



Micropolitics in collective learning spaces for adaptive decision making



Petra Tschakert^{a,b,e,*}, Partha Jyoti Das^c, Neera Shrestha Pradhan^d, Mario Machado^a,
Armando Lamadrid^e, Mandira Buragohain^c, Masfique Alam Hazarika^c

^a Department of Geography, Pennsylvania State University, University Park, PA 16802, USA

^b School of Earth and Environment and School of Agricultural and Resource Economics, University of Western Australia, 35 Sterling Highway, Crawley 6009 WA, Australia

^c Aaranyak, 13 Tayab Ali Byelane, Bishnu Rabha Path, Beltola Tinali-Bhetapara Link Road, PO: Beltola, Guwahati 781 028, Assam, India

^d International Centre for Integrated Mountain Development (ICIMOD), Khumaltar, Lalitpur, G.P.O. Box 3226, Kathmandu, Nepal

^e Center for International Climate and Environmental Research (CICERO), Gaustadalléen 21, 0349 Oslo, Norway

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ABSTRACT

Recent advances on power, politics, and pathways in climate change adaptation aim to re-frame decision-making processes from development-as-usual to openings for transformational adaptation. This paper offers empirical insights regarding decision-making politics in the context of collective learning through participatory scenario building and flexible flood management and planning in the Eastern Brahmaputra Basin of Assam, India. By foregrounding intergroup and intragroup power dynamics in such collective learning spaces and how they intersect with existing micropolitics of adaptation on the ground, we examine opportunities for and limitations to challenging entrenched authority and subjectivities. Our results suggest that emancipatory agency can indeed emerge but is likely to be fluid and multifaceted. Community actors who are best positioned to resist higher-level domination may well be imbricated in oppression at home. While participatory co-learning as embraced here might open some spaces for transformation, others close down or remain shut.

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1. Introduction

Successful adaptation to climate change does not only depend on reliable and accessible scientific and technical information but also on tools, processes, and practices that support the generation and exchange of knowledge and facilitate decision making. The chapter on foundations for decision making (Jones et al., 2014) of the Fifth Assessment Report by the Intergovernmental Panel on Climate Change (IPCC) stresses the critical role of processes for ‘good adaptive decision making’. Evolving work on adaptation pathways (e.g. Wise et al., 2014; Barnett et al., 2014; Wyborn et al., 2016) calls for incorporating the knowledges, aspirations, and preferences of multiple actors into collectively desirable pathways of social-ecological changes. In such a pathways approach,

adaptation decision making is understood as a ‘series of adaptive learning decision cycles over time’, an ongoing process of learning, acting, and reflecting, in a context of complexity, uncertainty, and looming thresholds (Wise et al., 2014: 324). Such a process-oriented pathway approach will still fall short of its full potential, however, unless it explicitly acknowledges the influence of power relations and politics within such processes. Recent work on the politics of adaptation has begun to address this challenge, offering theoretical (see Eriksen et al., 2015) and empirical (e.g., Yates, 2012; Manuel-Navarrete and Pelling, 2015; Nagoda, 2015) contributions.

These advances re-frame adaptive decision-making processes from development-as-usual pathways to openings for transformational adaptation. They draw explicit attention to fields of unequal power relations that exist across social actors at all scales. Eriksen et al. (2015) highlight three contours of power in decision making – authority, knowledge(s) and subjectivity – each of which is mediated with the others through political tension. Theorizing the political dimensions of social change in the context of pathway thinking is urgently needed, including processes that perpetuate and exacerbate vulnerabilities. This entails conceptualizing the political in adaptation as dynamic, contested, embedded in

* Corresponding author at: School of Earth and Environment and School of Agricultural and Resource Economics, University of Western Australia, 35 Sterling Highway, Crawley, 6009 WA, Australia.

E-mail addresses: petra.tschakert@uwa.edu.au (P. Tschakert), partha@aaranyak.org (P.J. Das), Neera.Pradhan@icimod.org (N. Shrestha Pradhan), mrm5236@psu.edu (M. Machado), armando.lamadrid@gmail.com (A. Lamadrid), mandiraburagohain@yahoo.in (M. Buragohain), masfiq.assam@gmail.com (M.A. Hazarika).

processes of prioritization and exclusion, and attentive to the ways “politics may open up or close down spaces for transformational adaptation” (Eriksen et al., 2015: p. 530). Yet, nuanced constellations of power in the decision processes in which social actors negotiate, accept, or contest what may become adaptive action remain grossly understudied. In fact, a close examination of power relations that underline how knowledge sharing evolves and how policy processes unfold often remains regarded as “too controversial” (Nagoda, 2015).

This paper offers empirical evidence of decision-making politics in the context of collective learning for climate change adaptation in the Eastern Brahmaputra Basin of Assam, India. It first provides an overview of the intersecting conceptual domains of 1) the politics of adaptation, 2) social learning and participatory scenario building to challenge uneven power structures, and 3) emancipatory agency and deliberate social transformation. The paper then proposes a conceptual framework to more closely examine power dynamics or what we call ‘micropolitics’ of adaptation, borrowing from Horowitz (2011). Next, we introduce our case study in Assam and then examine participatory learning spaces between rural communities, researchers, NGO members, and district-level disaster risk managers as part of a larger research project entitled HICAP (Himalayan Climate Change Adaptation Programme).¹ We end with methodological recommendations and conclusions.

2. Contexts for adaptive decision making

2.1. The politics of adaptation

A focus on decision-making politics requires not only broad understanding of the various causes of multidimensional vulnerabilities, but also a keen eye for processes that reproduce vulnerabilities across scale (e.g., Ribot, 2014; Olsson et al., 2014; Schipper et al., 2014). According to Eriksen et al. (2015), these practices are best observed through three distinct lenses: knowledge(s), authority, and subjectivities. There is growing consensus in the academic and practitioner communities highlighting the value of incorporating different types of *knowledge* into adaptation planning and decision making. Local knowledge and lay understandings, including embodied experiences of altered environments, often deviate significantly from the ‘expert,’ scientific knowledge of practitioners in the fields of disaster risk management, urban planning, or rural and urban development. Collective learning and co-production of knowledge aim to bridge the gap between different fields of knowledge, values, and experiences (e.g. Fazey et al., 2010; Manuel-Navarrete, 2013; Tschakert et al., 2013, 2014). *Authority* refers to how power is operationalized through various actors exerting agendas and influencing outcomes in adaptation decision making. Finally, *subjectivities* demonstrate how individuals and entire populations are viewed, labeled, and positioned vis-à-vis programs and policies, through the exercise of power and disciplining practices, discourses, and cultural norms (Butler, 1997; Nightingale and Ojha, 2013). In the context of climate change, the notion of subjectivities typically emerges when vulnerable populations are cast as passive and ignorant victims, or even villains.

Despite recognition of these three dimensions, the politics of adaptive decision making and how they play out in practice remain poorly understood. One explanation is that power, embedded in and exercised through everyday social relations and mediated by culture and history, generates dynamics that are typically not captured in snapshot vulnerability and adaptation studies (Tschakert et al., 2013). Easily overlooked are dynamics that entail

the production of distinct subjects and subjectivities, and processes of subjection that determine whose voice, knowledge, and claims are prioritized and whose are excluded (e.g. Cote and Nightingale, 2012; Mosberg and Eriksen, 2015). Moreover, most adaptation programs and projects remain entrenched in technocratic, apolitical adaptation and development discourses and practices that are ill-equipped to reveal how power is challenged, often because of donor pressure to produce clear results to feed into policy recommendations and solutions (Godfrey- Wood and Naess, 2016). Yet, closer attention to when, how, and by whom subjectivities, authorities, and elite control are contested (Nagoda, 2015; Manuel-Navarrete and Pelling, 2015) and outside and expert framings of risk are resisted (Barnett et al., 2014) would provide better insight into how politics shape adaptation successes and failures. Deep-seated local power dynamics not only control the space in which some actors exercise more power than others but also inform as to who aligns with dominant framings and for whose benefit. For instance, in her work on adaptation policies in Nepal, Nagoda (2015) found that better-off households tended to favor technological solutions to climatic changes while poorer and low caste farmers, and also often women, wished for reduced social inequalities and oppression, yet were largely excluded from decision-making processes.

2.2. Learning and visioning for climate change adaptation

Empirical and contextual studies on the politics of adaptation require nuanced methodological approaches that reveal and question power dynamics, such as elite capture. This includes methodologies that explicitly address structural inequalities (Tschakert et al., 2013). However, scholarship on climate change adaptation has only recently begun to embrace participation and incorporate vital lessons from related, yet often untapped fields, particularly development studies, with long traditions in examining entrenched power differentials. Most valuable insights stem from participatory development and participatory research methodologies that explicitly acknowledge complex power relations while attempting to identify openings in social relations that allow for shifts in these relations to occur (e.g. Hickey and Mohan, 2004; Kesby, 2005; Kindon et al., 2007; Askins and Pain, 2011). Participatory performance, in particular, has explored embodied and new subjectivities, injustices, and participatory politics of co-learning, for instance through theatre (e.g., Boal, 1985; Franks 2015).

Lessons from development studies have inspired social and collective learning approaches in natural resource management and adaptation efforts, particularly in the global South; they encourage the co-production of knowledge between local social actors (i.e. marginalized and vulnerable groups), scholars, and practitioners and can challenge uneven power structures (e.g., Rist et al., 2006; Fazey et al., 2010; Reed et al., 2010; Cundill, 2010; Lebel et al., 2010; Tschakert et al., 2014). Eriksen et al. (2015) attribute great potential to such social learning processes to resist domination and open up spaces for social transformation. Similarly, Gillard et al. (2016) recommend social learning and reflexivity in climate change responses, stressing social fields within which power and politics are enacted. Core aspects of learning-centered approaches relevant for climate change studies are: processes of shared sense making of complex social-environmental changes, iterative cycles of learning and reflection, attention to social differentiation, inequitable power relations, authority, diverse tools and methods, skilled facilitation, and clear visions for future change (Ensor and Harvey, 2015).

Most promising for developing visions for future change are engagements with possible future realities that are locally grounded and hence allow for ‘situated learning’. In the context

¹ See acknowledgements.

of adaptation pathways, such engagement is best achieved if it builds on socially-salient local experiences combined with future social thresholds or trigger points that are meaningful to residents and decision makers (Barnett et al., 2014). Similar future-oriented learning goals are found in transdisciplinary and transformational research (e.g., Wiek et al., 2012; Wyborn et al., 2016). Yet, as Eriksen et al. (2015) remind us, such engagements also necessitate an appreciation for the inherent difficulties in envisioning and promoting alternative pathways, acknowledging the messiness of struggles for authority and often contradictory outcomes.

Participatory scenario building and envisioning, specifically, have been tested as possible tools to inform adaptive decision making while fostering engagement and agency among those often excluded from more formal decision and planning fora. In the broadest sense, scenarios are a type of strategic thinking about possible future outcomes of complex systems, typically in the form of a story or narrative. They are explained as “descriptive narratives of pathways to the future” (Bohensky et al., 2006) and “description [s] of how the future may unfold” (Jäger et al., 2008), in contrast to single-outcome predictions or projections.

However, comparatively few adaptation studies have adopted a participatory scenario design that explicitly embraces processes of joint decision making between vulnerable populations, researchers, and knowledge brokers (Harrison et al., 2013). Existing examples of normative and exploratory scenario building that deepens deliberative dialogue and transdisciplinary learning stem predominantly from contexts of high literacy and agency in countries such as Switzerland, Canada and the United States (e.g., Walz et al., 2007; Shaw et al., 2009; Kok et al., 2011; Sheppard, 2012; Schneider and Rist, 2014). Far fewer applications of participatory scenario approaches are known for development and multi-dimensional poverty contexts in the global South (e.g., Enfors et al., 2016; Tschakert et al., 2014). Moreover, most participatory visioning and planning exercises and the reflections they generate tend to focus on outcomes (i.e. final storylines), with only some notable exceptions analyzing processes (e.g. Schneider and Rist, 2014).

2.3. Transformation and emancipatory agency

Debates regarding the politics of adaptation, social learning, and participatory research and performance all converge to advocate for empowered subjects and emancipatory agency to counteract entrenched inequalities. In discussions of transformative adaptation (Pelling, 2011; Eriksen et al., 2015; Manuel-Navarrete and Pelling, 2015; Pelling et al., 2015), the main emphasis is on ways subjects can use their knowledge and subjectivities to assert their own agendas and contest and resist authority and domination to forge alternative, more radical and more just transformational pathways for social change and climate change responses. Manuel-Navarrete (2010) identified ‘human emancipation’ (p. 782) as lacking in climate change research yet indispensable to overcome exploitative social and environmental power structures and conditions. Emancipatory subjectivities are described as essential for deliberate transformation, casting individuals with a choice to consent, evade, or transgress established authority in order to reduce both inequalities and climate risks (Manuel-Navarrete and Pelling, 2015). This recent emancipatory turn in adaptation debates also finds inspiration in participatory and development research, particularly in scholarly work on new subjectivities engendered through and in transformative spaces and contact zones (e.g., Pratt, 1999; Cahill, 2007; Askins and Pain, 2011).

Yet, as cautioned by Feola (2015), the concept of transformation (including emancipatory agency and transformative adaptation) has so far been predominantly used as a metaphor to express the

desire for fundamental changes, without sufficient empirical grounding, analytical clarity, and clear guidelines on how to practically implement it. Godfrey-Wood and Naess (2016) also raise concerns regarding the practical challenges of transformation and transformative adaptation in adaptation projects and programs on the ground. Hurdles, they point out, emerge due to hesitation within both funding and implementing agencies to expose structural inequalities, ethical limitations by external organizations to ‘transform’ and ‘rectify’ uneven power dynamics, and often entrenched dependencies between the poor and elites that hamper more empowered agency. Furthermore, including otherwise marginalized voices should not in itself be understood as a transformative outcome (ibid).

3. Conceptualizing openings for emancipatory agency

This brief review of emerging literature on the politics of adaptation and transformation suggests that empirical and contextual studies are needed to understand, as Eriksen et al. (2015) demand, whether an explicit emphasis on knowledge, authority, and subjectivities is indeed suited for ‘opening or closing down space for transformational change’ (p. 530). In order to respond to this call, this study examines how, on the one hand, collective learning may counteract disempowering micropolitics and inform anticipatory, and adaptive decision-making processes; and how, on the other hand, power and the micropolitics of adaptation manifest in seemingly inclusive and empowering collective learning spaces. In other words, we are interested in the knowledge-authority-subjectivity dynamics that emerge when vulnerable communities engage as active agents in envisioning and planning for an uncertain future in the context of inevitable power struggles.

We focus on so-called ‘micropolitics’ of adaptation decision making, borrowing from earlier political ecology scholarship that investigated quotidian politics occurring at small spatial and informal scales (Neumann, 1992), environmental conflict and cooperation at local levels (Bryant and Bailey, 1997), and people’s daily engagements with the materiality of the landscapes they inhabit (Horowitz, 2008, 2011). Such a micropolitics perspective allows for a better understanding of contestation and conflict within and between communities, and between communities, the state, and global actors, as well as struggles over livelihood strategies and claims to authority over knowledge, resource use, and environmental discourses (Rasch and Köhne, 2016).

We propose a conceptual framework (Fig. 1) that views anticipatory governance situated at the intersection of two distinct

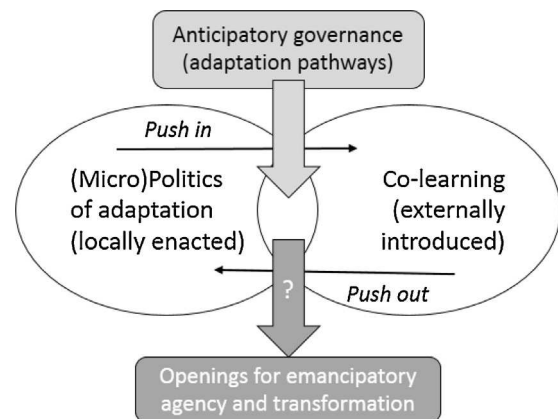


Fig. 1. Conceptual framework to explore how multi-scalar anticipatory governance may emerge at the intersection of (micro) politics of adaptation and co-learning spaces, and under which conditions it may create openings for emancipatory agency and transformation.

yet overlapping spaces. The first space is that of the (micro) politics of adaptation, largely enacted locally and including powerful local and state actors, governmental agencies and other institutions that affect how power is exercised in decision making, including path-dependencies in development discourses, policies, cultural norms, and practices of inclusion and exclusion. The other space is that of co-learning, externally introduced and encompassing both social learning and participatory performance. Borrowing from Kesby (2005) and Jones and Speech (2001), the politics ‘push in’ on co-learning spaces while the latter ‘push out’ on the politics. We consider anticipatory governance (Quay, 2010) a useful model for decision making as it appreciates the tension between these two arenas while foregrounding foresight and flexible strategies and adaptive pathways under uncertainty, similar to the concept of adaptation pathways (Wise et al., 2014; Barnett et al., 2014). The core question is whether such a constellation can indeed open up or close down space for emancipatory agency and transformational adaptation, as suggested by Eriksen et al. (2015).

We apply this conceptual framework to our pilot project on flood management in the Eastern Brahmaputra Basin to examine whether participatory scenario building and flexible planning (co-learning) can a) challenge inter- and intragroup power differentials (micropolitics); and b) engender emancipatory agency and subjectivities to consent to or contest dominant technocratic adaptation measures for flood-prone areas.

4. Climate change and flood management in the Eastern Brahmaputra Basin, Assam

The Brahmaputra, one of the largest transboundary rivers in the world, is monsoon-driven with a distinct wet season (June–September) accounting for 60–70% of the annual rainfall (Immerzeel, 2008). It is also heavily sediment-charged (Goswami and Das, 2003). With 40% of its land surface (3.2 million ha) susceptible to flooding, Assam’s Brahmaputra valley represents one of the most acutely flood-prone regions in India. The state has experienced >15 major floods since the 1950s. During the period 1953–2011, an estimated 858,000 ha of land, >2.5 million people, and >77,000 households have been affected by floods on average per year (Water Resources Department, Government of Assam). The Assam State Action Plan for Climate Change (SAPCC) lists Assam as one of the two most disaster-prone states in India (with Odisha being the other), counting 8000 ha of land annually destroyed due to river erosion, coupled with a growing magnitude and frequency of hazards (Varma et al., 2014). Projections into the late 21st century anticipate more rainfall, increase in the Brahmaputra’s peak flows with more intense flood risks, and intensified rural poverty due to crop losses and rising food prices and cost of living (Gain et al., 2011; Hijioka et al., 2014).

Communities and institutions in Assam, due to long-term exposure, have accumulated a wealth of knowledge on how to manage recurrent floods (Pradhan et al., 2012). Structural and non-structural flood protection measures are widespread (Das et al., 2009). Traditional practices include living in bamboo-stilt houses (*chang ghar*), using bamboo platforms and household ovens for food and seed storage, and erosion control with bamboo, trees, and sandbags. Farmers have expanded mixed cultivation of different rice varieties (*ahu* and *ba*) and diversified into new income-earning opportunities such as fish trading, selling of traditional wine, daily wage labor, weaving, carpentry, and handicrafts. More recently, some flood-prone villages have adopted community-based flood early warning systems, consisting of a low-cost wireless technology that senses (flash) flood dangers and transmits warnings to downstream communities and concerned agencies in real time via mobile phone.

At the same time, the policy landscape that guides climate change adaptation and disaster risk reduction in Assam is riddled with governance problems. Against the backdrop of erosion, embankment mismanagement, and subsequent breaches, particularly from the late 1990s onwards, populations along the Brahmaputra and its tributaries face not only flooding but also landlessness and livelihood loss, while disaster management agencies are said to still follow a ‘predict and control approach’, promoting technical fixes and impact studies rather than integrative and flexible learning environments (Varma et al., 2014). Clashing narratives of blame between responsible governmental agencies, extension officers, local communities, and academics – ranging from utter faith in technology to political neglect and exclusion – further undermine transparency, trust, coordination, inclusivity, and cultural sensitivity in adaptive flood management (ibid). Struggles over disaster governance have to be seen as embedded in a long history of social and political exclusion, minority oppression, and contestation in most of Northeast India, going back to colonial policies and exacerbated by continuous economic stagnation, entrenched poverty, high unemployment, internal displacements and a large influx of people from neighboring countries (Das, 2013a).

5. Methodology

5.1. Project rationale and team

The impetus for this pilot project was twofold: respond to the request for more integrative learning environments in the context of flood risk management in Assam (e.g., Varma et al., 2014), and demonstrate the value of participatory approaches to climate change adaptation, as an alternative to the predominantly quantitative perspective adopted by the larger HICAP project. Our research team consisted of a dozen members, including one senior researcher each of three partner institutions: Aaranyak (environmental NGO and boundary organization in Assam), CICERO (Norway), and ICIMOD (Nepal). The remaining team consisted of students and junior practitioners. Aaranyak and ICIMOD partners jointly proposed flood management as the entry point for this co-learning effort. Between March and December 2013, we collaborated with three communities – Soroni and Borsola in Lakhimpur District, and Dihiri in Dhemaji District (Fig. 2, Table 1) – and governmental officials responsible for disaster management from each district.

The study adopted an iterative co-learning approach focused on flooding and flood management. The overarching objectives were to a) incorporate and validate community knowledge, experiences, values, and aspirations for the future, b) communicate available climate information in accessible ways that would foster locally meaningful responses rather than outside/expert framings of risk and solutions, and c) create space for socially-salient visions for community futures to challenge portrayals of passive victims, dominant predict-and-control approaches and technocratic measures promoted by state agencies. The approach was comparable to local-scale adaptation pathways (e.g., Barnett et al., 2014). It was well suited to examine intergroup and intragroup power dynamics as it brought together flood-prone and marginalized rural communities and state-employed disaster risk managers in collective learning spaces.

A series of participatory activities – community and flood mapping, community-based environmental monitoring, scenario building, and flexible planning – were undertaken to stimulate learning about the past, present, and future and to facilitate future-oriented decision-making processes for both flood management and overall community well-being. The methods were inspired by community-based collaborative research on flood management in

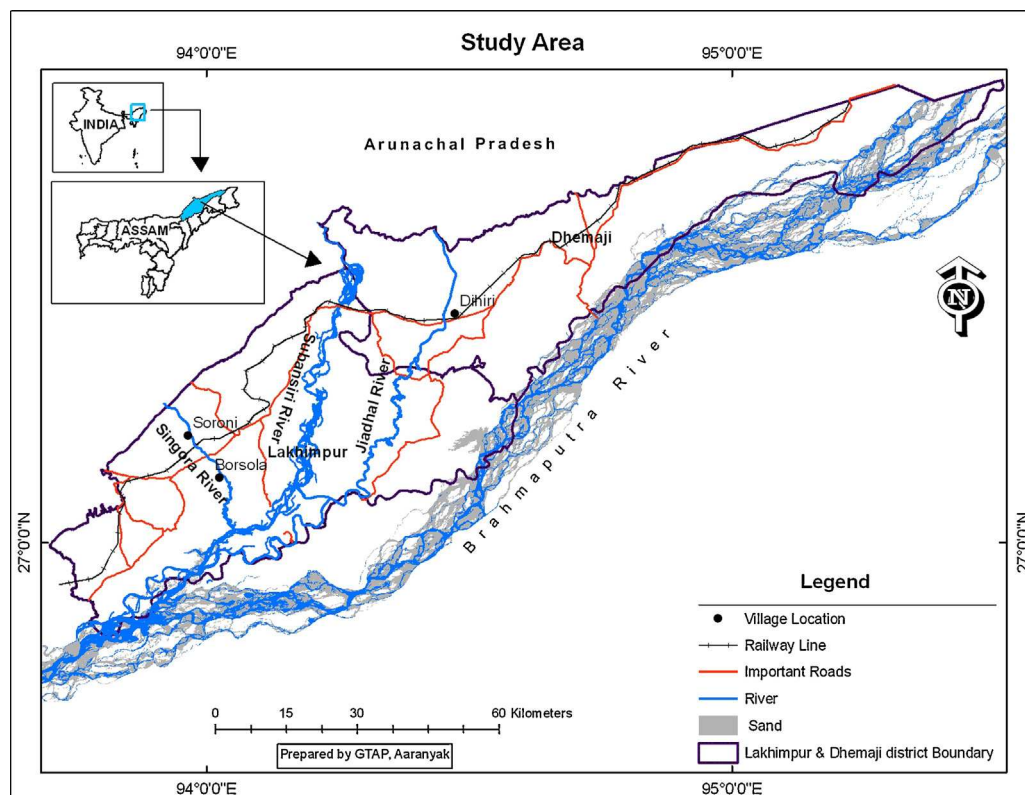


Fig. 2. Study area in northeastern Assam, with Soroni and Borsola located on the Singora River, and Dihiri on the Jadhah River. Both rivers originate in Arunachal Pradesh, then flow southward into Assam, and ultimately to the Brahmaputra River.

Table 1

Characteristics of the three partner communities in Assam.

Village name (ha)	Name of census village	Number of house-holds	Total population (% male)	Ethnic groups	Infrastructure	Major hazards	Community action
Soroni (290)	No 2 Phoolbari	226	1182 (51%)	Assamese (majority); Bengali, Nepali, Adivasi	Unpaved road Electricity supply poles Lower primary school Embankment (sand bags, bamboo screens and spurs, Water Resources Department)	Flash floods River bank erosion Sand casting Degradation of farmland	Raising of house foundations River monitoring during monsoon season Training in flood early warning Winter vegetables as additional income Strengthening of embankment 2015 Outmigration (esp. young males)
Borsola (145)	No. 1 Barchala	564	3461 (50%)	Bengali Muslims (majority); Mising	Unpaved road Electricity supply poles Lower primary school Public health centre Earthen embankment (community-built)	Flash floods River bank erosion Sand casting Degradation of farmland	Heighening of house plinths Embankment construction 2013 & maintenance Flood early warning and saving lives Shelters on embankment Reclamation of inland fisheries Winter vegetables as additional income
Dihiri (297)	Dihiri Panitula	90	390 (51%)	Mising	Unpaved road Lower primary school High-raise platform (shelter during inundation) Small remnant of earthen embankment	Flash floods River bank erosion Sand casting Degradation of farmland Shifting river course Scarcity of drinking water	Stilted bamboo houses, some concrete pillars River monitoring during monsoon season Shifts to high grounds for shelter Shifting cropping patterns Winter vegetables as additional income High outmigration of young people

Puerto Rico (López-Marrero and Tschakert, 2009) and anticipatory learning under climate change in Ghana and Tanzania (Tschakert et al., 2014). Men and women were encouraged to participate in sessions in their communities, all aged 18 years and above, with group sizes varying between eight and 25 participants. The project also included three training workshops with team members and culminated in a half-day stakeholder workshop in Lakhimpur.

5.2. Project context

Assam is known for communities with different cultural and linguistic characteristics with Assamese (~50%), Bengali (~25%), Bodo, Mising, and Nepali being the principal languages spoken. The Mising (also spelled Mishng) and the Bodos are classified as plain tribes since post-independence; with ~1.2 million and ~1.5 million respectively, they are the largest tribes in Assam (Pegu, 2013; Varma et al., 2014). While the hill tribes were granted protection of identity under the Sixth Schedule status and the Bodos achieved autonomy under the Bodo Territorial Council, the Mising continue their struggle for autonomy, having migrated from the Himalayas to the plains ~500 years ago (ibid). Assam's Mising have developed diverse measures to deal with monsoonal floods, but increasingly suffer embankment mismanagement, breaches, and land becoming unsuitable for farming (Varma et al., 2014). Discontent over social marginalization and exclusion of community needs from disaster risk reduction and planning, embedded in their larger, ongoing struggle for cultural identity and political autonomy (Pegu, 2013), point toward an urgent need for more inclusive adaptive governance (Varma et al., 2014).

Flooding is the most severe disaster risk in Assam. The Jiadhal River (catchment area 1205 km²) is particularly flood-prone and produces floods with sudden, high discharge over a short time interval (a few hours to a day) with a high sediment load and abundant debris. The Singora River (catchment area 138 km²) has also produced catastrophic floods, most recently in 2015. It has become extremely shallow due to high siltation; in some stretches, the riverbed level is higher than its banks, increasing the risk of flooding. A formerly productive regime of paddy fields has been largely replaced by this sediment-filled landscape (Varma et al., 2014), a problem known as 'sand casting' (Das, 2013 b). Both rivers frequently change course during flash floods, breaching their embankments, causing widespread riverbank erosion, and massive inundation and destruction of adjacent settlements and farmlands. Agriculture remains the main livelihood for the three case communities in this project (Table 1), albeit with additional income from fishing, sericulture, horticulture, employment in the government and private sectors, and wage labor.

5.3. Learning activities at the community level

Between March and July 2013, participants in each of the three communities produced a series of paper maps that depicted locally-salient infrastructure and landscape features, including the spatial distribution, frequencies, and causation of floods, distribution of exposure zones and water flows, embankment locations, high grounds, times of breaches, and shifting river flows (see example Dihiri, Fig. 3). Discussions evolved around the precariousness of living conditions, community action for protection (see also Table 1), and governmental neglect. To obtain a more precise picture of ongoing environmental conditions, self-selected community members began monitoring changes most relevant to them, such as riverbed erosion and sandcasting. Observations were recorded daily, weekly, or at individual occurrences.

Project participants reconvened in August 2013 to explore possible futures for each community, 20 years (roughly equivalent to one generation) into the future. We adopted a five-step process (Table 2), similar to that described by Tschakert et al. (2014), that unfolded over a couple of days. The goal was to stay focused on what was plausible and 'inhabiting' scenarios (Johnson et al., 2012), rather than imagining an ideal future. We included down-scaled climate projections, translated into simplified practical descriptions and symbols. Such scientific input into participatory scenario building remains scarce, especially with marginalized stakeholders in the global South, although similar approaches have been used in Canada (Shaw et al., 2009) and the United States (Johnson et al., 2012). A team facilitator helped with exploratory questions (e.g. what resources will be available or lacking? what will your children's lives be like?). The unfolding narrative was captured by a community artist (Fig. 4) and corrected for errors or omissions by those present.

This final activity ('flexible planning'), carried out in December 2013, formed the capstone to the iterative co-learning approach. Our deliberate focus on flexibility mirrored Quay's (2010) emphasis on flexible strategies and decision making in anticipatory governance as well as sequences of negotiable steps in local adaptation pathways (Barnett et al., 2014). The underlying rationale of such flexible approaches is to identify a variety of options, including low-cost, no-regret options, and longer-term strategies, to be implemented as needed and modified when monitoring suggests new approaching thresholds. The activity, also building on participatory mapping and planning for vulnerability assessments (e.g. Ceccato et al., 2011; Cadag and Gaillard, 2012), provided space to debate and visually capture challenges, opportunities, and concrete actions (Table 2, Figs. 5 and 6). To conclude, a guided reflection was carried out with the groups first discussing content and process of constructing the layered maps (e.g. most/least feasible actions, winners and losers, trade-offs). Participants also reflected on the process of planning for the future, particularly how to prioritize the timing of action items and review leadership and empowerment. The distinction between short- and long-term risks seemed important as Pelling et al. (2015) rightly note that participatory approaches often foreground immediate or predictable risks.

5.4. Workshops

Over ten months, we organized three small co-learning workshops, in March, July, and December 2013, respectively, jointly led by the team's co-investigators and evolving over several days, and one large half-day workshop with a broader range of participants at the end of the project. The training workshops covered state-of-the-art debates on and approaches used in climate change adaptation, specific methods training, English-Assamese translations, testing and modification of the participatory activities, daily evening debriefings, and final reflections. Although the training sessions were primarily designed for the team members themselves, three governmental agents from the Disaster Management Authorities in Lakhimpur and Dhemaji were also invited and joined whenever possible to adopt new skills and share insights from their work.

In December 2013, a few days after completing the final community activity, village representatives joined the half-day stakeholder consultation workshop organized by Aaranyak and the District Disaster Management Authority in Lakhimpur, attended by >100 people, also including governmental officials, teachers, and the local media. The workshop goals were to share the iterative learning and planning methodology, open space for community voices and experiences from the disaster risk managers, debate

(2015), good facilitation is fundamental in any learning-centered approach, yet poorly documented in the literature; it involves the ability to build trust, attend to social difference, address power imbalances, and shift from a practitioner/expert position to one of a participant and co-learner.

Notes were typed up, carefully reviewed, and edited, and translations from Assamese were merged with notes in English. Process notes were manually color-coded for emerging themes relevant to power dynamics, knowledge, authority, and subjectivities. Team debriefings, led by a different junior team member each evening, synthesized the experiences in the field by reviewing what went well and what needed improvement, and how to fine-tune facilitation skills or specific Assamese expressions in preparation for the following day. Notes from these debriefings and final group reflection were also manually coded for relevant insights.

6. Results: contradictions in power dynamics

Our findings illustrate power dynamics that underpinned the processes of prioritization in these iterative, collective learning

spaces, and the particular subjectivities that were mobilized to reproduce or contest uneven power structures. We organize our reflections along two axes. The first axis reveals successes and failures of the participatory co-learning efforts to push out on (challenge) disempowering micropolitics of adaptation. The second dimension describes entrenched power dynamics that push in on (undermine) the empowering of vulnerable agents. Lastly, we consider implications for emancipatory agency and subjectivities.

6.1. Participatory co-learning processes “pushing out”

Several aspects of the iterative co-learning process were inspiring as they succeeded in pushing out on politics that perpetuate top-down adaptation planning and exclusionary practices. First, the process provided rich opportunities for community actors, team members, and disaster risk managers alike to engage with uncertain and difficult futures in a non-threatening way. Jointly analyzing imminent challenges and their drivers allowed participants to overcome defeatist attitudes, witnessed for instance in Dihiri where an old man grumbled:

Table 2

Step-wise progression through the envisioning exercises (SB = scenario building; FP = flexible planning).

Steps	Purpose	Content examples
SB 1	Envision a possible future by extrapolating observed trends, including those from the monitoring, and considering likely driver of future change	<ul style="list-style-type: none"> Negative impacts on familiar landscapes, due to severe flooding, deforestation, and erosion Economic growth and improved infrastructure Threatened livelihood security and cultural values
SB 2	Explore in more depth drivers that participants deemed most important for their community	<ul style="list-style-type: none"> Population growth and migration Education and schools Embankments Small industries (e.g., weaving)
SB 3	Overlay these particular elements of the narrative with distinct aspects of likely climate futures, extracted from down-scaled climate projections for the region (for details, see van Oort, 2014) and debate associated risks and opportunities	<ul style="list-style-type: none"> In 2033, there is more rain in the monsoon season, especially in June and July. How much more? There is $\frac{1}{4}$ more compared to what you are used to now. If you left this bottle (show!) outside for the entire month of June, it would fill up until the lower end of the blue label. This is roughly 650 mm of rain. The same is true for July. In 2033, $\frac{1}{4}$ more means the amount goes up to the upper end of the blue label (800 mm)
SB 4	Construct two final scenarios with feasible adaptive pathways	<ul style="list-style-type: none"> External support (NGOs, government, researchers) 90% of narratives optimistic: modern model town with mechanized agriculture, artificial rains Effective community action (strong local networks) 82% of narratives optimistic: private schools, air conditioning, tree nurseries
SB 5	Present the results to the larger community and discuss the plausibility of the envisioned future and likely implications	<ul style="list-style-type: none"> Why wait until 2033 to see good things happening? With unity, the community can solve the problems Downstream villages will benefit from flood wall
FP 1	Transfer key features from the original community maps to prints of satellite imagery	<ul style="list-style-type: none"> WorldView-2, 50 cm resolution (Apollo Mapping) Learning to get oriented on satellite images
FP 2	Discuss and spatially locate, if meaningful, challenges and opportunities for the coming 5–15 years	<ul style="list-style-type: none"> Challenges: river flooding, poor/no embankment, poor roads, sandcasting, unsafe housing, cultural loss, poor health, no electricity, unemployment Opportunities: small-scale industries, microfinance, NGO collaboration, water harvesting, pisciculture
FP 3	Deliberate concrete short- and long-term actions, solutions, and trade-offs to prepare for the future, with individual preferences (voting, with colored sticky dots for top three actions/solutions)	<ul style="list-style-type: none"> Top priorities: permanent embankment, improved roads, bridge, elevated schools, community clinic, community hall/museum to enhance unity Secondary priorities: tree plantations, small-scale industries (weaving, broiler), improved agriculture, pisciculture, flood refuge, canal, computer store

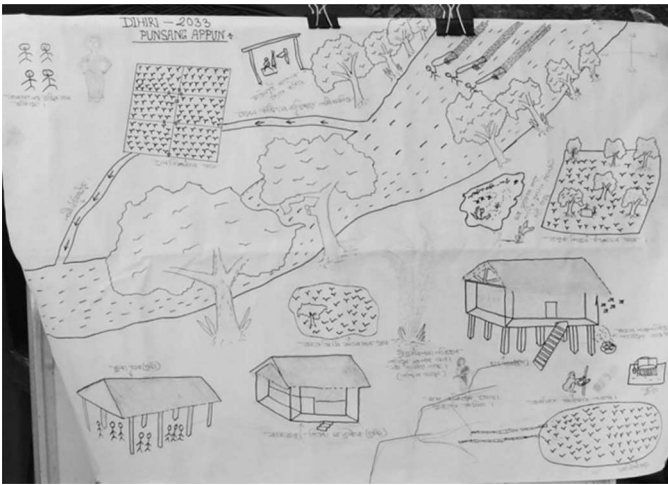


Fig. 4. Example of a final scenario with community action (Dihiri).

“This whole village is going to vanish. What’s the point of envisioning?” After such initial confusion about the purpose of envisioning – eventually understood as awareness raising rather than a concrete infrastructural delivery –, participants underscored the benefit of visualizing their potential lives and landscapes, of incorporating likely climate change elements into their frames of making sense of shifting realities, and of creating layers in their planning steps to buffer for various and simultaneous potential risks. This shared sense-making boosted trust in community agency and local networks. Final narratives entailed some innovative ideas such as upstream-downstream committees, higher income for women through revitalized silk worm industries, ashrams for the elderly, and eco-friendly green-houses. Yet, as also witnessed in similar co-learning spaces elsewhere (Tschakert et al., 2013), it is tricky to strike a balance between overly optimistic future visions (wishful thinking) and hopelessness due to long histories of social and political exclusion.

Second, the village leaders were quick in detecting the political value of the flexible planning exercise. In Dihiri in particular, leaders argued that such planning, especially with scientific consideration of climate change (our downscaled projections), would be the needed leverage to contest the government’s inertia and demand disaster funding for most vulnerable citizens. Indeed, at the stakeholder workshop in North Lakhimpur, one of the Dihiri male elites strategically employed his subjectivity as a poor, vulnerable actor in dire need of protection while exercising his authority as trusted political leader. He held up the village map with concrete planning action items in front of more than 100



Fig. 5. Flexible planning: Delineating the Jiadhal River bed (Dihiri).



Fig. 6. Voting for top priorities (Soroni).

people, accusing officials from the Disaster Management Authority of grave neglect:

“I am not agreeing. The department is not giving us any information. If the people from Aaranyak [the NGO] can give us knowledge against global warming, why can’t the government do this? They [governmental officials] say they are doing technical works, but they don’t do any in our village. They are not able to give us a channel to divert the water from the Jiadhal River”.

Contesting governmental authority at such a large public meeting required courage, and skill to both exploit and subvert entrenched subjectivities (poor, helpless, ill-informed rural victims) by claiming justice. Borsola’s elected leader demanded:

“Due to climate change and flood problems, NGOs are working very hard for us. As Aaranyak is thinking of us, our governmental departments should also actively work with us on this. The breaching of the Singora River is sanctioned by the government. Today we are given a chance to speak in front of all in such a local gathering, so thanks to Aaranyak”.

Third, a heightened sense of agency also emerged during the final team reflection, the evening before the stakeholder workshop. The young team members emphasized the value of co-learning, critical reflection, and learning from mistakes which not only accelerated skill development in facilitation and encouraged team ethos but also allowed the team to have “more respect for knowledge and adaptive capacity of the villagers, their capacity of self-determination, and mutual support structures”; it provided a “more detailed understanding of place-specific conditions of communities, and also people’s values, priorities, and emotions”. The approach, according to the most intrepid facilitators, “came with mind and heart, . . . , it happened there with the people, not among just experts holding meetings somewhere else”. It was not about “spoon-feeding knowledge but allowing knowledge to emerge through tackling problems and consultation”. Aaranyak’s director summed it up as follows:

“We understand adaptation as a learning process, not a one-stop achievement. We go beyond definitions and technicalities to see the integrated whole. This encourages people’s motivation to overcome difficulties, encourages innovative skills, the capacity to think

differently, over a longer period of time, so it becomes internalized. The government tries to infuse something but it's not successful as it is not internalized"

Nonetheless, the adopted co-learning approach failed to overcome some important obstacles and hence undercut its potential to push out on entrenched inequalities. First, despite best intentions, training sessions, and reflective debriefings, the facilitators were not always able to rectify uneven gender participation and representation. The process notes confirmed a well-known, emblematic pattern in development contexts: *"Women have mostly sat down. Adult male in the back. P. encourages M. to get women to participate, to come around to the other side. Unsuccessfully"; "While adult male is talking, a girl makes a suggestion, but it is ignored by M."* Although some women were vocal and articulate, and insisted on weaving industries and a clinic as high planning priorities, many didn't stay for the entire sessions (e.g., *"Tea is here and some women go to prepare"*). At certain points, influential men monopolizing a discussion were tolerated: *"Groups get lazy and will let dominant person take over.... Facilitators also get lazy and go for the easy responses instead of working to get everybody to respond"*. Moreover, despite multiple attempts from team members to invite participants across demographic, ethnic, and religious divides, more men were present than women, the first ones typically older with palpable authority and the latter often very young. The team felt inadequately placed to reprimand an otherwise impressive village leader explaining: *"Some old people couldn't come, some cultivators couldn't come either, and some don't care; and some religious people couldn't come either"*.

Second, also despite various rounds of practice and fine-tuning, good communication of key notions in Assamese, the language used in all community interactions, remained a significant challenge throughout. Facilitators struggled to convey vital nuances (e.g., distinguishing between challenges/obstacles for future planning and problems anticipated to occur in the future) which derailed discussions into wish lists rather than into deeper deliberations about trade-offs. *"You need to use village people speech, not sanskritized (written) Assamese!"*, the NGO leader kept insisting. It is difficult to judge whether the ultimate failure to consider possibly tough choices and inevitable trade-offs in the final storylines was indeed due to flaws in communication or to the reluctance of participants to address entrenched structural inequalities at the community level.

Third, and related, the iterative co-learning approach did not manage to challenge voiced preferences for technocratic and apolitical measures to protect against flash floods—improved infrastructure, above all permanent embankments, as well as roads, bridges, and canals. Women did draw attention to the need for functional health services and small-scale industries, yet were rapidly co-opted in planning future actions. No action items were put forward that would address existing social inequalities or exclusion. While participatory learning spaces can provide just the right environment to reveal and address injustices, we acknowledge that this bias toward infrastructure could well be a reflection of the project's focus on flood management, a biophysical entry point rather than a social one (Nightingale, 2016), and hence constitute an epistemological shortcoming. It may also be indicative of a wider dilemma in NGOs and development agencies, as argued by Godfrey-Wood and Naess (2016), to generate practical yet scientifically-sound solutions and avoid more complex analyses of structural inequities, which was certainly also the case for the HICAP program.

Fourth, the team's willingness to learn from communities, notwithstanding the fact that community members had implicitly subscribed to a distinct power hierarchy between themselves and

us (the Assamese, Nepali, American, and Norwegian scholars, junior and senior practitioners, students, and trained journalists on the project team), presumably out of respect, prohibited a more equal partnership. Given the project's embedded training mission, the junior team members facilitated all iterative learning activities. While this allowed room for experimentation, mistakes, reflection, and redirection, it also meant that villagers unquestioningly assigned all team members 'expert' status; they ascribed roles of authority and attached expectations to these subjectivities that are just as misplaced as an outsider's assumptions about 'good' community decision making.

6.2. Micropolitics "pushing in"

The process notes and team debriefings attest to some pervasive power differentials that repeatedly pushed in on the collective learning spaces. First, regarding authority, there was a distinct sentiment across all three sites that only the most influential elites (men) rather than disadvantaged villagers should be involved in the planning, given the formers' knowledge and their connections to governmental authorities. One man stated: *"100% of the people cannot be involved in the process, and 60% are outside to work [have migrated]; those who are illiterate should not be involved; but those who can settle problems will be involved"*. Rooted in hegemonic practices or cultural codes, a quasi-unlimited trust in a few well-established leaders, all men, reproduced clearly delineated subjectivities within each community. Powerful actors put distinctly less emphasis in the flexible planning activity on including more women and other underrepresented groups into leadership positions, for instance through leadership training programs.

Second, only limited self-critical discussions emerged regarding unavoidable trade-offs, and eventually all discussions of trade-offs were erased in the final storylines, arguably signaling a tacit acceptance of inevitably uneven outcomes. One group explicitly assured that *"no trade-offs would need to be considered; all we need is a good embankment, for which we need sand, and the sands are available in the river"*. No group raised concerns of potential winners and losers from the proposed action items; all groups concurred that *"everybody would benefit"*, obscuring existing power differentials among community members while cementing structural vulnerabilities. One woman declared: *"We are getting benefits if we get peace in life; also, when we learn new things here"* while another one said: *"What we have discussed today, the planning, we have really benefited from it. Everybody has benefited."* Only one man warned that *"if the government will make a strong embankment, then some of the people might lose their houses and agricultural land near the river"*. Overall, the prospect of a technocratic solution seemed to justify potentially further disadvantaging some individuals for the benefit of the larger community.

Third, and related, despite the project's attempt to create space for people-centered, socially-salient community visions, the overwhelming buy-in into the dominant narrative of disaster management pervaded discussions into the flexible planning exercise, constructed around solid embankments and improved roads. All groups requested technical expertise and heavy machinery from governmental departments, even if some local actors signaled willingness to volunteer labor and monetary contributions. Most participants remained convinced that it was the responsibility of the state, and that of science, to guarantee protection against negative impacts from climate change, especially flooding, as expressed by one man: *"In order to protect us from the future, we need some planning for future generations, to keep the climate stable! If we have embankments in place, the flood will not come; then, we won't fall sick frequently, and the animals will be*

healthy and our livelihoods strong.” Although the women’s short-term action items were on health, education, and small-industries, not once did they challenge the men’s priorities for river and road infrastructure. This technocratic lock-in prevailed even in the absence of state’s investments in politically insignificant rural areas, and despite that, “for generations, they have been cheated”, as our NGO partner stressed.

At the same time, our attention to power dynamics also revealed a less narrow predict-and-control approach among disaster managers than presumed. In an early training workshop, representatives of the District Disaster Management Authorities of Lakhimpur and Dhemaji shared insight into their capacity building efforts for a ‘disaster-resilient Assam’. This more inclusive approach, they explained, was part of a conceptual shift from post- to pre-disaster assistance, the latter ranging from save-your-life skills for school children to evacuation, shelters, and psychological support. In response to the village critique at the stakeholder workshop, several disaster risk managers reiterated the value of resilience building, including flood awareness camps, training in swimming and preparation of safe drinking water, protection of what is valuable to people, preemptive testing of rescue equipment, and early flood warning. A representative of the Assam Water Resources Department recognized the relevance of flexible planning in the context of climatic hazards, conceding that “continuing to just put in protective structures won’t be sufficient”. The proactive disaster preparedness, the various training programs, and the hazard mapping notwithstanding, the actual problem may be one of ill fit with more entrenched higher-level state departments (Varma et al., 2014).

6.3. Implications for emancipatory agency

Attention to the politics of adaptation, even in such a temporally and spatially limited study, revealed that certain community actors performed different aspects of developmental subjectivities throughout the participatory process, both consciously and unconsciously. The monopolizing of group discussion at times, the blatant exercising of power, and calls from community elites for the high prioritization of technocratic infrastructure solutions to address flood hazards reflect the politics of traditional development pathways and re-inscribe their positionality as authoritative leaders. Yet, the same elites cleverly used their authority and mobilized subjectivities as vulnerable victims to contest the government’s inadequate flood protection. The team was impressed during the stakeholder workshop when the men from Dihiri and Borsola chided established disaster authorities and displayed emancipatory subjectivities, opening up glimpses of space for transformational adaptation. At the same time, we were taken aback witnessing the same elite men reinforcing inequalities and perpetuating subjection at home, particularly by pressing technocratic solutions while disregarding approaches to challenge the very social and political processes that perpetuate marginalization of the most vulnerable. The latter, whose vulnerabilities emerged along the lines of socio-economic status, age, religion and, most prominently, gender, were reticent to challenge elite authority. Although the scenario building provided a temporary opening up of a potentially transformational adaptive space, as many voices were reflected in the envisioned storylines, the aspirations of the less powerful were silenced again in the subsequent planning stage. This was manifest in their tacit agreement with stated ‘community priorities’ and the reproduction of subaltern positionality (through underrepresentation and submission to elite control) in the voting for action items.

Hence, the main lesson learned from observing power dynamics in adaptive co-learning spaces is that emancipatory agency can indeed emerge but it is likely to be fluid and

multifaceted, not neatly black and white, not merely consenting or contesting authority. In our case, community elites, although successful in contesting higher-level authority when possible did not assert alternative adaptive pathways but clearly embodied an apolitical technocratic disaster management discourse while perpetuating subjection of least powerful actors within their own sphere of influence. Our observations show how such ‘contradictory outcomes’ (Eriksen et al., 2015, p. 524) denote that social actors who are best positioned to resist domination may well be imbricated in oppression at home. In other words, while some spaces for transformative adaptation may be opened, others close down or remain shut.

7. Methodological recommendations and conclusions

This empirical and contextualized study on participatory flood management in Assam used an iterative co-learning process as a reflexive space to examine how power and micropolitics shape local anticipatory governance and adaptation pathways. Reflections on decision-making politics in such a learning environment confirm the inherent difficulties in creating and promoting adaptive and transformational pathways, and the realization that the outcomes achieved are likely to be incomplete and contradictory. Our findings suggest that it would be simplistic to assume that bottom-up visions for community adaptation are intrinsically more inclusive and just than authority-led interventions. It would be equally simplistic to propose that more senior research teams and less time constraints in the field could remove the obstacles encountered in this study. Instead we recommend that the recent political turn in adaptation scholarship engage more deliberately with participatory processes and arenas. These spaces point to ‘openings’ within existing social relations they can engender, and the need to nourish and sustain new subjectivities (Kesby, 2005). They can best be conceptualized as ‘contact zones’ (Pratt, 1999), with porous interfaces. Enabling actors/subjects to assume power in this malleable interface is the basis for transformational politics (Gibson-Graham, 2002), even if authority and subjectivities remain fragmented and contradictory.

Our findings also suggest that emancipatory agency and transformational adaptation are unlikely to spontaneously emerge from participatory co-learning spaces and locally meaningful and presumably empowering adaptive pathways. This recognition calls for a re-evaluation of methodological (and even epistemological) angles to research in this domain, and science-policy interactions, in order to more effectively understand how power and politics shape adaptation success and failure. More precisely, there is a need to further stretch this contact zone so that participatory performances or what Kesby (2005) calls ‘rehearsing for reality’ can more forcefully and repeatedly challenge (push out on) and eventually transgress entrenched structures of authority and subjectivities. Some suggestions have already been put forward in the adaptation literature. These include hybrid approaches and plural epistemologies that acknowledge the value of different analytical starting points without necessarily privileging a hazard perspective (Nightingale, 2016) and justice-guided transformational analyses that first examine structural inequalities and then engage in iterative reflective dialogue and problem solving (Tschakert et al., 2013).

A novel and powerful methodological step forward would be to infuse participatory envisioning not only with locally-salient knowledge and skillfully packaged science products but with embodied experiences and affective ways of knowing. Explicit attention to emotions and affect can shift fixed subjectivities and promote capacities for transformation (Peltola and Tuomisaari, 2015; based on Singh, 2013). Embodied participatory

performance, for instance through role games and popular theatre, does not only open and reveal the multiple forms of subjectivity, it also *makes* them through the performance (Franks, 2015). This type of provocative unsettling of entrenched structures is precisely where current participatory envisioning falls short. Such methodological creativity, stretching as far as participatory action research, may sit uncomfortably with funding and implementing agencies invested in increasingly more sophisticated vulnerability assessments. Yet, this kind of performance appears to be the right leverage for injecting more justice into the learning decision cycle and transforming deep-seated and uneven power relations.

We conclude on an optimistic albeit cautionary note. Even presumably inclusive learning spaces are not immune from reproducing inequalities and exploiting inherent vulnerabilities. At the community level, as with the policy level, unequal power defines the range of developmental options conceivable and may close down trajectories that might address and overcome these inequities. This reality does not discount or dismiss the potential for such co-learning efforts for adaptive climate change decision making, but only highlights its challenges and limitations while advocating for the re-performance of emancipatory processes to extend and sustain the opening of spaces for transformational adaptation. The time is ripe for radical methodological innovation to actively confront structural inequities and destabilize entrenched authority and to transform the messy (micro-) politics of adaptation.

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