flexibility, an initial lack of adaptability in 2020 contributed to his decision to stick with his proposed research design instead of immediately abandoning it for more feasible methods. While the ongoing pandemic highlights the importance of key aspects of collaborative research like attentiveness and sensitivity, Furness found that relying on an epistemology that acknowledges affective complexities and sees interviews as emplaced (neither discrete nor disembodied) creates challenges to building rich, shared meaning in the context of virtual participation. As a result, he broadened his initial research plans to include more video interviews, in-person observation with field sites in Texas, and textual analysis of academic literature. Taking cues from Fortun (2012), he developed more creative, participatory approaches like collaborative mapping that may create space for new encounters to emerge. This attempt to navigate discrepancies between project ideals and realities with an emphasis on flexibility is a way of enacting a future anteriorized ethics despite unforeseen limitations.

Changing the research project altogether to reduce risk and embody a future anteriorized ethics

For some, the enduring nature of this global pandemic proved that modification alone would not suffice; an entirely new project needed to be developed. Delorean Wiley was in her first year of doctoral study when COVID-19 suspended in-person research. As 2020 turned to 2021, research travel continued to be restricted and vaccines were not yet widely available; an end to the pandemic looked distant. Weighing what Ford et al. (2009) call the harm-benefit ratio, Wiley decided her original plan—traveling to several states over an extended timeframe—would not be safe for her or potential research participants. Her choice to scale down the scope of her study area to Texas alone increased safety and reduced uncertainty about her ability to collect data, creating a future anteriorized ethic aimed at preventing further or unnecessary contamination.

Wiley's experience is illustrative of how viral contamination is performative. She contracted COVID-19 during Texas' third wave, despite being vaccinated. With recently-acquired antibodies through vaccination and contamination, her personal risk while teaching and collecting data shrank, at least for a time. However, to perform relatedness and care, Wiley chose to continue to wear a mask during pre-fieldwork meetings when social distancing was not possible.

Contamination risk as expressed by governments and public health agencies substantially diminished breweries' ability to serve as spaces for data collection and research. For ∼6 months in 2020, a Texas Alcoholic Beverage Commission (TABC) mandate forced breweries to quickly transform their operations by offering food under a temporary license in order to continue operating. Some were unable to do so and temporarily closed. Others closed indefinitely because they could not recoup the lost revenue. Wiley realized it would be impossible to collect the data needed to complete her original dissertation project, changing her research focus and the scope of her study area. In March 2021, Texas governor Greg Abbott's executive order preventing the closure of businesses due to COVID-19 eliminated the uncertainty of breweries being open for business, though many questions regarding contamination and the permissibility of research remained. Planning in this situation involved balancing precautions that limited risk of viral contamination while allowing participants agency and flexibility. The ethos Wiley espoused echoes Mackenzie et al.'s (2007) conduct of research with refugees: respect for persons, autonomy, and justice.

Planning collaboratively for the research to be conducted, the Wimberley Valley Watershed Alliance (WVWA) and the Fermented Landscapes Lab decided the risk of meeting face-to-face was worthwhile, gathering on a brisk and sunny afternoon in spring 2021 at a Texas Brewshed Alliance (TBA) member brewery. To guard against infection, the meeting occurred outside, participants wore masks, and sat spaced apart (although not a full six feet apart, as a greater physical distance between participants would have made dialogue difficult). During the meeting, participants from WVWA revealed they were reading the *Fermented Landscapes* edited volume (Myles, 2020), signaling a desire to learn more about our lab's work, which helped build rapport within the group. Additionally, WVWA members shared their vision for TBA, helping to cement the research team's mutual goals and commitments.

After a year of lost sales, the newly-formed group concurred that economics would be a key driver for breweries in 2021–2022. The collaborators agreed that hosting a TBA re-launch event could help bring the local craft beer community together and raise awareness of the TBA's mission. While researcher requests for business data could be viewed as insensitive or even inappropriate (evocative of research in conflict settings, which highlights how the provision of basic needs takes priority over research needs) (Leaning, 2001; Afifi et al., 2020), coordinating an event to generate sales for participants could signal the research group's genuine desire to help member breweries and not just use them extractively as research sites. Whether the event will be held virtually or in-person is dependent on future COVID-19 cases in the area, once again reminding us of the need to be flexible and creative, planning and adapting our fieldwork in response to an uncertain future.

Managing work-research divisions and respecting participants' unavailability

Much like breweries, wine and tourism industries were severely affected by the pandemic; businesses and revenues faltered as consumers were unable to visit closed tasting rooms. As mentioned previously, the Texas Alcoholic Beverage Commission decided to take action to help minimize transmission, shutting down establishments in March 2020 unless they could legally operate as a restaurant. Winery owners were forced to alter operations quickly to reopen and generate onsite revenue. Many were forced to lay off staff and work with skeleton crews, adding to workers' burdens. In July 2020, Texas governor Greg Abbott signed an executive order (GA-28) that allowed restaurants to open at 50% capacity and stated that any winery or bar that had a commercial kitchen with food sales above 51% of total sales could also open doors to the public at 50% capacity. Because of this new rule, many wineries decided to add restaurant operations on top of their existing winery operations, which quickly snowballed into an overwhelming collection of now-essential side projects in order to obtain necessary permits. Learning how to operate a tasting room and training staff to accommodate visitors in a COVID-safe manner was a challenge, especially in the middle of harvest season.

Master's student Kourtney Collins set out to examine the environmental and cultural context of the quickly-growing wine industry in Texas from the point of view of vineyard and winery owners and operators. However, when she started her community-based participatory fieldwork in the Texas wine sector in May 2020, just months after the start of the COVID-19 pandemic and in the midst of social distancing and other public health restrictions, she faced several challenges to accessing the field despite being directly employed in the industry she studied.

As an essential worker, Collins was already exposing herself to risk and conducting interviews while in the office did not seem appropriate, at least insofar as it extended the risks of contamination faced by her potential interviewees. Even though key informant interviews were an essential element of her research plan, the most ethical path forward—as revealed both by critical reflection and institutional review board (IRB) guidelines—was to avoid or eliminate face-to-face contact as much as possible. The socio-environmental context suggested that it was not the time to dare to gather data in-person, especially since participants were less available due to work and personal stressors.

Thus, Collins had to find a way to conduct fieldwork without proper access to her field. She conducted interviews via videoconference, which imparted and necessitated a significant amount of flexibility. The use of virtual methods made the interviews more accessible to the overworked study population, but they were also largely impractical, given that both researcher and participants were working in agriculture, an occupation with working hours that are driven by varying, seasonal tasks. Scheduled interviews were often missed and then rescheduled, sometimes repeatedly, to accommodate the inherently challenging nature of participating in virtual interviews while working in the vineyard during harvest season. Participating in a research project, or co-managing it, requires time and energy that participants in times of crisis and uncertainty may not have (Teti et al., 2021); being sensitive to this issue as researchers is part of an ethical relationship in which participants and researchers share power and foreground flexibility.

Since the Texas commercial wine industry is relatively new, many interviewees were selected for their ability to provide perspectives on how the industry had changed in the preceding decade or so. Many of the participants were older, not especially technologically savvy, and located in rural, agricultural areas with unreliable internet access. As such, there were a number of obstacles to the virtual interviews (Whitacre and Mills, 2007). For instance, given the pandemic context, participants had to focus on more tasks than normal and had limited time to participate. In addition, the use of technology to connect with participants made it difficult to build rapport, leading to a nagging sense that participants could not be authentic in their responses. Although the use of virtual methods proved to be largely dissatisfactory, Collins tried to make the best of the situation because in-person techniques were neither safe, feasible, nor ethical at the time.

While Collins was not able to gather data of the quality (or quantity) that she hoped to, she ultimately completed the thesis work. The project could have been more intensive or extensive had the circumstances been less challenging. Nevertheless, by enacting caution and respect, Collins' restraint was an ethical act, performing the prevention of contamination even to the detriment of the data. Echoing Teti et al. (2021), her sensitivity

to the obtrusiveness of virtual methods for certain populations acknowledged how building trust and relationships is key to CBPR methods and how CBPR is often compromised in pandemic times by necessary social distancing.

Together, these anecdotes point to the risks and difficulties of adjusting to the pandemic in contexts where bodies and sensations are highly mobile and safety is uncertain. The omnipresence of face masks and other necessary modifications to in-person interactions—as well as near-constant COVID-related stress and anxiety—mediate and transform rapport with interlocutors, adding layers of complexity to fieldwork. As previously mentioned, many of these obstacles are not new to researchers, but the inescapability of such challenges during a global pandemic suggests the need to reflect further on our methodological foundations, commitments, and responses.

Discussion

Each of us struggled with the pandemic-driven gaps between our initial, idealized research and the work that actually took place. While CBPR and PAR suggest participant-oriented frameworks that can adapt to challenging situations like these, our experiences resonate with a sustained need for more discussion of the difficulties, surprises, compromises, and readjustments endemic to COVID-era qualitative research. Thus, we found theoretical approaches highlighted by Fortun and others useful in contextualizing the current situation and gesturing toward possible ways forward. The processual methods presented here are rooted in a future anteriorized ethics, which centers the complexity of COVID-19 circumstances across time and space and helps situate participants and researchers as agentive actors whose powerful expressive and performative acts will help safeguard—or jeopardize—communal health. Our methodological contribution coalesces around three key findings: the need to address the uneven effects of COVID-19, how researchers should foreground flexibility and care in building rapport and designing their projects in times of uncertainty like pandemics, and how they should accept failures and limitations as part of research.

The need for care in an uneven pandemic

The COVID-19 pandemic has had uneven social and geographic effects on and due to participants' habitus, health situations, and personal positionalities. Stemming from their class, education, and racial backgrounds, "these positionalities have the potential to reproduce systemic health inequities and disadvantage community partners" (Bourassa et al., 2010). At the same time, "racism and capitalism mutually construct harmful social conditions that fundamentally shape COVID-19 disease inequities," as well as access to medical knowledge and freedom, which minimize risks and consequences of diseases and ultimately "replicate historical patterns of inequities within pandemics," as Pirtle (2020) notes. Since scholars often "represent centers of power, privilege, and status within their formal institutions, as well as within the production of scientific knowledge itself" (Muhammad et al., 2015), they may be less sensitive to equitable outcomes. Since COVID-19 is individually felt and experienced differently across socioeconomic strata, researchers in this time must redouble their efforts to minimize harm and maximize benefits for individuals and the greater community.

Our acknowledgment of the mutual obligation between researchers and participants to prevent contamination and harm in this uneven pandemic impels innovative ways to stage encounters without excessive risk and without amplifying stressful circumstances. Since regions and countries have differing capacities to roll out vaccines, varying access to (affordable) health care, and local health systems may already be strained by other viral or chronic diseases, we are ultimately entangled with a mutating virus, and future public health is dependent on individual and communal health worldwide. Community-based participatory (action) research that seeks to foreground virality and participants' agency in research projects is important to preventing, or not further exacerbating, the slow violence of the pandemic through the workings of the academy.

In the context of a pandemic, the CBP(A)R-influenced methods we enacted seek the co-production of knowledge and equitable benefits by sharing power, considering participants as experts in their own interests while acknowledging the need for public health directives. Our hybridized approaches did not necessarily mean involving participants all the time, at all stages, as PAR often requires, but rather promoting frequent and open communication with participants to share power, discuss/mitigate risks, and build reciprocity/mutuality. For instance, an online PAR approach with farmers in Collins' and Gailloux's projects would have been inadequate and insensitive to the participants' context and ease with technology in the midst of the pandemic.

Building rapport and flexibility during COVID

While the ideals and tenets of PAR and CBPR are more important than ever in the context of public health crises, the practicalities of implementing these approaches may remain prohibitive. As our (and so many others') experiences illustrate, the deep engagement required for collaborative research is difficult in the context of COVID. Researchers should be virus-like in adapting projects to evolving contexts, whether that

involves changing projects entirely, modifying data collection methods or field sites, or building more space into timelines for accommodating delays. They should be aware of intersections and idiosyncrasies between public expressions of contamination through decrees and mandated safety measures and how researchers and participants express and perform it personally through their individual actions, as Gailloux found in farms and distilleries in eastern Quebec.

Open-ended and creative methodologies hinge on a practice of iterative adaptation and solicitude to revalidate consent and remain methodologically flexible (Mokos, 2021). In other words, researchers need to be both reactive and proactive during times of radical uncertainty and risk. To ensure researcher and participant safety, we executed rigorous IRB-mandated consent processes and followed mandated protocols related to the use of personal protective equipment and social distancing practices. By ensuring safety measures are understood and accepted before a meeting ensues and by checking in frequently with participants, researchers can proactively address doubts and concerns. This process of frequent check-ins ultimately fosters relatedness, care, and trust (Strong et al., 2020), helping to turn participants into collaborators (Fortun, 2003).

Though contact was difficult due to infection risk, we were proactive in the ways we connected with participants and emphasized sensitivity to their communication preferences, generally meeting them "where they were." For example, Furness modulated his interview modalities from his idealized in-person conversations to video calls to asynchronous email conversations depending on participants' comfort and availability. Likewise, Collins shifted her approach and frequently rescheduled interviews out of respect for participants' health and time constraints. These adaptations served to build rapport and flexibility even as they necessitated changes to project design and timelines.

While local authorities expressed contamination differently in Wiley and Gailloux's field sites, both researchers responded with culturally-appropriate conduct to prevent contamination. Flexibility was paramount in their projects: although they worked with the same IRB's standard operating procedures (SOP) in times of a global pandemic, Wiley offered more agency to participants in using (or not) safety measures, while Gailloux followed the strict government color-coded alert map and mask mandates. This variance stemmed from the different cultural landscapes and norms of Texas and Quebec and accounted for participants' differing expectations and comfort with social contact and infection risk. Despite prescribed safety measures, in the midst of action, researchers and participants alike may negotiate their performative interactions in spontaneous and not always rational ways (Mokos, 2021), like shaking hands.

The negotiation of risk necessarily evolves as the virus appears less harmful and, thus, becomes less apparent. As health and safety norms and regulations shift and expire, so do personal preferences for interpersonal interactions, which can lead to hazy or even conflicting cues regarding what is ethically or socially acceptable behavior, especially as we move geographically. This interplay between safety measures and evolving virality creates the complex field in which we conduct and negotiate research. As Derrida (1987, p. 327) suggests, context is constituted through the very interplay of opposites, for instance in varying attitudes and reactions to COVID in the midst of and in-between viral waves. Yet he also notes that to be hospitable, one has to "have the power to host" and exercise control over the event while also giving up mastery and ownership to let the other in Derrida and Dufourmantelle (2000). In the context of the pandemic (as in other conflict settings), research comes second to health risks or even stress and emotional burdens (Ford et al., 2009). Hence, the ethical limits of fieldwork are bounded with an acknowledgment of the need to stage generative encounters strategically.

Accepting failure as part of research

As Davies et al. (2021) note, failure is an intrinsic part of research. The COVID-19 context diminished the quality and quantity of the data we were able to or dared to collect, one of many forms of failure we have had to accept and acknowledge. More generally, Horton (2020) proposes six dominant forms of failure in academia:

> *(i) things not going to plan; (ii) pervasive anxieties about performance within the neoliberal academy; (iii) regret, or wanting to do more; (iv) embodied sense of personal inadequacy and (not)belonging; (v) assessment criteria and procedures; and lastly (vi) a toxic triumphalism that can pervade less critical discussions of failure.*

We faced many of these kinds of failure in our projects, as we outline in the results section. As fledgling scholars, we felt especially vulnerable to performance anxieties, regret, and inadequacy, which had implications for our physical and emotional well-being (Butler-Rees and Robinson, 2020; Davies et al., 2021; Lorne, 2021). While striving to remain flexible, we were constrained by limited funding and time, which required each of us to grapple with unforeseen realities.

Barriers to access (to resources, interlocutors, or both) created challenges to completing our projects. While virtual interactions are freeing in some sense, they can also untether sociability in dynamic and unpredictable ways. On one hand, the structured, formalized, audiovisual context wherein participants must be invited, wield an audio and video-ready device, and have internet access makes casual interactions harder to replicate, as Collins and Furness highlight. Participants are constrained by the necessity of only one person speaking at a time, and non-verbal cues can be difficult or impossible to read (Fauville et al., 2021). On the other hand, such technologies may exacerbate issues of inequality in access and connectivity,

as software and broadband internet are unevenly distributed across communities and geographic locales (Whitacre and Mills, 2007; Lourenco and Tasimi, 2020; Van Dijk, 2020). Thus, the decision to hold remote, virtual events can impose burdens on or even exclude participants with modest economic means, located in rural regions, or in areas outside the Global North.

Even for more privileged individuals (ourselves included), access to some university resources has been limited (e.g., books!), and researchers—like other workers—have had to depend more on personal computers and utilities while adapting their living spaces into offices. Such spaces are readily available for some, but others have had to make do with limited or shared spaces. Competition for internet bandwidth and quiet-enough rooms for videoconferencing at home has become a very real consideration for many.

In the "Zoom era," participants can seem less focused or have reduced attention spans during meetings, as many are multitasking to provide care for children attending school virtually. Others may have their cameras turned off, lending a sense of disconnectedness to a meeting. All of this makes it harder to observe and jointly build meaning. In the context of our projects, virtual participation created challenges to co-producing rich and embodied data through an epistemology acknowledging affective complexities by seeing interviews as emplaced, as Furness notes.

There is likely an even greater need for feasibility analyses before conducting research now, and junior and senior researchers may benefit from appropriate training to increase knowledge of bioevent preparedness (Carrie et al., 2008; Ford et al., 2009). Moreover, along with researchers, a multitude of actors—from funding agencies to institutional research boards to journal editors and more—are responsible for ethical shortcomings and should "play a more proactive role for enhancing the practice of ethical research conduct" (Makhoul et al., 2018). Supervisors and mentors can play a significant role here.

While modifications to research plans and delays may be seen as failure, we suggest they are also opportunities for creativity. Turner (2020, p. 5) argues that we may find "power in failure" by being creative with how we engage with the quotidian processes of neoliberal, academic life and "push back against the fear and loneliness that 'failure' can create." Opportunities to effectively "teleport" between locations is one benefit of virtual interactions. Space is compressed and warped by satellites, allowing us to attend conferences, lab meetings, and interviews, regardless of distance or time zone. For instance, participants and researchers with caregiving responsibilities or non-traditional circumstances have been able to connect to peers and interlocutors in new ways as in-absentia or virtual forms of meeting and communication become mainstream. Since nearly anyone can join from anywhere—assuming they have the required equipment and connectivity—such interactions may increase fluidity and inclusiveness. The often-rigid boundary between personal and professional lives has softened, increasing awareness and acceptance of the various responsibilities people are juggling at work and at home, hopefully normalizing more empathetic and authentic interactions for everyone involved (Motherscholar Collective et al., 2021). These realities will likely shape our expectations and experiences of research going forward, meaning that failure and success may intermingle and overlap ever-more visibly.

Conclusion

With the interplay of variants, contamination, and vaccines, COVID-19 may not disappear, but shift from being a pandemic to be(com)ing endemic, a seasonal disease potentially less potent for the fully vaccinated (Xue, 2021). Qualitative researchers need to practice solicitude with and for participants while being attentive to the shifting preferences of all parties in terms of risk tolerance and individuals' capacity to participate in various ways as the epidemiological situation evolves. Decisions based on risk perception (i.e., severity or transmissibility) intersect with age, race, and gender differences and daily constraints, enabling or limiting the performance and prevention of contamination. A long-term commitment to ethical research and reciprocity is needed.

Whether conducted at home or abroad, travel and interpersonal encounters will almost certainly involve interactions with an array of unknowns as the uneven landscape of COVID-19 remains unpredictable. Attentiveness to how authorities express contamination and culturally-appropriate responses while remaining sensitive to participants' and researchers' specific needs and limits is an imperfect yet important starting point to assess the feasibility of research across diverse, viral contexts and geographic locations. Overall, precautions like opening dialogue before meeting or making the virus legible by talking about its perception and accompanying safety measures help stake out common ground (or intertextuality), ultimately sharing power. COVID-19's presence and gravity, continually performed through acts we do or do not commit (Butler, 1990; Fortun, 2011) and expressed variably in local contexts, is experienced individually and communally. We can help foster trust and build rapport with participants through open communication and flexible research design, adapting to participants' availability and preferences as well as the changing local epidemiological situation(s).

Through vignettes from our individual research projects, this paper highlights the challenges of progressively adapting research and navigating COVID-related barriers virtually and in-person. As previously routine elements of qualitative research became more problematic, we have had to respond

by developing processual, flexible, and creative approaches in perpetual adaptation to changing viral circumstances. Based on methods and conceptual frameworks inspired by ethnographies of toxic contamination (Fortun, 2003, 2011, 2012), work in conflict settings and early stages of COVID-19, community-based participatory (action) research (Walter, 2008; Afifi et al., 2020), and fermented landscapes (Myles, 2020), we assess how we adapted to the contingencies of COVID-19. Given the tenuousness of the present, we suggest qualitative scholars should continuously reflect on their individual commitments while learning from others to embody a future anteriorized ethics.

Reflecting on what data we were able to and dared to gather while maintaining a safe and ethical environment for conducting research, we also contemplate stresses (despite our relatively-privileged positionalities), including testing the limits of bodily risk posed by COVID to emerging scholars under pressure to pursue ambitious research over short timelines. Our approach suggests an acknowledgment of our obligations to ourselves and to our research partners in order to reduce risk. We conclude that, in order to effect a future anteriorized ethic, scholars must turn doubts and concerns into opportunities by engaging with them directly during fieldwork to ultimately transform participants into collaborators in spaces of uncertainty.

Data availability statement

The original contributions presented in the study are included in the article/supplementary materials, further inquiries can be directed to the corresponding author/s.

Ethics statement

The studies involving human participants were reviewed and approved by Texas State University Institutional Review Board. The patients/participants provided their written informed consent to participate in this study.

Author contributions

CG, WF, CM, and DW contributed to the conception of the study. CG wrote the theoretical section. CG, DW, and CM wrote the methods. CG, WF, DW, and KC contributed empirical reflections from their research projects. WF and CG led the writing of the findings section and CM and CG led the writing of the discussion section, but all authors contributed and participated in the writing of these sections. All authors contributed to manuscript revisions and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Call for reimagining institutional support for PAR post-COVID

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Although we believe academic researchers have a critical role to play in transformative systems change for social and ecological justice, we also argue that academic institutions have been (and continue to be) complicit in colonialism and in racialized, patriarchal capitalism. In this essay, we argue that if academia is to play a constructive role in supporting social and ecological resilience in the late stage Capitalocene epoch, we must move beyond mere critique to enact reimagined and decolonized forms of knowledge production, sovereignty, and structures for academic integrity. We use the pandemic as a moment of crisis to rethink what we are doing as PAR scholars and reflect on our experiences conducting PAR during the pandemic. A framework is presented for the reimaging of institutional support for the embedding of scholars in local social systems. We propose an academy with greater flexibility and consideration for PAR, one with increased funding support for community projects and community engagement offices, and a system that puts local communities first. This reimagining is followed by a set of our accounts of conducting PAR during the pandemic. Each account begins with an author's reflection on their experiences conducting PAR during the pandemic, focusing on how the current university system magnified the impacts of the pandemic. The author's reflection is then followed with a "what if" scenario were the university system changed in such a way that it mitigated or lessened the impacts of the pandemic on conducting PAR. Although this framework for a

reimagined university is not a panacea, the reliance on strong in-place local teams, mutually benefiting research processes, and resources for community organizations putting in the time to collaborate with scholars can overcome many of the challenges presented by the pandemic and future crises.

KEYWORDS

participatory action research, academic capitalism, neoliberal university, scholar activism, COVID-19

Introduction

In "Displacement of the Scholar: Participatory Action Research under COVID-19, we—a community of 15 scholar-activists—explored the varied impacts COVID-19 had upon us as we worked to carry out our diverse, critical participatory action research initiatives, and the ways in which we adapted and responded in the face of this multifaceted global crisis (Auerbach et al., 2022). Reflecting on our diverse experiences in community together, we explored similarities and differences, and outlined a set of propositions and recommendations to support ongoing participatory action research in these times of disruption and displacement. In this essay, we broaden our gaze, stepping back to (1) examine the long arc of institutional and relational patterns that contributed to the displacement and devastation surrounding the COVID-19 pandemic; (2) explore how critically, compassionately engaged participatory action research (PAR) can serve as an intervention point to disrupt these patterns of exploitation, extraction, and exclusion and enact liberatory relations of mutual care, reciprocity, and integrity; and (3) radically imagine how scholar activists can self-organize in efforts to co-create structures that support the transformative potential of PAR in—and beyond—university systems as we currently know them.

Co-emergence of academia and Capitalocene

As a point of departure, we acknowledge that displacement is an overarching experience of our current apocalyptic moment, and that the COVID-19 pandemic is but one example of disruptive change contributing to processes of displacement, dispossession, and extermination. While the International Geological Congress declared in 2016 that Earth has shifted from the Holocene into a new geological epoch, "the Anthropocene," based on the profound impact of human activities recorded in deposits in the geological record[1], we join environmental historians in referring to this epoch as the Capitalocene (Altvater et al., 2016; Moore, 2017; International Commission on Stratigraphy, 2019). We believe that this nomenclature offers a more critical and precise understanding of this period, given that observed changes are not endemic to all human activity, but rather emerge from *capitalism*, understood as a particular economic system of extractive, exploitative, and exclusive power relations focused on "discovering" and appropriating "nature" for use by global elite power brokers at the expense of the majority of human beings and more-than-human beings (McKittrick, 2013). As such, we employ the Capitalocene to highlight the root causes of climate change, displacement and other contemporary planetary crises, while also acknowledging that human beings can—and have—intentionally developed economies, cultures, and knowledge production systems that are rooted in less exploitative and more reciprocal relationships with the living systems of which they are part (Merchant, 1990; Ostrom et al., 1999; Salmón, 2012; Kimmerer, 2015; June, 2022).

Although we believe academic researchers have a critical role to play in transformative systems change for social and ecological justice, we also argue that academic institutions have been (and continue to be) complicit in colonialism and in racialized, patriarchal capitalism. In "Displacement of the Scholar? Participatory Action Research Under COVID-19" we discussed how the increasing neoliberalization of academic institutions over the past few decades [i.e., "academic capitalism" with its focus on entrepreneurial models in education and research, coupled with reduction of public resources (Slaughter and Leslie, 2001; Slaughter and Rhoades, 2009)] challenges authentic, critical PAR, even while publicly professing a commitment to "community participation" and "public good" (Auerbach et al., 2022). We also acknowledged that these tensions are built into capitalism itself, and that Indigenous and Black scholars in both the decolonial and Black Radical tradition have long highlighted the profound influence of racialized capitalism upon academia—from its epistemologies to its modes of production and control (Robinson, 1983; Eaves, 2019).

Building on this foundation, we extend our reflection on the complicity of academia in processes of displacement,

1 Geologists have yet to choose which geological deposit marker will be used to signal this profound change, but candidates include radioactive elements from nuclear bomb tests, plastic pollution, aluminum and concrete particles, high levels of nitrogen and phosphate in soils, and even the preponderance of domesticated chicken bones.

FIGURE 1
Screenshot taken during a presentation on grant funding criteria for the School of Natural and Built Environment at Queen's University Belfast (2021).

dispossession, and extermination from the past several decades to the past several centuries. We acknowledge that modern capitalism, academia, and western democracy co-evolved, all operating under the influence of Enlightenment Era conceptions of sovereignty and rationality/epistemology, with profound implications for the exercise of power in relation to land and people, and in the mission of universities (Santos, 2014, 2017). Sovereignty in this world view means "supreme authority within a territory," primarily by the State (e.g., nation state), but also by elite private property owners (e.g., gentry, and those responsible for gentrification) (Hern, 2017). In this context, cartography developed as a means through which the State could make its land and labor legible; that which can be (re)defined, divided, and controlled (Scott, 1999). Moreover, this way of "seeing like a State" profoundly shaped the axiological and epistemological assumptions of research paradigms, and universities evolved to privilege the pursuit of generalizable, a-contextual, objective truths by established scientists (Flyvbjerg, 2001; Edney and Pedley, 2020). Further supporting processes of colonization, academic institutions in North America—especially land grant universities[2]—developed as a critical infrastructure for settler colonialism, encouraging new settlement built on stolen land (Stein, 2020). Operating under these assumptions about sovereignty and epistemology, academic institutions from the Enlightenment Era on have contributed to colonizing processes of displacement and dispossession of Indigenous people from their homes, coupled with erasure of ways of knowing, relating, and governing that supported the regenerative vitality of those habitats.

In this essay, we argue that if academia is to play a constructive role in supporting social and ecological resilience in the late stage Capitalocene epoch, we must move beyond mere critique to enact reimagined and decolonized forms of knowledge production, sovereignty, and structures for academic integrity. For decades, academic researchers have documented and critiqued displacement, without disrupting institutionalized patterns of displacement or significantly changing social or material relations (Wisner, 1993; Chapple and Zuk, 2016; Richardson et al., 2019; Easton et al., 2020). As Matt Hern asserts in *What A City Is For: Remaking the Politics of Displacement*, "any attempts to ameliorate displacement are doomed if not rooted in an aggressively equitable and decolonized politics of land, ownership and sovereignty" (Hern, 2017, p. 30). Academic institutions and scholars will need to decolonize underlying assumptions of sovereignty and power, which drive the epistemological assumptions of university systems, as well as their institutional cultures, infrastructural investments, and broader politics of land (Santos, 2017).

PAR as a leverage point for geographies of radical resilience

We assert that critically and compassionately engaged PAR has the potential to disrupt exploitative, extractive and exclusive relations endemic to the Capitalocene while co-creating liberatory social relations and infrastructures to cultivate the knowledge and power required to enact geographies of radical resilience (Muñoz et al., 2022) through a *prefigurative politics of flourishing*.

In naming PAR's role in supporting a "prefigurative politics of flourishing," we are:

- Speaking to its value to diverse collaborators committed to "building the new society within the shell of the old" (Raekstad and Gradin, 2020), in the tradition of the Zapatistas' commitment to changing the world, "not to conquer the world, but to make it anew" (Holloway, 2002);
- Acknowledging that research is always political and that by participating in research, we are necessarily participating in politics and shaping the future through our everyday actions and interactions; and
- Positing that by practicing emancipatory, collaborative PAR methods in communities of praxis, we are better equipped to cultivate the kinds of embodied, embedded, and emplaced wisdom and power that support thriving, rooted, resilient communities.

While acknowledging that mere "participation" and "action" in research are not liberatory in and of themselves, we affirm that the roots of participatory action research (PAR) and the heart of ongoing PAR praxis support emancipatory research through collaborative, place-based, cyclical processes of learning,

2 A land-grant university is an institution of higher education in the United States designated by a state to receive benefits through the Morrill Acts of 1862 and 1890. The Morrill Acts were part of the colonization policies; they not only encouraged westward immigration through subsidized access to higher education, land grant universities provided new settlers with skills needed to conquer the west, including agriculture, military science, and engineering. Yet, land-grant universities are celebrated for the ways they have democratized higher education, especially through their cooperative extension offices.

acting, reflecting and intentional adaptation (Rappaport, 2020). Moreover, PAR's epistemological and methodological diversity is, unto itself, a key leverage point for transformative, decolonial, liberatory systems change within and beyond university systems (Santos, 2017; Walker and Boni, 2020). In contrast to the hegemonic ontological, axiological, and epistemological assumptions and conceptions of sovereignty that have shaped academia and the politics of land in the Capitalocene, PAR has been at the heart of pluriversal scholarship that embraces relational ontologies, epistemological multiplicity, contextual awareness, and autonomy (Vasudevan and Novoa, 2022).

Importantly, "autonomy" in this sense is generally rooted in Indigenous understandings of sovereignty that challenge the hegemonic view of sovereignty as a right to exercise supreme control over bodies (e.g., of land, water, people). More than a supreme right to control, sovereignty becomes an innate responsibility for care. Anishinabe spiritual leader Eddie Benton-Benaie profoundly expressed sovereignty as "a responsibility you carry inside yourself" (Harjo, 2019, p. 60)—an embodied, embedded, emplaced sovereignty that translates into care for self, neighbors, and the earth. This view of sovereignty translates into axiological and epistemological assumptions geared toward cultivating practical wisdom and collective power to support the profound cultural and ecological transitions needed to face the inter-related crises of climate, food, energy, poverty, and meaning. If universities are to respond to public demands that they address "grand challenges" like climate change and social inequity, multi-actor networks will need to incorporate decolonial PAR agendas into university systems. In our collective lived experience, embodied praxis of a politics of flourishing supported by PAR is enlivening and energizing, although not without risk.

The co-authors of this essay come from different continents, disciplines, languages, and experiences in academia, to find parallels in respective attempts at and journeys in community-based scholarship, PAR, and scholar activism. We draw upon a wide, robust, and growing literature on this work, the struggles it entails, and the reflexivity it demands. Female scholars of color have long been leading this crucial line of critical methodological inquiry and action (Kobayashi, 1994; Nagar and Geiger, 2007; Pulido, 2008; TallBear, 2014; Osborne, 2017; and others) while Geographers have long been reflecting on the opportunities and challenges of PAR (Kindon and Elwood, 2009; Pain, 2009). Our current essay is not a comprehensive review of this literature, and it does not purport to originate these ideas. What we trace in this essay is how and why calls for community-based and even community-led action research, grounded in antiracist, decolonial, and feminist (to name only a few) commitments, hits impasses in academia (Kindon et al., 2007; Chatterton et al., 2010; Derickson and Routledge, 2015; Hammelman et al., 2020; Henry and Fay, 2021; Montenegro de Wit et al., 2021; Roman-Alcalá, 2022). What accounts for the entrenched institutional roadblocks? How does the university care for its staff? What is the role of the university in regional development? We identify co-optation of public good ethics as central to these dynamics. What will it take to transform these obstacles?

Practicing PAR and a prefigurative politics of flourishing

Our review of literature and collective lived experience make it clear that authentic PAR has emancipatory potential for long-term systems transformation. As such, we also acknowledge that PAR necessarily threatens dominant power structures and their exclusive, extractive, and exploitative relational patterns. Engaging in authentic PAR within current university systems also requires that PAR practitioners engage what we call the "public good paradox." On one hand, we acknowledge that in this current moment of the neoliberal university, universities increasingly endorse "public service" as a means by which university students can cultivate skills that make them marketable as future employees, and university researchers are encouraged to demonstrate measurable and marketable impacts of applied, entrepreneurial research (Auerbach et al., 2022). Moreover, universities are under increasing pressure to address "grand challenges" and sustainable development goals[3] such as climate change and social inequity (i.e., through the production of knowledge and the development of professionals), even private universities are increasingly adopting a "public good" mission (DiEnno and DePrince, 2019).

We also acknowledge that in this current moment of the neoliberal university, PAR can easily be co-opted by academic capitalism to reproduce dominant social, economic, and ecological relations. As philanthropic and academic funding increasingly favors investment in applied research in sustainability and resilience (such as the National Science Foundation's Civic Innovation Challenges or Sustainable Regional Systems Research Networks), PAR researchers will need to continue asking critical questions of ourselves and our partners about whether initiatives are intended to sustain capitalist economic growth and support the resilience of systems of oppression, or to advance equity, vitality, and resilience

3 "The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing—in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth—all while tackling climate change and working to preserve our oceans and forests." *https://sdgs.un.org/goals*.

in living systems by disrupting dominant economic systems (Walsh, 2018).

In alignment with these aims and our collective praxis of PAR and a prefigurative politics of flourishing, we affirm that support of PAR is essential to a transformative agenda for higher education. In writing this essay, we are also reclaiming our own faculties for vision, intuition, and radical imagination, recognizing that these forms of knowledge are essential to navigating our way to geographies of radical resilience—within university campuses, as well as the neighborhoods and bioregions in which they are situated. We affirm that PAR is not just a tool to support community-university relationships "off-campus"—it is also an essential tool for us to support intentional, liberatory systems transformation from *within* the university, so that it may be an inclusive and liberatory geography nested within larger systems and communities. If students, adjuncts and others in the university community are undervalued or exploited, then the very presumptions and ethics of public-facing community-engagement ring hollow and disingenuous. We understand that practicing a prefigurative politics of flourishing implies that we must apply PAR to engage in the large scale work of decolonizing universities, with particular attention to supporting the material needs of students (especially those with marginalized identities) and investing in strengthened infrastructure to support community-based PAR (e.g., through cooperative extension offices). As such, we share insights on our journeys as we heed Boyer (1996) call for campuses to be staging grounds for action:

> "At one level, the scholarship of engagement means connecting the rich resources of the university to our most pressing social, civic, and ethical problems… Campuses would be viewed by both students and professors not as isolated islands, but as staging grounds for action.… Increasingly, I'm convinced that ultimately, the scholarship of engagement also means creating a special climate in which the academic and civic cultures communicate more continuously and more creatively with each other…enriching the quality of life for all of us." (Boyer, 1996)

We take the COVID-19 moment as a crisis moment from which we can both learn and use to build new and more inclusive institutions. We offer examples of challenges we faced and the insights and possibilities they have inspired to invite readers into a broader conversation about how to use PAR as a leverage point for systems change. These examples are more than mere anecdotes. This overview of cases is not comprehensive, but forms a process of finding parallels across our international and multidisciplinary research experiences so as to build communities of praxis. In the next section, we identify necessary changes and improvements within the university in terms of the role and expectations put on its scholars, students, and researchers that will lay the groundwork for a reimagining of academic support for PAR. Subsequently, through (1) an analysis of our professional experiences as researchers and scholars during the COVID-19 pandemic and lockdown and (2) an exercise of our faculties for radical imagination, we present "what-if" scenarios: what if we worked in this reimagined academia, and how, could these PAR experiences during the pandemic have been different? The pandemic provided a moment of crisis to rethink what we are doing as PAR scholars and why we are doing it this way. These "what-if" propositions are used to identify what conditions need to be in place to promote more socially just, transformative scholarship of engagement that can offer alternatives that will adequately and effectively allow communities to overcome future crises. We offer these stories in keeping with our commitments to engage in desire-based research, a PAR methodology from Indigenous studies (Tuck, 2009).

The neoliberal university contributed to and magnified the social issues from the COVID pandemic

We use the pandemic as a moment of crisis to reflect on what we did as PAR scholars during the pandemic, focusing on how the patterns of settler-colonialism and neoliberalism shaping the current university system magnified the impacts of the pandemic[4]. We deliberately chose cases drawn from our experiences that reflect key challenges and opportunities that were revealed in the apocalyptic moment of the pandemic—and which can be addressed through PAR. We chose one case that reflects the way universities continue contributing to displacement while "seeing like a State" and acting as a corporate developer beyond the campus environment. We chose one case that highlights how patterns of exploitation shape dynamics within the university system, especially through treatment of

4 A more detailed description of each author's PAR project is provided in this special issue (see Table 1 in Auerbach et al., 2022). The authors' research are with and for diverse communities, such as migrant farmworkers, Indigenous and queer communities, youth in the urban periphery, and urban housing coalitions. These communities are located in the global North (Canada, UK, and the US) and South (Brazil, Mexico, and Peru). The projects were at different stages of development when the pandemic started, and include some that were initiated during the pandemic. The authors represent a group of international scholars at different career stages (students, research staff, and early, mid-career faculty), and are from a representative set of institutes (teaching, research, small, and large). Our methodological approaches were equally diverse, and include a wide-ranging set of tools to meet the needs expressed by our community partners, such as interviews, focus groups, participant observation, and digital, community, and participatory mapping techniques.

emerging scholars. We chose one case to highlight tensions posed by the "public good paradox" and challenges faced in creating institutional infrastructure to support authentic PAR. Following these cases and the critique they generate, we explore opportunities to reimagine and enact alternative futures for PAR as a leverage point for transformative change post-COVID-19.

The neoliberal university is a corporate developer and driver of displacement

Where one lives should provide some degree of safety and stability, from which individuals and families can go to work and school, and access resources in the community that allow them to thrive. During the COVID-19 pandemic, neoliberal housing policies and growing economic inequalities led to increased rents and home prices across the globe (Xu and Hale, 2022) while corporate investors bought as much as 20% of homes for sale in some regions (Katz and Bokhari, 2022). One of the most important and powerful land investors is the university, and in many communities it has remarkable power to choose where and how to operate in corporate or public interest ways (Holley and Harris, 2018). Universities have historically been inextricably linked to processes of dispossession and displacement (e.g., *via* colonization of Indigenous land and the exploitation of Black slave labor), and current trends reflect the university's increasing involvement in the development of the neighborhoods where they are situated (Glasson, 2003). Research shows that capital expenditures related to campus expansions have little positive impact on student achievement and retention, especially in comparison to increases in operational spending (Baron, 2022). Yet, impacts on surrounding communities are clear: when universities expand their footprint, longtime, low-income residents are often displaced (Gilderbloom, 2005).

The destructive roles of the university as a corporate developer, colonizer, and driver of displacement has been front and center in public debates surrounding Colorado State University's (CSU) plans for its new "CSU Spur" campus through a planned redevelopment of the historic National Western Center (NWC). In 2015, CSU received $200 M from the Colorado State Legislature to construct a 30,000 m^2 facility in the heart of Denver, and 100 km from CSU's campus. According to the CSU Spur website, the campus will operate as a mutually beneficial anchor institution, in that it will "host families and tourists, K-12 student field trips, conferences, and meetings; it will house researchers in state-of-the-art labs; college students pursuing degrees in fields related to agriculture and sustainability; and local artists creating pieces in on-site studios[5]."

The NWC is situated within the historically redlined and marginalized neighborhoods of Globeville, Elyria, and Swansea (GES)—within a zip code that is arguably the most polluted in the nation (Svaldi, 2022). However, these well-publicized development proposals neglect to name how the plans will generate substantive economic and healthy benefits for immediate neighbors. Similarly, the NWC has yet to announce strategies for redressing long standing environmental injustices or for proactively addressing the gentrification threats its development poses. NWC is compounding displacement pressures in GES: in the 10 years prior to the pandemic, Denver was ranked third in the US for rent increases, up 88.2% (Clark, 2019), and like other formerly redlined neighborhoods, GES was hit hard by the pandemic, both in terms of COVID-19 morbidity and eviction threats (Németh and Rowan, 2020).

At the time the COVID-19 quarantine began in 2020, Colorado-based authors JA, CD, SM, and EW were all participating with a few colleagues from CSU in a loose interinstitutional network of action-oriented researchers committed to co-producing knowledge and power with Denver based community partners to advance regenerative development without displacement. They had developed relationships and research initiatives with multi-sector community stakeholders in historically marginalized neighborhoods that were experiencing escalating displacement pressure. CD also participated with CSU staff in the Denver Anchor Network, a group of institutions that aim to leverage their economic power to help close the racial wealth gap through procurement, hiring, and investment practices[6]. The CSU faculty and staff in these networks have been committed to building authentic community partnerships and advancing equitable, community-based development[7]. However, at the system level, development of the National Western Center complex has positioned CSU – a founding

5 *https://nationalwesterncenter.com/*. In 2020, the NWC received national acclaim for its 2050 Food Vision "How the West Was One," centered around becoming a global, state, regional, and local hub for applied research on regenerative agriculture. *https://www.rockefellerfoundation.org/meet-the-top-visionaries-food-system-vision-prize/*. Ironically there is no mention in this vision of CSU's role in "how the West was won" through the obliteration of the original regenerative agriculture system. CSU's agricultural programs helped transform the Buffalo Prairie ecosystem into monocultures of grain production.

6 https://www.communitywealthbuilding.org/denveranchornetwork.html

7 Press coverage of CSU faculty and staff efforts to create community partnerships includes: https://denverite.com/2022/01/12/globeville-and-elyria-swansea-residents-are-burnt-out-on-projects-they-say-dont-benefit-them-but-there-is-hope-for-csus-spur-campus/; https://source.colostate.edu/csu-spur-anchored-in-community/; https://gesgazette.com/csus-terra-building-latest-to-open-on-spur-campus/; https://gesgazette.com/stock-show-csu-spur-into-action/

partner of the National Western Center[8] – in the role of corporate developer. The 2015 master plan for regenerative development of the NWC campus fails to mention the threats it poses to gentrification, let alone recommend strategies to mitigate such harm[9]. In 2021, the City and County of Denver proposed a $190 million bond for capital investments in the National Western Center. This decision was in direct opposition to what residents desired. Neighborhood organizers had been very clear that the proposed development was not what the local community needed or wanted, and instead is another example of state-led gentrification. Moreover, as a result of their savvy community organizing, networking, and communication efforts, 58% of voters rejected the referendum (Swanson, 2021).

The university exploits scholars

At the time of writing, much of the world is experiencing significant inflation, with rates far exceeding annual academic pay increases[10]. Students are especially struggling with rising rents, low wages, inadequate healthcare and childcare coverage, and discrimination and sexual harassment in the academic workplace. Several large labor strikes between student workers and their universities recently occurred, such as the 2021–2022 Columbia University Strike (Wong, 2022) that demanded, among other things, an increase in wages, and increased healthcare and childcare coverage. During the pandemic, students experienced increased academic stress and isolation under conditions that in so-called "normal" times already included a high workload, with demanding courses, weekly deadlines, the struggle to balance university and private life, and the rising financial costs of education and living expenses. In the US, the average room rate among public 4-year institutions rose 111% from 1989 to 2019, after accounting for inflation, while in the UK, dorm rents rose 60% from 2010 to 2020 (National Center for Education Statistics, 2021; National Union of Students, 2021). At the same time, minorities, women, LGBTQ+, and international students experience higher rates of violence on and off campus (Gómez, 2022).

The COVID-19 pandemic has also exacerbated these health, finance, and education issues, which are linked to a greater risk of distress and reduced academic achievement (Misra and McKean, 2000; Kerr et al., 2004; Stallman and Hurst, 2016; Burns et al., 2020). Attaining a graduate degree often involves a number of challenging conditions that can have negative impacts on students, such as student loan debt, unpaid or underpaid teaching or research responsibilities, multiple and continuous deadlines that require long nights of study and work, and schedules that are both isolating and require students to be very self-disciplined at all times. For students who are poor, first-generation, BIPOC, differently-abled and who are spouses and/or parents, these challenges can be even more daunting. At the same time, even with some institutional acknowledgment and support, students are mostly expected to manage these challenges on their own, with many faculty and administrators seeing them as "rights of passage."

These conditions must be understood not simply in the context of tradition or status quo, but rather in the current context of neoliberalism. We argue that the current capitalist, neoliberal context in academia is taking a toll in unprecedented ways that have not been sufficiently acknowledged. Instead, universities are increasingly being revamped to act as corporations, with students and faculty required to be increasingly more productive and competitive even as working conditions become more exploitative and precarious.

At American University (AU), a private, liberal arts university in a wealthy suburb of Washington DC, students face exorbitant tuition fees atop increasing costs of living. AU does provide some grants and scholarships, but these pale in comparison to skyrocketing rent and food costs in an aggressively gentrifying city. Thankfully, a new student food pantry, respectfully called "The Market" has arisen to provide free groceries on campus. A team at AU were able to convince the leaders of AU's farm (located in Virginia) to grow food not just for the overpriced meal plan, but also for The Market. Yet, 2 years have gone by without this being actualized. Administrative turnover, a bunker-like location, and lack of publicity originally hampered The Market's capacity, and then COVID-19 disruptions exacerbated the logistical issues—and student need. But grassroots student leadership arose anew, and demanded increased administrative investment in the project—from central relocation to amplified offerings. As a result of these changes and activism, The Market has been successful in reaching students and even in broader outreach. Recently, impressive undergraduate student leaders, from the student-founded Unity Coalition, have arranged for The Market to purchase foods from Black farmers in the DMV area, while facilitating the transfer of surplus harvest from these BIPOC food sovereignty initiatives back to The Market. As a faculty member, author GGL has tried to support this work by hiring students as research assistants for the semester as they do this innovative (and emancipatory) food recovery, by moving funds to support a Food Justice panel featuring the students and farmers (with honorariums and funding for a shared meal), and by incorporating this work into a Community-Based Learning class (to fulfill requisite hours of CBL). But these efforts do not suffice, and rarely last past the semester at hand.

8 https://nationalwesterncenter.com/about/

9 http://nationalwesterncenter.com/wp-content/uploads/2017/10/NWC-Master-Plan-2015.pdf

10 Several strikes occurred in the UK and Australia during the 2021-2022 academic year over the lack of increased faculty and staff wages and reductions in pensions (https://www.nature.com/articles/d41586-021-01183-9).

Author VL (one of GGL's students at AU) finds that even when universities recognize the needs of students (such as the student food bank for low-income, food insecure students), they rely on students themselves to volunteer, run the program, and bill it as a "service" and "extracurricular engagement." The University could easily assign university funds to creating actual centers of food access (including free meal plans, university funded and staffed food banks, free pantries, and free food boxes available in dorms, etc.). Instead, the onus is put on the most impacted students to identify systems that perpetuate inequality, and to set up and organize initiatives to resolve access to something as fundamental as food.

This leads to pressing questions about how methodological questions of community-based research interact so directly to material wellbeing—and lack thereof—of those in the university community itself, namely students, but also adjunct faculty and underpaid staff. At AU, longstanding frustrations by these groups simmered into union organizing and intense negotiations with the administration in the spring and summer of 2022. The Staff Union, when administrators ended negotiations, voted to strike—the week of student move-in. Many faculty mobilized in support of the union, and the first year students walked out of the President's welcome convocation en masse, in vocal solidarity with the Union. The next morning, administrators returned to the negotiation table and agreed to union demands, also agreeing to demands by Adjunct Union. The ordeal, overall an improbable success of labor equity and university community solidarity, became a real-time lesson in collective bargaining, university political economies, and coalition-building amidst neoliberalizing trends in higher education. Having made local and national news, the strike, faculty support, and student solidarity walk-out made its way into civil society news in DC and beyond. Current and potential community-based research partners are taking note.

Structural challenges limit the university's commitment to community-engagement

While PAR research aims to build collaborative, trusting, and flexible collaborations between local communities and researchers, it also faces administrative challenges in the process of establishing and navigating these partnerships. To carry out her research on young people's experiences living with and adapting to resource insecurity in conditions of disaster risk in the urban periphery of São Paulo, Brazil, author SB relied to a large extent on the support from the extension office of the School of Public Health at the University of São Paulo (USP). As part of her research to understand everyday experiences and adaptive practices to resource scarcity (food, water, energy) and disaster risk, author SB implemented a university extension course aimed at ∼40 young people aged 12–18 in two Social Assistance Reference Centers in the municipality of Franco da Rocha in the São Paulo Greater Metropolitan Area.

Author SB's research experience illustrates how university extension offices can play a fundamental role in establishing, maintaining and deepening relations between the university and local partner communities. However, they are also often understaffed and underfunded, and part of the highly bureaucratic institutional structures in which they are embedded. Extension offices also often lack flexibility and an understanding of the (administrative) challenges of working with peripheral communities (e.g., in SB's project, not all young people were in the possession of an identity card or an email address, a prerequisite for registration). The administrative process in universities can already be very challenging in "normal" times and requires a lot of back and forth between the community and the extension office. Thus, in moments of crisis, like the COVID-19 pandemic, university extension offices are slow to adapt to changing conditions. In author SB's research, the leading researcher and local gatekeepers (staff implementing the course at two local Social Assistance Reference Centers in the urban periphery) were responsible for much of the administrative process which included: (a) obtaining the necessary data from the participants for enrollment, (b) completing the enrollment forms, and (c) communicating the data to the university extension office at USP.

In author SB's case, with the onset of COVID-19, the extension office (the committee in charge of approving the extension course) showed support and flexibility in (a) adjusting the dates for the extension course and (b) enabling an online modality to be conducted *via* "informal" means, such as WhatsApp. Moreover, the inscription process was facilitated by sending the inscription forms *via* email and collecting the necessary student data *via* social media (e.g., WhatsApp) without requiring a signature on the inscription forms. This flexibilization facilitated the enrollment process enormously and SB was able to enroll 33 young people, of which 15 completed the course with an attendance rate above 75%, which was required to receive a certificate of attendance from the university. However, the role of the leading researcher as a key link between local communities and the extension office was essential to facilitate the administrative process and to create mutual trust. In the process, the researcher also provided informal capacity-building to the extension office staff to foster a better understanding of the structural (administrative) challenges of implementing an extension course in peripheral urban communities and the additional barriers imposed by the COVID-19 pandemic.

A reimagining of the university to support PAR

As PAR scholars in various roles (students, faculty, and engagement officers) and in different career stages (graduate

students, postdoctoral fellows, and early- and mid-career faculty and officers) working within academia, we draw from this diversity to reimagine an academia that supports PAR, and in turn, supports resilient communities. We identify the need not only for increased academic infrastructure, such as funding for PAR and extension programs, but also a fundamental change in academic culture, such as greater flexibility, meaningful and sustained community-engagement, and most importantly, greater prioritization of community needs and demands by the University. This reimagining is followed with "what-if" scenarios, illustrating possible changes that could have mitigated or lessened the impacts of the pandemic on PAR and communities.

Centering frontline communities

Universities have played a historically significant role in settler colonialism (e.g., as land-grab institutions) and imperialism (e.g., as partners with the military-industrial complex). Similarly, they have historically remained outside of the communities in which they are located, and ignoring or dismissing their impact on these communities. We argue that Universities must be aware and mindful of their impact on the communities where they are located and develop policies and practices that work with and support them. Universities are part of the power-knowledge networks of regional development. As such, they can and should be key players in building a more socially just approach to learning, and implementing programs and partnerships with community leaders and organizations that address the development needs and priorities where they are embedded and beyond[11].

There is a rich history of attempts to both decolonize the university and to broaden its role and mission to one that is more inclusive (Goldstein et al., 2018) and liberatory. In the 19th century, "pracademics" like Ellen Swallow Richards (who created the MIT Women's Lab for Food, Air, Water and an international correspondence program to take science into the home), and George Washington Carver (who led the Tuskegee Institute regenerative agriculture program and cooperative extension to repair harm to soil and people from agriculture systems based on enslavement and monoculture), were all responding to social and ecological crises of their time with novel education systems rooted in alternative epistemologies and social relations conducive to mutual aid and cooperation (Hines and George, 1979; Boles et al., 2016; Walsh, 2018). Following this tradition, in recent times there have been growing calls for academic institutions to play a larger role in supporting their communities, and many universities have responded by initiating programs or policies that support methodologies such as PAR and community outreach and engagement[12]. To support the integrity and liberatory potential of these programs, centering the voices of marginalized community partners at the leadership table is important. This must occur not only at a level of a research project, but also within the university, e.g., on local university boards of directors. Similarly, in light of the COVID-19 pandemic, increasing social strife, and growing inequalities, it has become clear that much more centering and support is needed.

We follow the scholars that have called for the decolonizing of the university [such as la paperson (2017)] and find that a university that centers frontline communities and decolonizes regional politics of land is one that:

- Repurposes the industrial machinery,
- Terminates contracts and receiving profits from relationships with organizations that have a history of human and environmental abuse (e.g., fossil fuel companies and the military),
- Returns land and Indigenous artifacts,
- Helps in the accumulation of third world power rather than simply disavowing first world power,
- Engages the local communities in research and co-production of understandings of desirable charge,
- Acts upon financial systems rather than just critiquing them,
- Economically and socially values the students, staff and faculty, and
- Is a school-to-community pipeline as well as a community-to-school pipeline.

Similarly, we also ask:

What if the university stopped being a corporate developer and developed with and for the local community? Universities are important actors in terms of providing jobs, opportunities, capital and other benefits to the communities where they are located. The benefits of engagement of communities within planning for urban change is also an epistemic matter. In other words, local knowledge and community understanding and experience is significantly distinct from professional expertise and institutional approaches and can add important nuances

11 The role of the university as a developer is part of the larger role as a global land colonizer. The Teachers Insurance and Annuity Association (TIAA) manages the retirement funds of faculty and staff at 15,000 universities, hospitals and non-profits in the US, and has invested these funds to purchase 3 million acres of land making it the largest manager of farmland in the world, and a leader in the timber industry. Sign this petition to TIAA demanding divestment from land grabbing and climate destruction: *https://www.stoplandgrabs.org/en-us/take-action*.

12 Some examples include: Center for Community Engagement to Advance Scholarship and Learning at the University of Denver (https://www.du.edu/ccesl/) and the Columbus Community Geography Center at Columbus State University (https://history.columbusstate.edu/columbus-community-geography.php).

often ignored by experts and institutions who want efficient and simple answers. While the debate continues around quality of regional development, and development is also regulated in different ways globally, it is clear that the local stakeholders' perspective is paramount and should be a key consideration in the choices over development. Institutions such as universities are major players with significant potential to be agents of change in this respect (see for instance the work of Just Space, where University College London academics support the civil society network to have greater voice in development matters of the Greater London area)[13].

Even at the smallest scale, community-university knowledge networks can shape regional development in important and beneficial ways. University developments such as halls of residence could be built with greater attention to the experience of students (Goodstadt, 2014), and wider campus developments could embrace the socio-spatial knowledge of local communities (Natarajan, 2017). The reputation and finances of institutions are at stake and it is undoubtedly beneficial to avoid mistakes, and reduce the risk of future judicial review or stop orders on construction. 'Do it right or do it twice' as they say in the building trades. This learning together is powerful and can be possible where there are trusting community-university relations.

We argue that: if universities were to assume a greater partnership and more cohesive relationship with the local communities where they are located, they could:

- Further institutionalize their commitments as an anchor institution in the community. This is a boon to the university itself; it helps in building the long term reputation of the university by boosting its capacity for bridging social capital (Birch et al., 2013).
- Support the co-production of development strategies with local community stakeholder involvement to produce strategies that include local hiring, local procurement of goods and services, local investment, catalyzing of new business, creating career pathways, collecting and disseminating research findings, sharing resources, and developing local equity-centered partnerships.
- Promote development in and around their estates that work better for local residential stakeholders, by learning with them. Protection of spaces with functions that are important to quality of place and support community wellbeing. For instance it could be important to deliberate which spaces are given over to parking when transit networks temporarily close. Similarly the detail of the construction can be managed better, to protect air quality and ecologies during the period of change. Local communities know their localities and the societal uses of urban development (including the built and natural elements) intimately.
- Pursue investments in decolonial, inter-institutional, intersectional, community-engaged applied research networks working to disrupt infrastructural racism and support geographies of radical resilience (Muñoz et al., 2022).
- Universities can decline state monies and ask they be directed for affordable housing[14].

Providing greater academic flexibility and support for PAR scholarship

The increasingly neoliberal and corporate University severely impacts many of the goals of university faculty, staff and students who are committed to social justice through participatory action research with surrounding communities and beyond. One of the principal ways this occurs is through inflexible institutional requirements and demands that limit the ways in which PAR scholars and others are able to do research and develop relationships with community. Mentioned earlier in regards to extension offices, bureaucratic barriers are just one example of institutional inflexibility that create a less hospitable environment for PAR partnerships to flourish.

Flexibility is foundational for PAR and becomes especially necessary during crises where research is interrupted, derailed, and reconstructed. Academic institutions need to allow for this "failure" (Davies et al., 2021), and to provide time, space and support for readjustment when necessary. Relationships of trust, care and mutual reliance take time to build (Gerhard and Keller, 2022). Under conditions of extreme precarity, conditions that characterize many neighborhoods and communities where PAR scholars are located, relationship building requires even more time, presence and often unplanned visits and interventions. Capitalist models of higher education that prioritize efficiency and quantitative metrics to determine scholarly progress and merit severely hinder other, less quantifiable educational and research models.

The authors identified several administrative barriers that slowed or created added work and limitations for those engaging in PAR. In one situation experienced by one of the authors of this essay, a grant opportunity that was designed to provide direct support for scholar-community partnerships (The University of British Columbia, n.d), negatively impacted the relationship between the scholar and the community due to the "unwelcoming" administrative requirements that donnees must have charitable status in order to receive the grant directly. The requirements for charitable status in Canada exclude multiple groups who do not have secure funding sources,

13 https://justspace.org.uk/

14 If CSU had declined the original $200 million in government funding it received and asked that it be used for affordable housing, ~400 affordable housing units could have been built.

paid staff or otherwise limited capacity. Although the project was successful in securing funding, these requirements created unnecessary work for both the community partner and the researcher to get and distribute the funds accordingly.

Another challenge to PAR is the ways in which funding interests and allocation do not necessarily reflect community needs and realities. Large funding organizations and institutions are often focused on macro-scale data findings, analysis and outcomes that are tied directly to policy and planning. As such, the criteria used to assess what types of research will be funded or rewarded by various funding bodies largely depend on national policies for research and innovation. For example, some countries use an academic funding model that includes a wider societal impact of research (see REF model in the UK; Bornmann, 2012), while other cases tend to rely on quantifiable outcomes such as impact factors of published papers and the number of patents from the research.

Academic institutions also require faculty to apply for these large, national and international grants that provide institutional revenue, while discouraging them from applying to smaller grants or outside funding for PAR related, community based projects. For example, at Queen's University Belfast (UK), author JA was informed by the school's administration and leadership that they would not support funding applications that did not include overhead or that awarded <£35K, as these were deemed an inefficient use of institutional resources (see Figure 1). These institutional barriers block applications for small-scale and pilot community partnership funds (e.g., the community-engagement grants provided by the Urban Studies Foundation[15] among others), and highlights how the criteria and priorities of a funding body as well as the receiving institution, inevitably impact how research is developed, conducted, and managed, often to the detriment of PAR and other community-based and social justice research. The focus on large-scale projects and grants with lengthy and highly specific outcomes is often antithetical to community needs and interests that are generally smaller in scope and more immediate, requiring levels of flexibility that current funding models lack. Instead, small-scale grants and community projects may better generate catalytic impacts by cultivating the kinds of knowledge, power, and emergent strategies needed for effective, long-term change that starts at the community scale and moves incrementally into other local spaces and contexts.

Finally, and in relation to university community relations, it is important to note that wider funding structures often appear to undervalue the need for deep and long-term connections between universities and local communities. Firstly, through their very nature, universities tend to support formally recognized relationships. In the case of researchers, university funds tend to be allocated to tenure-track and tenured professors, since scholars with short-term or temporary contracts often cannot sustain long-term relationships with local communities in the same way. Secondly, external funding institutions often reduce the relationship between universities and communities to a rather distanced funder-recipient relationship, instead of seeing universities as integrally part of the communities in which they are located (Moore, 2014). This means that those working at the institutional level may be expected to maintain the position of a neutral party with regards to external funding sources, a common expectation and policy that is grounded in the hard sciences, but that does not reflect the methods nor objectives of PAR. In practice, funding for relationship building may come from universities' core funds, e.g., where researcher time or institutional resources are given over to "impact work: as seen in the UK."

Much of the relationship-building ground work essential for PAR is conducted by researchers outside of contracted hours or goes un/underfunded. During the pandemic, some researchers were able to maintain relationships with local communities while they changed institutions (Auerbach et al., 2022). In other cases, the authors of this essay reworked their agenda and were able to undertake additional data collection regarding the impact of COVID-19 on the communities where they were already embedded, which the original funding did not cover. One of the authors was unable to access funding to complete their research and found adjunct positions that helped to keep them afloat and also took time away from their dissertation research. These anecdotes and analysis suggest the existence of barriers to PAR research at multiple stages and scales of the research process as well as to institutional and community relationships.

We argue that the institutional position and organizational structure of universities must be more deeply understood when considering the importance of relationships between universities and communities. Greater academic flexibility and a consideration for PAR scholarship should include:

- Time and material support scholars to build community relationships,
- The inclusion of community-engagement in hiring and promotion,
- Faster and more contextually responsive ethics reviews (e.g., IRB),
- Less rigid funding support (e.g., the removal of overhead requirements, barriers for partner organizations, and strict deadlines),
- Increased availability of small or short-term grants aimed at building trust and community relationships or working with the community, and
- Financial support for emerging scholars and adjunct professors leading PAR, especially in ways that support communities of practice in the university.

What if the university practiced flexibility and care and acknowledged the material reality of students? Centering

15 https://www.urbanstudiesfoundation.org/funding/

frontline communities also includes centering a university's students and staff. In many areas where Universities are located, students, staff and non-tenure track faculty often live in precarious conditions or far away from campus. Furthermore, when scholars are themselves unsupported and in precarious positions, then mental load and invisible labor limits and interrupts the ability to build, grow, and maintain genuine relationships with the community. If students/adjuncts and others in the university community remain undervalued or exploited, then the very presumptions and ethics of public-facing community-engagement ring hollow and disingenuous. A university infrastructure of caring for students and staff would:

- Recognize the differences among students in terms of their material realities and provide material assistance such as increased funding for life expenses, child support, and summer pay,
- Reduce mental and physical health issues facing student workers, including building faculty capacity for healthy working environments, such as providing "How-to mentoring" that include real sensitivity training by experts—not just a video you watch for human resources,
- Provide flexibility with student deadlines when students face academic, financial and non-academic issues, and
- Encourage friendships among students, not competition–these social relationships are important for mental health and building networks of care.

Improving community-engagement infrastructure

While adequate resources are certainly a key ingredient vital to the success of any effort, we believe that changes in campus climate and culture are also an important currency and necessary pre-conditions to ensure success. These shifts take time and dedicated effort from both within and from outside the institution. Good, ethical PAR doesn't just happen, it is forged with intentionality, deep reflection, openness, and collaboration. The commitment to such processes can be challenging when viewed as an individual practice and thus, institutional support for PAR is crucial to ensuring the greatest possibility of scholarship that leads to social change (as with SB's case study in Section Structural challenges limit the university's commitment to community-engagement). Such support can and should be multilayered: within the academy, it can reside among scholars with shared affinities (e.g., PAR collaborators), within institutions (e.g., engagement offices), and across institutions (e.g., civic and science organizations)[16].

Within institutions, the infrastructure and backbone support that engagement offices and officers can provide is often paramount to the success of community-engaged faculty who seek to use PAR methods. Such officers often function as boundary spanners (Weerts and Sandmann, 2010). Such centers have often built a level of trust and credibility across both campus and community to serve as movement-building leaders, who "bring together a diverse group of stakeholders, including those not in traditional institutions or seats of power, to build a vision of the future based on common values and narratives" (Cabaj and Weaver, 2016). These officers bring a respect for and ability to connect community perspectives with people and programs at their institution that can lead to rich collaborations grounded in mutual benefit (Dostilio, 2017). Such offices can help academics understand the difference between doing work *on* communities and doing work *with* and *driven by* communities. Some scholars can fall into the academic belief that just because their work is related to, connected to, or even involves community stakeholders that it will ultimately benefit communities. This faulty assumption can cause more harm than good as a history of such issues has shown. Community-engaged work requires a commitment to constant dialogue between both academic and community collaborators to ensure that mutual benefit and reciprocity stay central to any scholarly work. This also requires a commitment to the co-design and co-implementation of projects and the willingness to adapt and change as necessary to ensure "shared voice and power and insist upon collaborative knowledge construction and joint ownership of work processes and products" (Jameson et al., 2010, p. 264).

Engagement offices can provide support for:

- Physical and digital spaces for teaching, workshops, and meetings,
- Community-engaged research methods (e.g., translation services) and pedagogy,
- Funding opportunities, and
- Building and maintaining relationships between scholars and community organizations.

However, we are aware that creating this culture of collaboration and shared responsibility between researchers and extension offices requires not only a topping up of financial

16 Scholar-activists pursuing community-based scholarship have been self organizing. The Agroecology Research-Action Collective (ARC) is one example, where scholars across and beyond formal disciplines engaged in research on and for agroecology and agrarian justice are developing operating Principles for collaborative research with and for frontline movements. From anti-oppression training to ongoing political education, ARC aims to co-conduct research and shared analysis with grassroots coalitions, while mobilizing campus resources and supplying logistical and informational support to movements (Montenegro de Wit et al., 2021). Such community organizing within academic spaces helps solidify and expand communities of practice alongside and even beyond formal engagement centers on campus.

means to hire (additional) support staff. In addition, what is needed is capacity-building and training to enable extension staff to (a) develop a more in-depth understanding and ownership regarding the research projects they are supporting, (b) an awareness and sensitivity to situate administrative processes in the context of local realities (which may require a greater flexibility); and (c) a forum for continuous engagement with communities locally and globally to not only build but also maintain and strengthen resilient networks of collaboration. Under these conditions, extension offices could assume a key role in building and supporting mutually trusting networks between local communities and universities.

What if the university strengthened its extension office? More funding, an increase in (trained) staff and capacity-building for university extension is necessary in order to be able to take a more active and meaningful role as intermediary between the university and the community. Currently, extension offices are the "administrative arm" of the principal investigator with little autonomy or knowledge of the individual research projects or even of the realities of the communities where they work. Strengthening the financial and technical staff capacities of the extension office could enable a more proactive role of the extension offices. Especially in critical situations such as the COVID-19 crisis, extension offices could then assume a key role as a link between local communities and the researcher. Where researchers were displaced from the field and international researchers like SB had to spend several months outside the country, relying on local colleagues with a good knowledge of the administrative processes to collect paperwork and to request course changes from in-person to online was essential. Strengthening the extension offices could alleviate such additional pressure on academic staff.

Building up staff and financial capacities of the extension office, e.g., by putting in place key individuals who can act as a coordinators/connectors between researchers/university research staff, university administration, and local communities could lead to:

- Providing more autonomy to extension offices which would allow for deeper engagement with the research process as well as university-community collaborations.
- Streamlining the administrative processes of the university extension office.
- Allowing for more flexibility and resilience in adapting to changing external circumstances and crises. This includes a targeted support of (national and international) researchers doing overseas fieldwork especially during COVID-19 and preventing a disruption of the research by finding viable remote solutions and streamlining communication.
- Establishing strong, centralized, and ongoing links between local partner communities and the universities which could enhance a mutual understanding for the administrative requirements in each and foster a culture of mutual trust and shared responsibility.

Conclusion

As set out above, we reflected on our own research experiences during the COVID-19 pandemic to reflect on the challenges of doing PAR under quarantine and in the broader context of the neoliberal university. Even though COVID-19 has demonstrated that community-based, public-good, action-research scholarship has never been more necessary, the pandemic has also exposed the challenges of PAR and the university system in an on-going neoliberal age in which the Capitalocene reigns. The impacts of COVID-19 have not only laid bare the impacts of academic capitalism on community relationships, but have also highlighted how the neoliberal university model is unevenly providing resources with effects that have the potential to work against the general PAR ambition of broadening institutional engagement with communities. While there were instances where institutional supports enabled PAR to continue (or even catalyzed it in one instance), for the most part it was the commitment of the individuals involved; relationships held by researchers and community organizations (not universities) and the use of unconventional digital tools (e.g., WhatsApp and Zoom) that enabled PAR during the pandemic. In many ways we had to relearn and reevaluate how to do our work in ways that made it possible and that remained true to the nature of PAR. For those of us who had already established strong relationships with community members and organizations, and had strong institutional support, the shift was easier than many of us expected.

Of course, scholar-community relationships are at the heart of trusting and equitable PAR work, but institutions can do more to create the conditions for and reduce barriers to creating and maintaining these relationships. Reflecting on the wider academic context, the analysis of these case studies provide insights on the direction and possible alternatives of institutional support for PAR. Even though there is no panacea, several changes to the current academic system are put forward. Firstly, the university must center genuine partnerships and collaborations with the local communities where they are located and to acknowledge and address historical and on-going practices of colonialism. Second, there must be greater academic flexibility and financial support for PAR. Third, it must create or expand autonomous community-engagement programs or extension offices to provide the support PAR scholars need during future crises. This institutional support can help place researchers in an active and sustained role during crises instead of being reactionary, interrupted, and displaced. COVID-19 has not only impacted the communities for whom we work and displaced the scholar, but it has also provided a clarion call to

institutions of higher education to return to a place of relevance, reciprocity, and embeddedness with their communities.

Author contributions

JA and SM conceived the original idea. UA, JA, GB, SB, HC, RC, CD, SK, VL, AM, SM, LN, and EW contributed to the analysis and writing. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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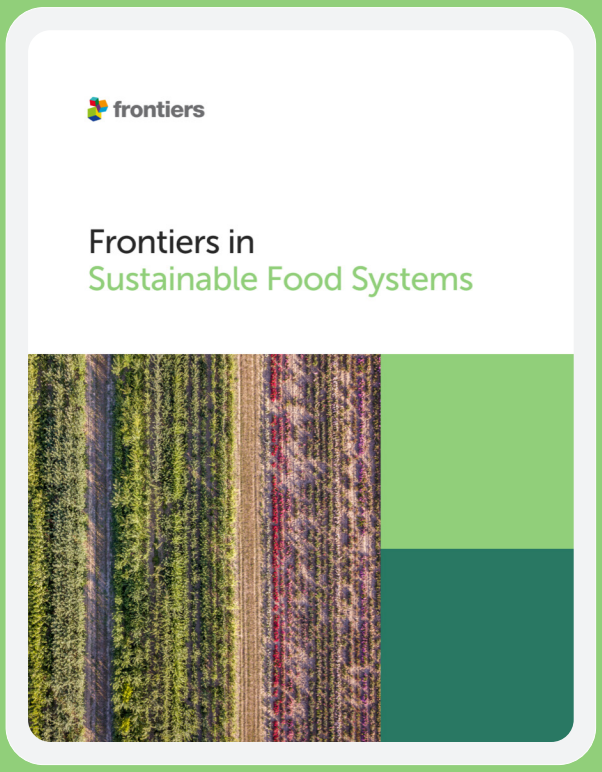

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