APPENDIX 1: QUESTIONNAIRE USED IN THE STUDY

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BACKGROUND

This document presents the research data collection tools for Water Research Commission (WRC) funded project titled "Integrating water-energy-food (WEF) nexus innovations and practices into policy, governance and institutional frameworks for sustainable development in Vhembe District Municipality, Limpopo Province, South Africa". Motar and Daher (2016)[1] posit that WEF nexus research should include local level stakeholders. Therefore, this research seeks support the decision-making process of the nexus assessment by collecting new knowledge which is context specific (Melloni et al., 2020[2])

ETHICAL CONSIDERATIONS

The project will respect at its core the five ethical principles that researchers need to adhere to:

a) obtain informed consent from potential research participants;
b) minimize the risk of harm to participants;
c) protect the participants' anonymity and confidentiality;
d) avoid using deceptive practices; and
e) give participants the right to withdraw from your research.

In addition to the five "gold" standard principles, integrity and transparency shall be vital in our research.

INFORMED CONSENT

The human subjects in any research project must participate willingly, having been adequately informed about the research. Informed consent in our study will entail a process of telling potential research participants about the key elements of the research study and what their participation will involve. The consent process will also include providing a written consent document containing the required information (See Annex A) for the proposed Consent Form) and the presentation of that information to prospective participants to concur.

INTELLECTUAL PROPERTY (IP) CONSIDERATIONS

With regard to intellectual property (IP), data collected, data collection tool and reports of this study shall be an intellectual property of the WRC. This will be guided by the Intellectual Property Rights from Publicly Financed Research and Development Act 51 of 2008 (IP Act) (Republic of South Africa, 2008).

[1] Rabi H. Mohtar & Bassel Daher (2016) Water-Energy-Food Nexus Framework for facilitating multi-stakeholder dialogue, Water International, 41:5, 655-661, DOI: 10.1080/02508060.2016.1149759

[2] Melloni et al., 2020. A Stakeholder Analysis for a Water-Energy-Food Nexus Evaluation in an Atlantic Forest Area: Implications for an Integrated Assessment and a Participatory Approach.

SECTION 1: INTERVIEW DETAILS

This Section is designed to gather information about the study respondents (and/or participants). Respondents are those persons who will be invited to participate in this research study and have actually taken part in the study.

Numbering	Required to fill-in/Question	Instruction
	Supervisor's Name	Indicate the name of the supervisor
	Enumerator's Name	Indicate name of the supervisor
	Supervisor's Check Date	yyyy-mm-dd To be completed by supervisor
	Name of the Respondent	Type in Name and Surname
	Respondent's Household (HH) Status	Choose from: - Household Head - Spouse - Child - Relative
	Gender of the Head of the Respondent	Choose from: - Male - Female - Prefer not to say
	Age category of the Respondent	Choose from: - 20 and under - 21-30 - 31-40 - 41-50 - 51-60 - Above 60
	Highest Education Level of the Respondent	Choose from: - No schooling - Primary Education - Secondary Education - TVET/College Education - University Education
	Employment Status of the Respondent	Ask if the respondent is employed: - Yes - No - Self employed
		If YES, type in the form of employment[3] (i.e., teacher, nurse, shop steward, etc.)
		Also, indicate if it is[4]: - Formal - Informal

SECTION 2: DEMOGRAPHIC INFORMATION (HOUSEHOLD TYPOLOGY)

The collected demographic information in this Section will allow the Research Team to better understand certain background characteristics of an audience, whether it's their age, race, ethnicity, income, work situation, marital status, etc.

[3] Employment means the state of having a paid job.

[4] Formal employment is recognised of workers with social security benefits provided by the employer, while informal employment refers to its absence.

Numbering	Required to fill-in/Question	Instruction
	Indicate Village Location	Municipality ward within Vhembe with reference to pilot site
	Indicate Village Name	Village with reference to pilot site
	How many members live in this household including you?	Choose from pre-programmed numbers
	Household Physical Assets: What are the assets within the household? ➔ Select = ticking from pre-programmed list. Multiple entries are allowed.	Select water related assets
		Select energy related assets (i.e., what does the HH use for lighting): - Biomass (Firewood, animal dung etc) - Battery powered light/lamp - Paraffin - Electricity - Solar - Generator - *Other, name:* - *What does the HH use for heating (space heating, water heating etc)* - *Biomass (Firewood, animal dung etc)* - *Paraffin* - *Electricity* - *Solar water heaters* - *Liquid Petroleum Gas (LP Gas)* - *Other (specify)* - *What does the HH use for cooking?* - *Biomass (Firewood, animal dung etc)* - *Paraffin* - *Electricity* - *Liquid petroleum gas (LPGas)* - *Other (specify)* -
		Select agriculture production related assets
		Crops: - Spade - Digging fork - Rake - Han Hoe - Home ox-drawn farm implements (e.g., plough, cultivator, ridger, cart) - Tractor - Home garden - Field within HH - Filed outside HH - Commercial orchard - *Other, name:* **Livestock:** - Chickens - Commercial Poultry - Small stock - goats - Small stock - sheep) - - Cattle – Beef - Cattle Dairy - *Other, name:*
		Food storage, processing or preservation (i.e., post-harvest loss management): - Fridge/Freezer - Stove (charcoal, firestone, biogas, paraffin, electricity) - Sun drier - Grinder/ HH miller - Household grain storage facility - *Other, name:*
		ICT/Information access and related assets: - Telephone line - Cellphone Network Access - TV

		- Radio
	Indicate other WEF related assets, if any.	Type in as required ➔ Multiple entries are allowed.

SECTION 3: A TYPOLOGY OF THE WEF NEXUS

The purpose of this Section is to characterize the Water, Energy and Food (Agriculture) nexus elements. To provide context, in this Section, we will collect data to assist describe concretely what is happening (i.e., the current situation of the WEF elements within the pilot sites). This will then make it easy for the reader to have a better understanding of the background and the results of the research.

Section 3.1: Typology of Household Water Uses

Numbering	Required to fill-in/Question	Instruction
	Indicate the source of household water? ➔ some questions will have sub-questions.	Choose from (multiple entries allowed): - Household Municipal Tap - Communal Municipal Tap - Household Borehole *(➔ indicate the source of energy used pump water*) - Communal Borehole *(➔ indicate the source of energy used pump water*) - Fountain - River steam *(➔ indicate the mechanism used to draw or transfer water*) - Rainwater *Other, name:*
	For each selected source, indicate water treatment method.	Choose from: - Household boiling - Household chlorine treatment - Central chlorine treatment - *Other, name:*
	For each selected source, indicate if water is paid for.	Choose from: - Paid - Not paid
	For each selected source, indicate location/distance to water source.	Choose from: - Within the HH - Within 1 KM of the HH - Beyond 1 KM of the HH
	Indicate the main use of water by the household	Choose from: - HH consumption and use - Vegetable husbandry - Livestock husbandry - Other commercial activity, name:
	Indicate consistency of water supply (if there are cut off) affecting WEF nexus	Are cut-off happening: - Daily - Once a week - Once a month - Never
	Other, please specify	

Section 3.2: Typology of Household Energy Uses

Numbering	Required to fill-in/Question	Instruction
	Indicate the type of household energy used (at HH level and/or field outside the HH)	Choose from - Biomass (Fuelwood, animal dung, biogas etc) - Eskom/Municipality electricity - Paraffin - Liquid petroleum gas - Renewable energy technologies (solar panels, solar water heaters etc.) - Other (specify)
	For each selected type, indicate the source/supplier of each.	Choose from - Eskom - Municipality - Self

		- Other (Specify) -
	For each selected source, source indicate if that energy is paid for.	Choose from: - Paid - Not paid
	For each selected type, indicate the main use of each mentioned energy type.	Choose from - Heating (water, pottery, space) - Lighting - Cooking - Cooling - Refrigeration - Television - Charging computers and other devices such as cellphones
	Indicate if there are any energy supply disruptions that affect WEF nexus	Choose from: --Load shedding Shortage at source or supplier Other (specify)
	Other, specify	

Section 3.3: Typology of Household Agriculture Farming Systems

Numbering	Required to fill-in/Question	Instruction
	Agro-ecological zone	Choose from -
	Crop Farming System	- Type of Crops; for each: - Form of production o Irrigated/Dryland o Inside/outside homestead o Subsistence/commercial o Labor provision (HH/hired) - Post-harvest activities o Form of storage o Form of value-addition o Form of preservation - Marketing channels - The importance of water to the farming system - Importance of energy to the farming system - Total size of land
	Horticulture Farming System	- Type of fruit trees farmed, for each: - Production system - Intensive/extensive - Subsistence/commercial - Labor provision (HH/hired) - Marketing channels - The importance of water to the farming system - Importance of energy to the farming system - Total size of land
	Livestock Farming System	- Type of livestock farmed, for each: - Production system o Intensive/extensive o Subsistence/commercial o Labor provision (HH/hired) - Marketing channels - The importance of water to the farming system - Importance of energy to the farming system - Herd sizes
	Other, please specify	

Section 3.4: Typology of Food Security and Food Sufficiency

➔ this is a gold standard tool use.

Numbering	Required to fill-in/Question	Instruction
	Food Security	
	"I worried whether our food would run-out."	Please for each statement/question whether the statement/question was often, sometimes, or never in the last 12 months. Choose from: - Often - Sometimes - Never
	"The food that we produced just didn't last, and we didn't have money to get more."	
	"We couldn't afford to eat balanced meals."	
	"We couldn't feed the children a balanced meal because we couldn't afford that."	
	In the last 12 months, did you ever eat less than you felt you should because there wasn't enough food?	
	In the last 12 months, were you ever hungry but didn't eat because there wasn't enough food?	
	In the last 12 months, did you or other adults in your household ever not eat for a whole day because there wasn't Enough money for food?	
	In the last 12 months, did you ever cut the size of any of the children's meals because there wasn't enough food?	
	Food Sufficiency	
	Which of these statements best describes the food eaten in your household in the last 12 months:	<u>Please read the statements and ask the respondent to select his/her best choice</u> - We always have enough to eat and the kinds of food we want; - We have enough to eat but not always the kinds of food we want; - Sometimes we don't have enough to eat; or - Often we don't have enough to eat?
	Here are some reasons why people don't always have enough to eat. For each one, please tell me if that is a reason why You don't always have enough to eat.	<u>Multiple responses allowed</u> - Agriculture low production - Agriculture post-harvest loss - Not enough money/income for food - Lack of water - No access to cooking energy source - Too hard to get to the store - Drought - Theft - Not able to cook or eat because of health problems; - Other, name

SECTION 4: WEF TECHNOLOGICAL INNOVATIONS AND PRACTICES

In the specified field: 1) Indicate the WEF technological innovations and practices use are currently using; 2) indicate how you are using them, 3) mention the related benefits, and 4) mention the related challenges.

The purpose this Section is to understand each WEF components and relationships among the component parts found within the WEF system. This will help explain, better understand, and explore research subjects' opinions, behavior, experiences, phenomenon, etc.

Section 4.1: Water Technological Innovations and Practices

Numbering	Water technological Innovation and Practices Choose from the list as dictated by the respondent		Details about the utilized technological Innovation and Practices (Required to fill-in/Question)			Prioritization[5]
	Indicate the sub-category as per WEF nexus	Utilized technological Innovation and Practices	Indicate how you are using the Water technological Innovation and Practice	Give us the reasons why you are using the technological Innovation and Practice	Give us the challenges you are experiencing using the technological Innovation and Practice	Rank the perceived benefit of the technological Innovation and Practice
	Rainwater	Water harvesting using large dams				
		Water harvesting using small dams (i.e., for agriculture)				
		Household storage (e.g., jojo tanks).				
	Groundwater	Water detection: XXX technologies (i.e., Allen technology)				
		Water drawing: Wind/Solar powered boreholes				
		Artificial Groundwater recharge into confined aquifers for future use				
	Water Recycling	Wastewater Treatment with Effective Microorganisms (EM) (i.e., Photosynthetic bacteria, Lactic acid bacteria, Yeast) Grey water reuse				

[5] The Likert scale used to prioritize the WEF identifies technological Innovation and Practice is: 1 = very poor, 2 = poor, 3 = neutral, 4 = good, 5 = excellent

	River streams	Digital water monitoring using satellite images – Ability to track in- and out-flows.				
	Reducing water loss	Maintenance of bulk water storage and distribution networks (e.g., infrastructure routine maintenance and use call centers to log/report leaks for timely repairs) Promoting use of water saving devices in institutions and households (e.g. washing machines, showers, toilet systems)				
	Watergen technology	A solution that uses humidity in the air to create clean and fresh drinking water				
	Other indigenous innovations and practices					

Section 4.2: Agriculture and Food Technological Innovations and Practices

Numbering	Food and Agriculture Innovation and Practices Choose from the list as dictated by the respondent		Details about the utilized technological Innovation and Practices (Required to fill-in/Question)			Prioritization
	Indicate the sub-category as per WEF nexus	Utilized technological Innovation and Practices	Indicate how you are using the Water technological Innovation and Practice	Give us the reasons why you are using the technological Innovation and Practice	Give us the challenges you are experiencing using the technological Innovation and Practice	Rank the perceived benefit of the technological Innovation and Practice
	Conservation agriculture	- Zero cultivation - Mulching, etc.				
	Smart irrigation	- Drip irrigation - using handheld devices to measure soil moisture (chameleon technology)				

	Sustainable intensification	use of: - tunnels, - hydroponics - aquaponics				
	Use of disaster related insurance	Index-based insurance (for floods) (e.g., http://ibfi.iwmi.org/ by IWMI).				
	Behaviour Change Interventions	- Innovation platforms - WEF Trainings				
	Other indigenous innovations and practices					

Section 4.3: Energy Innovations and Practices

Numbering	Energy Innovation and Practices Choose from the list as dictated by the respondent		Details about the utilized technological Innovation and Practices (Required to fill-in/Question)			Prioritization
	Indicate the sub-category as per WEF nexus	Utilized technological Innovation and Practices	Indicate how you are using the Innovation and Practice	Give us the reasons why you are using the technological Innovation and Practices	Give us the reasons why you are using the technological Innovation and Practices	Rank the perceived benefit of the Water technological Innovation and Practices
	Biogas digester	-				
	Electricity	-				
	Firewood	-				
	Paraffin	-				
	LPG / Gas	-				
	Coal	-				
	Solar (PV or Solar water heaters)	-				
	Wind	-				
	Other indigenous innovations and practices	-				

SECTION 5: GOVERNANCE, INSTITUTIONS AND POLICY DIMENSIONS

SECTION 6: ACCESS TO AND USE OF WEF RESOURCES

Section 6.1: WEF resource use

WEF Resource	Type and source	Amount used per day/ month/ season/ year/ crop cycle	Specific use for which resource is used
Food/Agriculture	Fruit trees Fodder Vegetables Cereals and pulses Fodder/ pastures Livestock (poultry)		
Energy	Solar Mains Electricity Wind Biomass (Fuelwood, animal dung, biogas etc)		

Water	Borehole River Roof Harvesting Dam Surface harvesting		

Section 6.2: WEF resource access and use rights

WEF Resource	Dimension	Is any of the dimension in the previous column an issue of concern Yes / NO	If Yes state, the issue (e.g. Permits, metering, rules, rationing for each of the dimensions)	Further comment if any
Water	Source for Domestic use Source for Agricultural use/ irrigation Quantity for Agricultural use/ irrigation			
Energy	Type (Solar, wind, thermal etc) Regulation on type to use Reliability of supply Cost of alternatives Access to alternatives			
Land/ food production	Size of land planted Season of planting			

	Crop type Amount of water required and used Time of irrigation Zoning restrictions Type of livestock kept			

SECTION 7: FINANCIAL SUPPORT, EXTENSION AND ADOPTION

Section 7.1: WEF financing

Have you received any financing towards any of the following?

WEF	Credit source	Yes/No	Specific Purpose on which credit was utilised	Any comment
Water development	Cooperative Bank Microcredit Family Local saving group Grant (specify)			
Energy development	Cooperative Bank Microcredit Family Local saving group Grant (specify)			
Food production	Cooperative Bank Microcredit Family Local saving group			

	Grant (specify)			

Section 7.2: Communication channels and extension services on WEF technologies

For each of the information sources provide the frequency you have had in the last one year

Source of information for each WEF	**Source of information**	**Yes/ No**	**How frequent do you receive the information (for each source)**
Energy smart technologies	Public extension Private extension Radio Newspaper Online Peers Scientific publication Autonomous (own effort)		Daily Weekly Monthly Quarterly Biannually Annually
Water Smart technologies	Public extension Private extension Radio Newspaper Online Peers Scientific publication Autonomous (own effort)		
Land use for food production smart technologies	Public extension Private extension Radio Newspaper Online		

	Peers Scientific publication Autonomous (own effort)		

Section 7.3: Players in WEF technology promotion and adoption

Smart technology	Specific WEF smart innovation	Who promotes	Constraints	Rank the constraints named (Use 1 for the most pressing)
Energy	Solar Energy saving Wind Any Other	Public extension Private Extension NGO/ CSO/ CBO Research Organisation Government agency International organisation Autonomous (own effort)	Initial investment cost Maintenance costs Lack of market Lack of knowhow High Cost of alternatives Lack Access to alternatives Any other	
Water use	Water recycling Water harvesting/ roof harvesting Drip irrigation Hydroponics Any other	Public extension Private Extension NGO/ CSO/ CBO Research Organisation Government agency International organisation Autonomous (own effort)	Initial investment cost Maintenance costs Lack of market Lack of knowhow High Cost of alternatives Lack Access to alternatives Any other	
Land use	Manuring Cover crops Mulching Zero tillage Climate manipulation /Green houses	Public extension Private Extension NGO/ CSO/ CBO Research Organisation Government agency	Initial investment cost Maintenance costs Lack of market Lack of knowhow	

	Any other	International organisation Autonomous (own effort	High Cost of alternatives Lack Access to alternatives Any other	

Section 7.4: Factors influencing adoption of smart WEF technologies

What has influenced or likely to influence you adopt smart technologies?

WEF Technology	Factor	Already influenced? Yes/ no	Likely to influence in future if not using
Energy smart technologies	Knowledge/ education Finance Value for environment Social network Peers Family spillovers Market access Grant High returns Cost saving Reliability		
Water smart Technologies	Knowledge/ education Finance Value for environment Social network Peers Family spillovers Market access Grant High returns Cost saving Reliability		
Land use/ food production smart technologies	Knowledge/ education Access to financing Value for environment Social network		

	Peers Family spillovers Market access Grant High returns Cost saving		

Section 7.5: Barriers to WEF smart technologies

WEF resource	Barrier	Yes / No	Rank the barriers (Use 1 as the most pressing)
Energy smart technologies	Initial cost Technical Knowhow Government regulation and policies Lack of information Lack of capital/ credit Lack of alternatives High cost of alternatives Any other		
Water Smart technology	Initial cost Technical Knowhow Government regulation Lack of information Lack of capital/ credit Lack of alternatives High cost of alternatives Any other		
Land use smart technologies	Initial cost Technical Knowhow Government regulation Lack of information Lack of capital/ credit Any other		

To ensure that the proposed mixed model approach is robust enough, Sections 8, 9 and 10 interview questions are open-ended questions so that in-depth information will be collected.

SECTION 8: WEF NEXUS TRADE-OFF AND SYNERGIES[6]

Numbering	Required to fill-in/Question	Instruction
	What are the trade-offs (even potential completion) experienced while enhancing synergies towards attaining simultaneous WEF resource securities?	Please read the statements and ask the respondent to answer to their best ability.
	What are the synergies required to attain simultaneous WEF resource securities?	
	Practical experience in water, energy and food interlinkages	

SECTION 9: GENERAL KNOWLEDGE ON WEF NEXUS

Numbering	Required to fill-in/Question	Instruction
	What is the meaning of WEF nexus approach?	Please read the statements and ask the respondent to answer to their best ability.
	What do you understand by the term water security?	
	What do you understand by the term renewable energy?	
	What do you understand by the term food security?	
	What do you understand by the term sustainability?	

SECTION 10: SUGGESTED ON WEF NEXUS SOLUTIONS

Numbering	Required to fill-in/Question	Instruction
	What should be done to eradicate water insecurity?	Please read the statements and ask the respondent to answer to their best ability.
	What should be done to eradicate energy scarcity (if any)?	
	What should be done to eradicate food insecurity?	
	What can be done to overcome the barriers impeding WEF nexus operationalisation?	

[6] Naidoo et al. (2021) Operationalizing the water-energy-food nexus through the theory of change.

KEY INFORMANT INTERVIEWS SCHEDULE

1. Actor name and mandate

Sector	Actor	Mandate	Instruments and tools on access and use of WEF resources
Energy			Permits Tariffs Education/ informational
Water			
Land and land use			

2. Do you have coordination mechanism with other sectors (named in 1) at local and national levels?
3. Are there community engagement plans in your sector regarding water use/ energy/ land use
4. What are some of the resource conflicts and grievance redress mechanisms about access, use and control of the WEF resources in your sector and how do you resolve them?
5. How is Environmental, social and climate impact assessment integrated into your planning processes
6. How are financing intermediaries integrated into your planning processes?
7. What incentives do you have regarding scaling of climate smart technologies?
8. Do you have partnership with regard to research, implementation and steering of your mandate?
9. What are your intervention and strategies regarding the following?

Sector and actor	Access (poverty and equity)	Sustainability (economic, social, and environmental	Efficiency	Climate change vulnerability (adaptation and mitigation and resilience building)
Water – Water smart energy systems 1. 2. 3.				

Energy – Energy smart water systems 1. 2. 3.				
Land use=- Water land smart food systems 1. 2. 3.				

Annex 1: Water Innovations and Solutions and Tools: Water-Energy-Food/Agric nexus
Table 1: Supply-side of Water (i.e., Source and distribution[7,8])

Water Source	Solution/Tool[9]	Benefit	Concerns/Gaps	Energy source
Rainwater	Water harvesting using large dams.	• Provides wider access to water • Opportunity to generate hydro-energy	• Dependent on rainfall, and in recent past dam levels are below required levels. • Intra- and inter-sharing of water sharing challenges. • Lack of distribution and reticulation. • Silting of dams (reducing the water carrying capacity)	• Gravity
	Water harvesting using small dams (i.e., for agriculture)	• Increases "water balance" • Reduce production cost	• Lack of resources to construct these small dams (e.g., by the farming community)	• Gravity
	Household storage (e.g., jojo tanks). Promoting a national policy that requires each private and commercial property to put in place a water storage of a specific size to harvest rainwater	• Increases "water balance"	• Cost?	• None
Ocean Water	Desalination (thermal, electrical, and pressure distillation)	• Abundance of the ocean water	• How this can be done efficiently • Waste management	• Solar/wind/hydropower
Watergen technology	A solution that uses humidity in the air to create clean and fresh drinking water	• Abundance of water in the atmosphere	•	• Solar

[7] Linking energy nexus, it will require green mini power stations off the grid and biogas for power generation (reduce low emission)
[8] A construction and civil engineering companies will be engaged as partners
[9] A tool kit box will be developed after proof of concept to allow scaling out and learning

~~Underground Water~~Groundwater	Water detection: XXX technologies (i.e., Allen technology)	• Independent from the mains water supply • Borehole water supplies are sustainable in even drought conditions • Independent from the mains water supply – no water charge/cost saving	• Water quality and safety: Contamination of aquafers (e.g., from pit latrines, agriculture (fertilizers, insecticides, etc.) • Over abstraction of the ground water	• Solar/wind/hydropower
	Water drawing: Wind/Solar powered boreholes Artificial Groundwater recharge into confined aquifers for future use			• Wind/Solar
Water Recycling	Wastewater Treatment with Effective Microorganisms (EM) (i.e., Photosynthetic bacteria, Lactic acid bacteria, Yeast)	• Increases “water balance”	• Effectiveness of the water cleaning solution may be questionable	• Solar/Hydropower
River streams	Digital water monitoring using satellite images – Ability to track in- and out-flows.	• Solve water allocation	• Water sharing challenges (upstream v/s downstream conflicts) • Drought • Contamination from industrial waste	• Solar
Reducing water loss	Maintenance of bulk water storage and distribution networks (e.g., infrastructure routine maintenance and use call centers to log/report leaks for timely repairs) Promoting use of water saving devices in institutions and households (e.g. washing machines, showers, toilet systems)	• Reduces water loss due to leakages	•	• Solar/Hydropower

Table 2: Demand-side of water (users)

User type	Solution/Tool	Benefit	Concerns	Energy source
	Local wind/solar energy desalination system for irrigation	• Less burged to the national grid	• `Maintenance and security issues	• Solar/win
Agriculture	Smart irrigation using handheld devices (chameleon technology)	• Efficient water use	• Accuracy of these technologies	• Solar?
	Sustainable intensification (e.g., use of tunnels, hydroponics and aquaponics)	• Increased agriculture productivity	• Cost to establish	• Solar/wind/hydropower
	Index-based insurance (for floods) (e.g., http://ibfi.iwmi.org/ by IWMI). Can leverage digital weather stations which are becoming accurate and cheaper (and can be used for early warnings).	• De-risking farmers against climate disasters (here flood) • Early warnings for preparedness	• Accuracy of the data • Lack of such products	• Solar
	Innovation platforms	• Long lasting changes due its participatory nature.	Representativeness nature of the Innovation Platforms and power dynamics.	
Household use	Behaviour change and communication (for attitude towards water use)	• Long lasting changes due its participatory nature.	Sustainability of this changes after implemented BCC interventions	
	Smart use of water (e.g., timed shower, smart flush toilets)	• Reduce household water use and water bill.		
	Community-based decision-making platforms	• Increased ownership due to community participation	Methodology to achieve total but-in is not know	
	Water billing			
Other industries				