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Supplementary table 2 – Barriers to mainstreaming

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| **Barrier/challenge** | **References** |
| Ineffective/insufficient communication, coordination and collaboration between stakeholders across hierarchies and sectors | (Macchi and Ricci, 2016; Lyles et al., 2018; Mogelgaard et al., 2018; Boezeman and De Vries, 2019; Ahenkan et al., 2021; New et al., 2022; Rogers et al., 2023) |
| Lack of or inadequate data/information e.g., quantified climate change considerations | (Dalal-Clayton and Bass, 2009; Lyles et al., 2018; Mogelgaard et al., 2018; Ahenkan et al., 2021; Pieterse et al., 2021; Bleby and Foerster, 2023) |
| Lack of technical, analytical, organizational capacity to incorporate climate change data, risk assessments etc. | (Dalal-Clayton and Bass, 2009; Macchi and Ricci, 2016; Howlett and Saguin, 2018; Mogelgaard et al., 2018; Pieterse et al., 2021; García Sánchez, 2022; Bleby and Foerster, 2023; Rogers et al., 2023) |
| Not prioritizing climate change adaptation/ lacking awareness about the importance of CCA | (Dalal-Clayton and Bass, 2009; Nassef, 2012; Cuevas, 2016a; Boezeman and De Vries, 2019; Ahenkan et al., 2021) |
| Lack of stakeholder engagement | (Ahenkan et al., 2021; Rogers et al., 2023) |
| Lack of funds for mainstreaming projects | (Ahenkan et al., 2021) |
| Lacking contextualization of mainstreaming process in urban contexts | (Adams et al., 2023) |
| Conceptual under-development | (Adams et al., 2023) |
| Lacking or uneven awareness and experience with climate change impacts across government | (Dalal-Clayton and Bass, 2009; García Sánchez et al., 2018; Boezeman and De Vries, 2019; Bleby and Foerster, 2023) |
| Lack of guidance and support for mainstreaming e.g., decision-making tools, guidelines | (Bleby and Foerster, 2023) |
| Lack of resources, incl. funding, time, personnel | (Dalal-Clayton and Bass, 2009; Cuevas, 2016a, 2016b; Lyles et al., 2018; Mogelgaard et al., 2018; Boezeman and De Vries, 2019; Bleby and Foerster, 2023; Rogers et al., 2023) |
| Lack of legal incentives/regulation for mainstreaming | (Boezeman and De Vries, 2019; Pieterse et al., 2021) |
| Lack of knowledge how to move from planning to implementation, i.e., mainstreaming policies to mainstreaming action | (Cuevas, 2016a; Runhaar et al., 2018) |
| Lack of monitoring and evaluation of mainstreaming effects no indicators for success, no frameworks or processes | (Cuevas, 2016b; New et al., 2022) |
| Trade-offs | (Candel, 2021) |
| Mainstreaming vs. specialized entities | (Candel, 2021) |
| Lacking clarity about what to mainstream | (Candel, 2021) |
| Conflict of scales, i.e., national regulation hinders coherent municipal planning | (García Sánchez, 2022) |
| Lack of political leadership and commitment | (Macchi and Ricci, 2016; Lyles et al., 2018; Mogelgaard et al., 2018; García Sánchez, 2022) |
| Political reality = messy practices on the ground | (Candel, 2021) |
| Conflicting values, beliefs, and interests | (Lyles et al., 2018; Mogelgaard et al., 2018) |
| Lacking short-term benefits | (Macchi and Ricci, 2016) |
| Unclear roles and responsibilities | (Macchi and Ricci, 2016; Mogelgaard et al., 2018; Rogers et al., 2023) |
| Power relationships, fear of losing power/influence | (Macchi and Ricci, 2016) |
| Lack of guidelines that operationalize the integration of DRR into existing dev. plans + investment for DRR | (Taylor et al., 2018) |

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