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Published online: 16 Nov 2022.

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# Handling Compounded Uncertainty in Spatial Planning and Humanitarian Action in Unexpected Floods in Wayanad, Kerala: Towards a Contextualised Contingency Planning Approach

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## ABSTRACT

Increasing environmental crises due to climate change calls for bridging the research and operational logics of spatial planning and humanitarian response. This article explores how long-term spatial planning and short-term humanitarian responses relate to three facets of uncertainty that are particularly relevant in developmental contexts, namely epistemic uncertainty, ontic uncertainty, and ambiguity. The authors explore these facets through a case study of uncertainty, that of unexpected monsoon floods in 2018 and 2019 in Wayanad, a peri-urban hill district in Kerala, India. Through the case, they show that compounded uncertainty leads to ambiguity in action, but that this ambiguity can be ameliorated by a contextualised contingency planning approach. The authors conclude the article by outlining the approach in spatial planning that prioritises flexible and adaptable decision-making to enhance iterative organisational learning and action, as well as cross-sectoral dialogue to deal with uncertainty.

## Introduction: Dealing with Uncertainty Due to Unexpected Events in a Developmental Context

In 2018, Wayanad, a peri-urban hill district in the state of Kerala on the south-west coast of India, was hit by heavy monsoon floods of a magnitude not seen for almost a century. The floods, which affected 12 of Kerala's 14 districts were not anticipated (Indian Institute of Architects, Calicut Centre & District Town and Country Planning Office, Wayanad, 2018). They occurred after weeks of intense rainfall that had swollen Kerala's rivers, resulting in an excessive inflow into a majority of the state's 58 dams. In Wayanad, the opening of the dam floodgates to release excess water triggered 247 landslides and landslips, as well as land subsidence in the mountain areas, affecting 29,316 hectares of land, causing the complete collapse of 426 homes, the partial collapse of 3232 homes, and the loss of 115 lives, in addition to excessive damage to infrastructure, services, and property (Indian Institute of Architects, Calicut Centre & District Town and Country Planning Office, Wayanad, 2018). In 2019, another round of heavy monsoon floods saw Wayanad being the worst-hit district of Kerala as a result of cloud bursts and

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landslides. The occurrence of floods in two consecutive years and the possibility of their recurrence due to climate change and human activity have triggered discussions among planners about both short-term and longer term responses to such events.

The floods in Kerala underline the characteristic uncertainties of unexpected environmental crises and how they amplify challenges for planners who tend to theorise mainly on the basis of predictions (Albrechts, 2015; Balducci et al., 2011). Spatial planning conventionally operates with the aim to reduce uncertainty, which creates a paradoxical relationship between planning and uncertainty. However, humanitarian agencies tend to focus on short-term uncertainties and have limited capacity to plan for long-term uncertainties.

How uncertainty is to be addressed in planning and decision-making is understood differently depending on the point of departure. Studies of uncertainty undertaken from an *epistemological* point of view have tended to cite lack of knowledge as the main source of uncertainty, with issues related to insufficient resources, lack of instruments to deal with sudden changes, and cognitive limitations, all of which heighten uncertainty in decision-making (Abbott, 2005; Christensen, 1985; Rauws, 2017). Studies focusing on *ontic uncertainty* (Brugnach et al., 2008; Walker et al., 2003) have emphasised environmental factors, including the predictability versus unpredictability of risks, limits to actors' jurisdiction, and conflicts of agency. Spatial planning and humanitarian response, which are two key approaches to address hazards and disasters, have historically engaged with epistemic and ontic uncertainty in different ways. The distinction pertains to how the two domains have traditionally perceived, discussed, and dealt with different societal challenges, and how their framing of problems and operational logics have been reflected in research, practice, and policy towards uncertainty. For example, the humanitarian sector has warned against trying to ameliorate long-term uncertainty by accumulating information, and has argued that instead alternative decision-making methods that seek to accept rather than decrease uncertainty are required (Campbell & Knox Clarke, 2018). However, spatial planning has traditionally adopted an instrumental approach, aiming to create certainty, stability and predictability, with recent approaches emphasising open-ended plans and consensus-building to manage uncertainty (Abbott, 2005; Rauws, 2017).

In recent decades, a "contingency approach" has been observed in planning (Alexander, 2017; Ten Brinke et al., 2010), one that calls for embracing uncertainty rather than reducing, fudging, or deflecting it (Balducci et al., 2011). In supporting this approach, the New Urban Agenda and the UN's Sustainable Development Goals advocate for the integration of urban planning and territorial development into disaster risk reduction and crisis response activities to enable the formulation of appropriate planning measures (Habitat, 2016). Despite the more recent convergence in planning and humanitarian literature and policy, the differences in how both spatial planning and the humanitarian sector approach uncertainty continue to make it challenging to operationalise and implement joint strategies (Maynard et al., 2018). This is especially evident in development contexts in the Global South,[1] where crises are compounded by conditions of weaker institutions and resource scarcity compared with the Global North (Maynard et al., 2018). Many of the procedures and instruments for dealing with uncertainty in planning under the contingency approach were developed in countries in the Global North (e.g. van den Hoek et al., 2014; Walker et al., 2003; Zandvoort et al., 2018). In a developmental setting, chronic vulnerabilities are often perpetuated through top-down governance and planning (Maynard et al., 2018). This contributes to pronounced challenges in planning, as actors have different and incomplete understandings of a given situation (Brugnach et al., 2008; McCaskey, 1982). In such contexts, there is a need for a planning approach that bridges understandings of

epistemic and ontic uncertainty and simultaneously addresses the breakdown of both processes and the environment (Abbott, 2005).

Although the narrative of the disaster management and relief efforts that took place in Wayanad during the unexpected floods is a relevant study in itself, our aim in this article is to view the floods through the prism of uncertainty in order to extract general propositions on how short-term unexpected events influence approaches to long-term planning. Accordingly, our intention is less about assessing the lessons learned from Wayanad and more about analysing what happened in Wayanad as a case study of uncertainty to facilitate a discussion of how spatial planning could address uncertainty during an emergency situation. We draw inspiration from authors, such as Jennifer Robinson (2016), who argue for more global ways of undertaking urban studies, in which the potential and status of case studies could be used to expand current understandings of concepts and "to contribute to wider theoretical conversations" (Robinson, 2016, p. 4).

The acquisition of rural land, formerly held by tribal communities, by settlers from other districts has gradually transformed Wayanad into a peri-urban, spatially dispersed, relatively sparsely populated district (383 inhabitants per km$^2$) (Indian Institute of Architects, Calicut Centre & District Town and Country Planning Office, Wayanad, 2018), with three municipal towns and several smaller villages. In total, 90% of the land is reserved for forests, plantations and agriculture (ibid.), which has reduced spatial flexibility. Changes in land use through conversion of paddy fields and flood plains into areas for real estate have decreased the capacity for water retention, and unregulated building construction and quarrying have destabilised the hilly areas of the region. In addition, the cultivation of commercially viable crops such as bananas, tea and coffee has decreased the fertility of the topsoil. An expanding hospitality industry is challenging existing land-use boundaries by catering to local and regional tourists, and several quarries currently satisfy the demand for building materials for rapid real estate development. Sectoral planning policies with unclear mandates render regulation challenging, and oversights have increased uncertainties arising from development in the area. The inability of the system to reconcile both short-term and long-term threats due to quarrying, coupled with the vulnerabilities due to historical marginalisation of the tribal communities, have entrenched inherent uncertainties in Wayanad. As we show in this article, the above-mentioned systemic tensions that affect Wayanad were exacerbated by the unexpected occurrence of the 2018 floods, while other challenges were overcome. The interlaced challenges and layers of institutional governance make Wayanad a pertinent case for analysing ontic and epistemic uncertainties and ambiguity, and how these were dealt with in planning frameworks. The case provides a different departure point for studying uncertainty that could speak to the increasing literature on contingency planning developed mainly in European and North American cases.

In this article, we first map how uncertainty is theorised, conceptualised and operationalised within spatial planning and humanitarian studies. We build on the conceptualisation of uncertainty adopted by Walker et al. (2003), Brugnach et al. (2008), and van den Hoek et al. (2014) from a flood risk and climate adaptation perspective, wherein ontic uncertainty, epistemic uncertainty and ambiguity are identified as three broad facets of uncertainty. These facets are defined respectively as "the inherent variability or unpredictability of a system," "imperfection of knowledge about a system" and "too many possible interpretations of uncertainty" (Brugnach et al., 2008, p. 5). We used these facets as a "trialectic" to understand how the floods in Wayanad were handled. Through abductive reasoning, this conceptualisation helped us formulate a theoretical framework for analysing the case, generate new theoretical propositions, and facilitate our discussion of the need for novel methodological and conceptual approaches in spatial planning.

The 2018 and 2019 floods in Wayanad represent unexpected events with a low probability of occurrence and low degree of predictability. In the article we show how decision-makers dealt with uncertainty during the floods despite institutional, resource and capacity limitations. We also show how the blurred boundaries between humanitarian and development responses became visible in that process. A combination of the three facets of uncertainty compounded the levels of uncertainty, leading to *ambiguity "in action,"* which we define here as *the discordance experienced on the ground despite consensus in theory, practice and policy for bridging fragmented and sectorised institutional jurisdiction*[2] *with asymmetries in power and resources at the state, district and lower administrative levels.* The findings from our study indicate that the resulting compounded uncertainty and ambiguity in action could have been ameliorated by a contextualised contingency planning approach, aspects of which seemed to be implemented by the district administration in collaboration with community actors in Wayanad. We conclude the article with recommendations for advancing a contextualised contingency planning approach that would consolidate research and operational logics of spatial planning and humanitarian efforts in order to address the uncertainty and ambiguity "in action" that typify unexpected events in similar developmental contexts.

In this article we define a contextualised contingency planning approach as having the following features. First, the approach is positioned at the intersection between humanitarian action and planning, and it aims to bridge the temporal gaps between emergency response and long-term spatial planning by drawing on a plurality of perspectives and experiences of dealing with contingencies within humanitarian practice into spatial planning. Second, a contextualised contingency planning approach embraces and explicitly takes into account the interrelational and compounded aspects of uncertainty. This enables planners to deal with ambiguity in action in a better way. Third, and finally, the approach emphasises contextual embeddedness and pays particular attention to historical marginalisation, as well as power asymmetries at work in resources, institutions and capacities in contexts where uncertainty is compounded by chronic vulnerabilities. Thus, the approach is well suited for addressing uncertainty in cases where uncertainty will continue to be most prevalent in terms of climate change effects and volatility in world markets. A more detailed description of these features is provided in the section "*Bridging Operational Logics of Spatial Planning and Humanitarian Response by Explicating Ambiguity in Action: Steps towards a Contextualised Contingency Planning Approach.*"

## Methodology

To advance the state of the art concerning how uncertainty manifests in both the short-term and long-term during environmental crises in developmental contexts situated in the Global South, we combined case study research with interviews and a literature review. An exploratory qualitative study of the unexpected floods in Wayanad was undertaken with fieldwork in December 2018 and from October to December 2019. The fieldwork started at Trivandrum, the capital city of Kerala, where the state's administrative and planning and disaster management institutions are located, and finished in Wayanad, the site of the floods. It consisted of semi-structured interviews with 58 stakeholders and was concentrated on understanding decision-making under uncertainty. The interviews focused on the nature of the collaborations between various actors involved in flood response and their institutional and personal roles before, during, and after the floods that potentially had influenced their decisions. Of the 58 interviewees,

30 were decision-makers from the line departments of the administration involved in disaster management and response, and in long-term planning. The remaining interviewees included elected representatives of local self-government institutions (LSGIs), known as village pan-chayats, as well as coordinators from local and national nongovernmental organisations (NGOs) involved in multiple initiatives such as development work, sustainable tourism and disaster relief, representatives of local research organisations, and community volunteers identified through snowballing. In addition, project coordinators from UNDP (United Nations Development Programme), UNICEF and disaster relief NGOs were interviewed. Humanitarian action and coord-ination during the floods were undertaken by a range of state, non-state and community actors who were present when the floods occurred; there was no clear division between humanitarian and development actors in the response. This finding supports the notion that the separation between humanitarian and development actors in crises is less pronounced when viewed from the perspective of local operational response (Campbell & Knox Clarke, 2018). In this article, the separation between "humanitarianism," "development," and "planning" is therefore based less on the type of actor involved, and more on both the short-term and long-term perspectives of different activities and the distinctive operational logics present in their work.

We analysed the collective response to the floods in Wayanad by conducting a case study of uncertainty in a developmental context with weak institutional mechanisms, chronic vulnerabil-ities, and scarce resources. The embedded units of analyses in the single case study design (Yin, 1994) were the decisions taken and by whom to deal with uncertainty in both the short-term and long-term, due to the unexpected floods. The interviewees' answers were written down, transcribed, anonymised, thematically coded, and analysed in several rounds by using qualitative content analysis software (NVivo).[3] They were coded by clustering decisions made in different phases based on the following groupings, all of which related to responses: governance, emer-gency, humanitarian, community, and planning.

Uncertainty has been the focus of discussion in a number of fields and disciplines. As the art-icle aims to address current gaps in literature on uncertainty, we conducted a literature review of English publications on uncertainty in 22 journals, spanning planning (spatial, strategic, adap-tation, environmental, regional), humanitarian studies, geography, risk research, decision-making, and climate adaptation, as well as seminal work addressing uncertainty in other relevant domains such as business and management. The review focused on the extent to which uncer-tainty has been acknowledged in decision-making in planning, and on tracing efforts to deal with epistemic uncertainty, ontic uncertainty, and ambiguity in spatial planning over the past 35 years, starting with the uncertainty framework for planning developed by Christensen (1985); the review covered the years 1985–2020 inclusive. Since uncertainty is often regarded as the domain of humanitarianism, especially in the context of crises (Earle, 2016), we also included lit-erature focused on the long-standing discussion on the humanitarian-development nexus in cri-sis planning and response (Sande Lie, 2020), as well as reports and working papers from the Active Learning Network for Accountability and Performance (ALNAP), the UN General Assembly, and the UN Office for the Coordination of Humanitarian Affairs (OCHA).

## Unpacking Epistemic Uncertainty, Ontic Uncertainty, and Ambiguity

Abbott (2005) defines uncertainty as "a perceived lack of knowledge, by an individual or group, that is relevant to the purpose or action being taken" (p. 238). As with many other definitions, the focus is on ignorance generated by imprecise information (Weick, 1995) without considering

other facets of uncertainty that arise during unexpected events. Drawing on Walker et al.'s conceptualisation and emphasis on the importance of viewing different facets of uncertainty in a relational manner (Walker et al. 2003), Brugnach et al. (2008) define uncertainty as "the situation in which there is not a unique and complete understanding of the system to be managed" (p. 4).

Ambiguity, one of the focuses in this article, is understood by Brugnach et al. (2008) as a "third dimension" of uncertainty. Ambiguity refers to the confusion generated by multiple interpretations or frames of reference, lack of clarity, and political and emotional clashes when more information does not necessarily lead to better comprehension (Brugnach et al., 2008; McCaskey, 1982; Weick, 1995). Ambiguity is therefore a useful concept for understanding interrelational aspects of uncertainty during an unexpected event, especially in a developmental setting such as Wayanad, where ambiguity persists as a result of the different interpretations, jurisdictions and mandates relating to ways to act on the ground among actors working with planning, development and humanitarian action. Furthermore, several authors (Brugnach et al., 2008; van den Hoek et al., 2014; Walker et al., 2003) have shed light on how understanding the nature of interrelations between the different facets of uncertainty can yield benefits by seeking "unexplored approaches to cope with interrelated uncertainties" (van den Hoek et al., 2014, p. 374). These recent developments have led to an emphasis on the "making of sense" of uncertainty (Weick, 1995, p. 4) through strategies that enable decision-making based on intuition, such as fast and frugal heuristics (Knox Clarke & Campbell, 2020; Mousavi & Gigerenzer, 2014).[4]

During unexpected events, both planning processes and the environment can experience breakdowns. The level of uncertainty and the preparedness and response required during such events is often contextually determined by the extent of the event's impact, the nature of decision-making in the context of the event, the duration of the event, the actors involved, and the scope of spatial interventions. Figure 1 shows the degree of probability and probability of occurrence of events in the context of Wayanad.



Figure 1. Types of events characterised by degrees of uncertainty within the context of Wayanad (based on Christensen, 1985).

We argue that events with a low probability of occurrence and a low degree of predictability, which are referred to in humanitarian literature as "contingencies" (Choularton, 2007), *compound* uncertainties, as they encompass situations where ontic and epistemic uncertainty, as well as ambiguity come into play. While spatial planning has limited deliberations on contingencies and rarely addresses uncertainties that arise during such events, humanitarian response has contingencies as its domain (Campbell & Knox Clarke, 2018). In the following two subsections, we explore the differences between both long-term and short-term perspectives, and how they are treated in literature on spatial planning and humanitarian responses to address uncertainty in the event of contingencies.

## Uncertainty in Spatial Planning

As described in the introduction to this paper, it is now widely acknowledged that traditional systems of spatial planning are not well placed to cope with uncertainty (Albrechts, 2015; Balducci et al., 2011; Bertolini, 2010). However, since the early 2000s, the planning community has continually discussed the "irreducible uncertainties of planning" (Bertolini, 2010) and advanced theoretical positions that call for embracing uncertainty rather than resisting it (Balducci et al., 2011). In contrast to early planning theory debates, which were largely process-driven, incremental approaches such as "muddling through" planning problems (Lindblom, 1959), pluralist approaches towards "wicked problems" (Rittel & Webber, 1973) and a recognition of bounded rationalities (Forester, 1984) have developed as reactions to the instrumental logic of rational planning. Also, acknowledgments of a "compound rationale" for planning (Sager, 1992) have expanded the boundaries of the systems dealt with by spatial planners. This has promulgated ways of internalising unexpected and unknown elements in mitigation and management that were previously considered externalities and therefore beyond the scope of the planner (e.g. Balducci et al., 2011; Gunn & Hillier, 2014; Rauws, 2017; Skrimizea et al., 2019). Along with the increase in environmental uncertainties due to climate change, the above-mentioned theoretical advances have enabled planning perspectives that earlier addressed mostly epistemic uncertainty, to the extent that instead they navigate a combination of epistemic and ontic uncertainty. Imagination, experimentation, and the discovery of potentialities through non-linear explorations (Brugnach et al., 2008) have therefore begun to replace stability and predictability, which were traditionally the qualities aimed for within planning.

## Uncertainty and Humanitarian Response

While embracing uncertainty is relatively new in spatial planning, the humanitarian sector is regarded as "bred for uncertainty" (Campbell & Knox Clarke, 2018, p. 33). The unpredictable nature of humanitarian crises far exceeds local capacity, and therefore uncertainty is explicitly acknowledged as a contextual *modus operandi* (Campbell & Knox Clarke, 2018, p. 33). At the same time, humanitarian approaches have been criticised for being trapped in a state of temporal thinking (Brun, 2016) that is focused on "quick delivery, high impact" activities rather than being predicated on coherent development programmes that integrate long-term economic and societal goals (Tag-Eldeen, 2017, p. 400). This is partly due to how international humanitarian systems were originally set up, with a focus on upholding principles of neutrality, impartiality and independence in order to gain access to populations in conflict areas and to ensure the safety of aid workers. To uphold the principles, humanitarian aid agencies have largely avoided involvement in "development work" on the grounds that it is more politically oriented. At the

same time, as stressed by the then UN Secretary-General Ban Ki-moon at the World Humanitarian Summit in 2016 "humanitarian actors need to move beyond repeatedly carrying out short-term interventions year after year towards contributing to the achievement of longer-term development results" (UN General Assembly, 2016, p. 32). This argument is not new,[5] but humanitarian work is increasingly expected to strengthen preparedness before crises and disasters occur, and to take into account planning and development strategies (Choularton, 2007; OCHA, 2017). Efforts have therefore been made to develop effective operational mechanisms that address the tensions between short-term relief and long-term development. What we see, therefore, is a convergence in both discussions on and practices within spatial planning and the humanitarian sector regarding multiscalar, cross-sectoral and bridging strategies for dealing with uncertainty, as crisis increasingly comes to be seen as the "new normal" (Hilhorst, 2018).

While the need to bridge the humanitarian-development nexus is now acknowledged, it remains to be fully operationalised and achieved (ALNAP, 2018; Earle, 2016; Spiegel, 2017). We argue that this is partly due to the differences between how the two domains of spatial planning and humanitarianism perceive, discuss and deal with ontic and epistemic uncertainty. Actors from the two domains also face ambiguity on the ground as a result of blurred vertical and horizontal boundaries between actors, siloed mandates and different time horizons in their work (DuBois, 2018). In the next section we discuss how this played out in Wayanad. We show how the floods in Wayanad exacerbated systemic tensions while other challenges were overcome, and how ambiguity became the norm due to varying policy interpretations by decision-makers, together with siloed and contradictory mandates for development and conservation (DuBois, 2018).

## Contextualising Uncertainty in Wayanad

As part of contextualising uncertainty in Wayanad, we first briefly describe the social, cultural and political nature of the state of Kerala to indicate how existing decentralised governance and community resourcefulness were factors that aided the response to the floods in 2018 and 2019. In accordance with the 74th Amendment Act of 1992 relating to the constitution of India, the People's Campaign for Decentralised Planning initiated by left-leaning political parties in 1996 enabled local participatory governance through the creation of local self-government institutions (LSGIs), known as village panchayats in India. The reforms devolved substantive administrative and fiscal powers to villages, with village panchayats taking on many functions usually performed by the centralised administration, such as taxation and the creation of physical development plans and revenue-sharing schemes with the districts (Isaac & Heller, 2003). In Kerala, these institutional and policy transformations were assisted by high levels of literacy, its gender balance and its capacity for self-organisation (Isaac & Heller, 2003), which are reflected in most districts of Kerala, including Wayanad. While the heavy monsoon floods that occurred in several districts in Kerala, including Wayanad, in August 2018 were unexpected, since similar floods had not occurred since 1924, the recurrence of the floods in 2019 drew attention to the significant impact of climate change and human activities.

### Epistemic Uncertainty in Wayanad

Overall responsibility for planning in Wayanad rests with the District Planning Committee (DPC), with the Department of Town & Country Planning (CTP) functioning as the spatial wing of the DPC. These bodies are supported by various line departments with responsibility for, for

example, agriculture, forest and wildlife, soil conservation, geology, water, electricity, housing, and public works. Disaster management and emergency measures are led by the District Administration (DA), with the District Emergency Operations Centre (DEOC) functioning as the DA's implementing partner, assisted locally by the village offices. As a result, multiple sectoral plans are created, containing varying mandates. At the state level, there are 20-year state-per-spective plans that outline policies and strategies for long-term development. In addition, inte-grated district-development plans, 20-year perspective plans, 5-year execution plans, and rural plans are all prepared by the DPC, and 20-year master plans and detailed town planning schemes are prepared by the CTP at the district and municipal levels. There are also subplans, such as tribal subplans to accommodate the needs of the marginalised tribal communities, and at the village level there are physical development plans and both 5-year and annual plans pre-pared by the LSGIs. Quarrying and agriculture in Wayanad are regulated by policies for real estate development and conservation of paddy fields. The policies are often contradictory, and until recently departments that worked in ways characteristic of working in siloes did not see quarrying and agricultural activities as having any direct causal role in terms of flooding or as being under the jurisdiction of local disaster planning and response.

Interviewees from governmental departments acknowledged that there was a lack of adequate land use management as a result of siloed mandates. They also emphasised the need for more topographic, contour, geological, and drainage mapping, along with advanced technol-ogy and trained personnel for better decision-making. A local government official (KI 8b) stated: "There is the [disaster management] handbook, but *tahsildars*[6] have not even read it [ … ] We need more people, more decision-makers to handle [disasters]." At the time when we conducted our fieldwork in 2019, the CTP operated with 14 staff members, of which only the chief town planner had a formal educational background in town planning. Similarly, the DPC operated with personnel who did not have a background in integrated planning. Interviewees who were members of the DPC acknowledged that the perception of Wayanad as a lesser developed dis-trict than other districts in Kerala had led to a prolonged shortage of competent personnel. This in turn had contributed to a lack of capacity required to aggregate different plans and an insuf-ficient understanding of complexity. Furthermore, lack of resources limited the amount of research that was carried out, entrenching the epistemic uncertainty caused by imperfect know-ledge about the situation and system (Brugnach et al., 2008).

Failure to make use of local knowledge was perceived as influencing the level of epistemic uncertainty and thus hindering long-term decision-making. A local researcher (KI 53) emphasised that "farmers have a lot of knowledge, but this does not reflect in local planning, so not much change." This included indigenous knowledge systems regarding paddy cultivation, the local cli-mate, and local flora and fauna that have been built up over time by Wayanad's farming and tribal communities. In addition, since weather data for Wayanad were received from the India Meteorological Department based in Delhi, there were delays in processing information in the absence of real-time local weather and rainfall data and a lack of precision regarding local weather readings. A local government official (KI 26) disclosed that they had very few rain gauges and stated "We need more data collection that is helpful for us to predict and for long-term mon-itoring." Also, local government officials expressed the need for integrated watershed-based plan-ning through collaboration between various planning departments to manage the area's dams, land, water and environment in a scientific way, similar to that highlighted in the post-disaster needs assessment prepared by the Indian Institute of Architects, Calicut Centre & District Town and Country Planning Office, Wayanad (2018). However, the DA appeared to be hindered in using

such maps and information as a base for further interventions due to the siloed mandates discussed above. As critiqued by a local NGO representative (KI 10b), "Very interesting systems were devised last year. Instead of building on this, they [DA] devised new systems."

While siloed working and gaps occurred, the numerous bureaucratic hurdles that are normally encountered by humanitarian interventions and that slow down phased procedures were less visible in Wayanad at the time of the floods. This was a result of a conscious effort by the DA to include various actors irrespective of their formal roles. A local community actor (KI 18) stated "In the first year, everybody worked in every role. Whoever had a voice and leadership was running the camp." The "camps" were run by elected representatives, community-based organisations and community leaders in 2018. Steps taken by the DA included the provision of office space for UN coordinators at the DA premises from September 2018, collaboration with NGOs on the "We for Wayanad" Facebook page created after the 2018 floods to facilitate donations of relief material and awareness-raising, and the enlisting of community radio services for outreach. These short-term initiatives led by the DA were implemented by the DEOC, locally coordinated by village officers and village panchayat members, and supported by local NGOs. Project coordinators from national NGOs and UN organisations played a supportive role in offering technical and specialised assistance for community-based disaster risk reduction, participatory mapping, and documentation of spatial, social and economic vulnerabilities, as is evident in recent literature on resilient humanitarianism (Hilhorst, 2018). Together, these developments facilitated an incremental process of learning whereby "people's representatives and officials were ready to respond this year because of last year's learning experiences" (KI 9b, local government official). Furthermore, the traditional separation between government, humanitarian and development actors seems blurred in this case, as "irrespective of designation […] everyone saw an opportunity to learn" (KI 37, local government official), and thus spearheaded a locally led implementation response to the floods. This also included women entrepreneurs from low-income communities cooperating on Kudumbasree, a state-sponsored poverty-alleviation and female-empowerment platform; the women entrepreneurs used an app to train in surveying and recording post-disaster damage. Thus, epistemic uncertainty during the unexpected floods was dealt with by acting fast, despite weak institutional mechanisms and scarce resources. In addition, incremental learning from the 2018 floods enabled an understanding and reflection of what information was most relevant and what ways were most appropriate to deal with the 2019 floods. A state government official (KI 51) stated: "We had the benefit of 2018 […] so pre-emptive evacuation was done smartly especially in Wayanad."

### Ontic Uncertainty in Wayanad

Compared with the more developed districts of Kerala, Wayanad possesses few infrastructural facilities or service industries. Daily agriculture activity is dependent on the monsoons due to insufficient irrigation facilities, but unexpectedly heavy rainfall washes away productive land and destroys crops. As highlighted by a local NGO representative (KI 42) "Land use change is a big reason for this. There are laws, but there are loopholes." Some interviewees acknowledged that this development in land use had perpetuated chronic vulnerabilities, especially for marginalised tribal communities, which comprise 18% of the district's population (Indian Institute of Architects, Calicut Centre & District Town and Country Planning Office, Wayanad, 2018). A local government official (KI 8b) stated: "Poor people will be affected, especially tribals in Wayanad. Even with government support, it will be difficult for them to recover." Their income levels, literacy rate and access to jobs

are significantly lower than those of settlers from other districts, which affects their participation in LSGIs and thus leads to an unequal distribution of benefits. They were affected more than other communities by the floods in 2018 and 2019, and the recurring loss of their livelihoods was not adequately addressed due to resource limitations. Although such asymmetries in power relations are not demonstrated further in this article, they have been highlighted as a contributing factor to chronic conditions in similar contexts in the Global South.

The above-mentioned factors make Wayanad fragile, as the effects of unexpected events, such as the floods in 2018 and 2019, are unevenly distributed. This exacerbates "uncertainty due to inherent variability or unpredictability of the system" (Brugnach et al., 2008, p. 5); in other words, it exacerbates ontic uncertainty. Although ontic uncertainty is acknowledged in recent spatial planning literature (Zandvoort et al., 2018), the influence of factors such as chronic vulnerabilities, asymmetries in political power, and the role of communities has received insufficient attention. In the months following the 2018 floods in Wayanad, decision-makers from the DA, the DEOC, and *tehsil* and village offices worked closely with local and national NGOs, UN representatives, village panchayat members, and community volunteers, through a combination of formalised disaster management protocols and informal coordination on various post-disaster relief and recovery initiatives. Activities included relief camp management, collection of food supplies, distribution of relief kits, cleaning of schools and contaminated wells, assessing the extent of the damage, repair of affected houses, and counselling for post-disaster trauma. Those initiatives were supported by local communities on a voluntary basis. One local government official (KI 8b) acknowledged that "Government is not the reason why this was contained. Without civil society, everything would have collapsed." We consider that the collective actions of civil society members offset the level of ontic uncertainty in Wayanad and enabled community members to resume their lives within weeks after the floods in 2018. Furthermore, awareness campaigns and training workshops were held at schools and public facilities to familiarise local community members with disaster management. Those responses ensured that, despite limited resources, Wayanad was better prepared when the floods occurred again in 2019.

While short-term needs were satisfied by fast action, systemic challenges need the benefit of reflection over time and action taking place slowly. For example, recent debates invigorated by earlier environmental reports on the biodiverse hilly areas of Wayanad (Gadgil et al., 2011) have shed light on quarrying in ecologically sensitive areas as one of the reasons for landslides following the floods in 2018 and 2019. Such long-term consequences of quarrying need to be incorporated into long-term policy for flood mitigation. However, current policy mandates and governance structures do not accommodate these challenges. Therefore, long-term transformation requires a combination of acting fast and slow. As expressed in the interviews, Wayanad needs "long-term vision" (KI 56, local elected representative), and "long-term land governance has to change" (KI 53, local researcher).

## Ambiguity in Wayanad

Ambiguity in the sense of "too many possible interpretations of uncertainty" (Brugnach et al., 2008) has been heightened in Wayanad as a result of actors operating with varying temporalities. This includes siloed regulations and confusion generated by different perceptions, mandates and jurisdictions of various departments regarding building construction, conversion of paddy fields and quarrying. This was observed also by actors who were not part of the formal government administration. According to one local community actor, "All departments are working independently now, interdepartmental coordination has to be better" (KI 18, local

community actor). In addition, ambiguity perpetuated a lack of clarity and accountability on the part of the departments and impeded planning, decision-making and coordination for systemic issues, as illustrated by the following quotation: "Multisectoral coordination is a risky job and a big issue. Each agency has by-laws [and] areas of interest, and lobbying is a major headache" (KI 27, local representative of an international development organisation).

Most quarries in Wayanad were banned from functioning after the 2019 floods, due to their perceived role in increasing the fragility of the hilly areas, which, as many interviewees acknowledged, had contributed to landslides. However, formulating long-term planning responses to quarrying is challenging due to ambiguity generated by contextual decision-making responses. In Kerala, the cultural identity and local knowledge of communities is interspersed with deliberative empowerment through community participation (Isaac & Heller, 2003). This contributes to enhanced political engagement and expectations of decision-makers' accountability, which was defined as an "emotional response" by a local representative of a non-state NGO (KI 22): "Many people have voiced personal or organisational opinions on quarrying. What they expect from us is also an emotional response regarding quarrying of ecologically fragile areas. We can answer them only within the limits of the legal entity."

Corruption may play a role in facilitating hidden decision-making, thus perpetuating ambiguity. For example, permission to build resorts may be granted by elected representatives despite building and zoning regulations limiting the burgeoning hospitality industry, as hinted by a local researcher (KI 20): "If you ask government officers how many resorts there are, they wouldn't know. Panchayat has to monitor, but they can get money." Ambiguity in this situation was addressed to some extent through inter-agency groups (IAGs) established in March 2019, based on learning from the experiences of challenges faced in 2018. The IAGs consisted of various NGOs and the DA, and jointly facilitated decision-making and coordinated the activities of multiple actors through monthly in-person meetings at the DA office. WhatsApp groups and Google Docs served as communication channels. One interviewee acknowledged that "a rapport has been created" (KI 22, local representative of a non-state NGO). That rapport had facilitated "direct collaborations through shared goals" (KI 17, local representative of a non-state NGO). Both in the immediate response to the crisis and in the subsequent sustained engagement, the IAGs matched demands with the need to avoid duplication of services, and they spearheaded a decentralised way of addressing issues on the ground, as acknowledged by some interviewees.

A local government official (KI 8b) stressed the importance of flexibility and transparency, which closely aligned with understandings in organisational studies of dealing with ambiguity (Volberda, 1999) "Formally, there are no policies or procedures for addressing conflict of interest. But the [administrative] system is open and flexible." Additionally, insights from the officials acknowledged the advantage of a "small, intensely interactive group" (as highlighted by McCaskey, 1982). One such group had been formed through "unofficial and informal relations at the workplace" (KI 23, local government official), which was helpful in, for example, rescuing people who had been stranded during the landslides in 2019.

A humanitarian crisis, such as unexpected flooding in Wayanad, results in a breakdown of the planning process and increases the fragility of the environment. Our findings from this case highlight that all three facets of uncertainty (epistemic uncertainty, ontic uncertainty, and ambiguity) are intertwined and mutually compounding, and that they generate *ambiguity in action*, thereby adding to the complexity in development contexts. At the same time, spatial planners expanded their horizons by acknowledging the political ecology of disasters, and the level of unexpectedness forced them to find better ways to respond to such events. We argue that

these observations support the argument for a contextualised contingency planning approach that centres on flexibility to address jointly the various facets of uncertainty.

### Bridging Operational Logics of Spatial Planning and Humanitarian Response by Explicating Ambiguity in Action: Steps towards a Contextualised Contingency Planning Approach

The case of unexpected floods in Wayanad supports a relational understanding of ontic uncertainty, epistemic uncertainty, and ambiguity that can enhance crisis response during unexpected environmental crises (Brugnach et al., 2008; van den Hoek et al., 2014). Spatial planning, as mentioned earlier in the section "*Uncertainty in Spatial Planning*," given its focus on dealing with epistemic and ontic uncertainty, calls for incremental, adaptive, strategic, and complexity-driven planning to achieve goals for a desirable, long-term future. However, a poor assessment of a crisis and the communities affected by it will impact decision-making and lead to maladaptation regarding spatial interventions (Zandvoort et al., 2018). Within humanitarian approaches, a short-term, sectoral approach is often adopted in emergency response in order to simplify the uncertainty involved, and until recently the humanitarian sector did not focus on consensus-building to aid projects and processes (Campbell & Knox Clarke, 2018; Hilhorst, 2018; Sanderson, 2017). The need to work for "collective outcomes" (OCHA, 2017) is now well established in both spatial planning and the humanitarian sector as a result of a convergence in their understandings. However, actors still struggle to operationalise their approaches and collaborations (ALNAP, 2018; Stamnes, 2016).

While both domains (i.e. spatial planning and the humanitarian sector) acknowledge epistemic and ontic uncertainty, they grapple with ambiguity. Thus, too many interpretations regarding the ways of engaging on the ground (Weick, 1995), the existence of silos and departments' differing perceptions of silos, and gaps between organisational mandates, all heighten *ambiguity in action*, as shown in Figure 2.
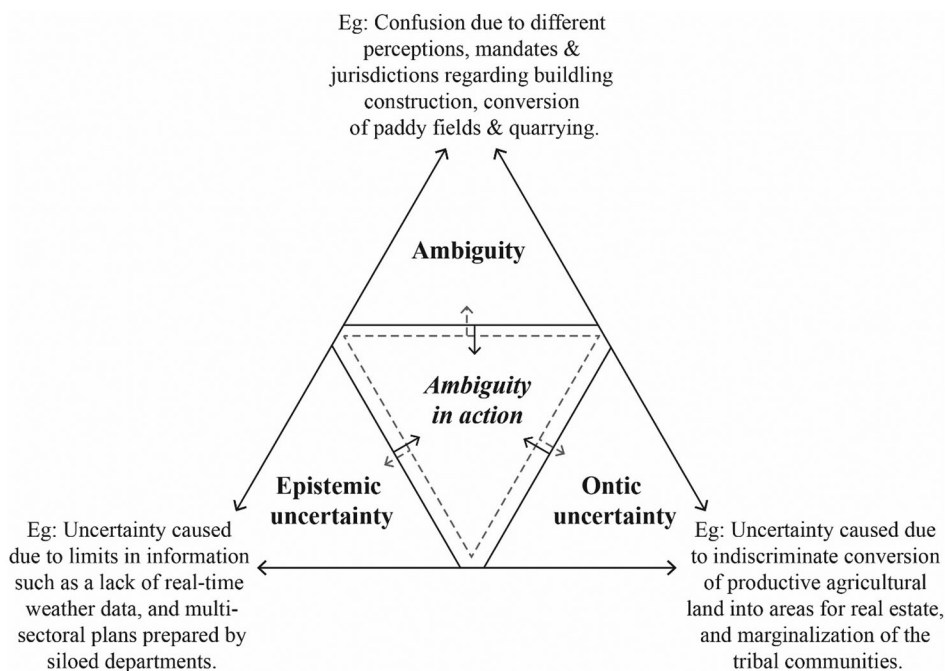


Figure 2. Three facets of uncertainty and their relation to ambiguity in action.

Furthermore, decision-making is complicated by a lack of specialised training and competence required to upgrade disaster management plans, which in turn intensifies ambiguity in action during unexpected events, as seen in Wayanad. The floods briefly united the fragmented governmental departments and multiple actors through various informal and heuristic decision-making processes related to emergency measures that bypassed existing bureaucratic procedures. However, whether such a development could be sustained by policy and organisational changes that address systemic issues and provide long-term transformation and meta-learning for future unexpected events remains to be seen. Currently, governmental planning departments, civil society organisations and community actors seem ill-equipped to deal with more systemic issues influencing the occurrence and impact of floods. As highlighted by a local government official (KI 29) in Wayanad, "We have many rules, but [they are] there only in books, but not followed or in action." Moreover, the administrative structures consisted of various siloed departments that contributed to ontic uncertainty due to the ways in which multiple plans at different levels did not overlap and therefore impeded cohesive implementation on the ground. We perceive this factor as having blurred boundaries between epistemic and ontic uncertainty at the organisational level.

We argue that each facet of uncertainty is closely related to the other facets, making up a "trialectic" where dimensions co-constitute each other (see Figure 2). In a real-life context, ambiguity in action persists in addition to the general characteristics of ambiguity within organisations, as exemplified by McCaskey (1982), due to the presence of multiple actors with asymmetries in power and resources. We argue that the above insights reveal gaps in the current approaches that hinder the bridging of understandings in spatial planning and humanitarian response, thus influencing actions on the ground. In many cases, working in accordance with government protocols does not allow humanitarian agencies to react in a timely, fast and contingent manner. Therefore, unexpected events would benefit from a contextual planning approach that facilitates inter-agency coordination and streamlines procedures, allowing humanitarian response to plug in and address situations in a flexible manner when government agencies are not fully functional (DuBois, 2018). Our case study also demonstrates that when local actors take the lead, gaps are minimised and humanitarian actors can optimise actions based on needs. Simultaneously, this enables humanitarian actors to overcome boundaries by operating contextually and working with local organisations and institutions, thereby laying the ground for overall long-term spatial planning of the affected areas. As discussed in literature (Weick, 1995) and confirmed by empirical findings in Wayanad, the quality of frugal decision-making is influenced by available information and trained personnel.

Knowledge about how to deal with unexpected events is often sought from the humanitarian domain, where long-term planning interventions are still a relatively new endeavour. We therefore regard our study as a contribution towards bridging different ways of engaging with disaster response, as we used a theoretical framework of uncertainty to discuss the role of spatial planning in addressing humanitarian crises. We acknowledge that, seen from a critical realist perspective (Sayer, 1992), humanitarian and spatial planning approaches have different rationales as a starting point. However, our observations from Wayanad point to the potential for the two approaches to bridge an understanding of chronic challenges and focus on multilevel, interorganisational coordination in times of uncertainty (Tag-Eldeen, 2017). In addition, a renewed focus on the category of uncertainty defined as "chaos" (Christensen, 1985), which pertains to unpredictable and unknown challenges, could be supplemented by social learning through the experience of uncertainty (Brugnach et al., 2008),

as occurred in Wayanad, where the 2018 floods enabled a learning experience that helped to establish an improved response in 2019.

From our empirical findings, we conclude that ambiguity in action in Wayanad was ameliorated to some extent through a contextualised contingency approach. Wayanad's institutional, administrative, planning, and governance mechanisms responded effectively to the best of their means towards short-term, emergency flood response in both 2018 and 2019, supported by the collective organisational capacities of the local communities. The latter factor, pertaining to sociocultural behaviour in Kerala, is understood to offset both ontic and epistemic uncertainty as the actions of local communities filled gaps in perceptions, mandates and jurisdictions of the formal government organisations. Additionally, humanitarian actors in Wayanad were not one big actor but comprised a diverse range of state, non-state and community actors. Even though national NGOs, UNDP and UNICEF actors were present, the Kerala disaster management protocol obliged them to collaborate with local actors who could better contextualise the situation.

In the absence of strong institutional planning mechanisms, community resourcefulness, decentralised governance and localised capacity in Wayanad contributed to contextualised contingency planning based on ad hoc, informal, spontaneous, and heuristic decisions (Choularton, 2007).[7] As pointed out by Knox Clarke and Campbell (2020) in earlier humanitarian literature, the above-mentioned factors are considered reasons for decision-making oversights, but recent approaches have tried to embrace the positive aspects of such emergent measures. The findings from our case study support those of earlier studies regarding how incremental learning from crises (Boin & 't Hart, 2003), decision-makers who are flexible, intuitive, transparent, and adaptive (Knox Clarke & Campbell, 2020; McCaskey, 1982; Volberda, 1999), and who use fast and frugal heuristics for decision-making (Mousavi & Gigerenzer, 2014) provide a basis for relational understandings of epistemic uncertainty, ontic uncertainty, and ambiguity as a way of improving responses to future unexpected events. These are useful lessons for spatial planning to deal with uncertainty.

As discussed in this article, disaster management and adaptive planning are approaches conventionally used to address uncertainty. Disaster management approaches are built on assumptions that their mandates do not extend beyond the state of emergency. Long-term rebuilding and rehabilitation is considered the responsibility of local governments. However, disaster management approaches operate on a synoptic logic of complete information and rational choice based on unlimited resources. Therefore, in developmental contexts, such as Wayanad, which are faced with unexpected events, these considerations tend to fail in practice when an inherently vulnerable system is stretched beyond its limits. Adaptive planning, which is prevalent in contexts in the Global North, is dependent on precise data, and current methodologies are ill-equipped to address challenges in developmental contexts. While we are inspired by the above-mentioned approaches, we argue that a contextualised contingency planning approach, aspects of which were partly observed in Wayanad, could additionally take into account the specifics of developmental contexts with weak institutional mechanisms, scarce resources, and chronic vulnerabilities. Such an approach could be further strengthened in Wayanad by incorporating the element of chance and stimulating improvised ways of interorganisational working among actors to address the challenges generated by ambiguity in action. Drawing on our empirical observations, and earlier definitions of contingency planning (Choularton, 2007; Volberda, 1999), we argue that a contextualised contingency planning approach could contain a repertoire of attributes. The attributes could include a set of integrated, flexible, proactive and adaptable decisions, actions, processes, strategies and interventions for both the short-term and long-term,

which could be undertaken in the face of unexpected events and determined by the social, spatial, cultural, political, and economic dynamics within a context before, during and after the event. Ongoing efforts in Kerala and Wayanad to integrate spatial and risk-informed planning show awareness of the need for a contextualised contingency planning approach among decision-makers. These include amendments to the Kerala Town and Country Planning Act 2016 in May 2020, developing village-level disaster management plans, training village task forces in emergency measures, and instituting a working group for disaster management at the district, *tehsil* and village levels to manage future unexpected risks. However, as noted earlier in the section, "*Epistemic Uncertainty in Wayanad*," there is a lack of integrated planning mechanisms and sustained organisational engagement for long-term transformation to limitations in resources and the ability of planning professionals to comprehend the level of complexity imposed by uncertainty.

Recent spatial planning literature suggests a distinct "contingency" approach by combining theories of rational decision-making and communicative action (Alexander, 2017) to deal with complex challenges. This includes proactively addressing the interactions and gaps between decisions and actions through case-specific experiences by engaging a diverse range of stakeholders in new combinations, and allowing for improvisations rather than control-based static plans (Alexander, 2017; Ten Brinke et al., 2010). We suggest mainstreaming these orientations, given the rise in unexpected events caused by climate change, that amplify interdependencies between various facets of uncertainty and ambiguity in action. We argue that this pertains especially to developmental contexts but suggest that it is relevant also for other complex contexts in which a multitude of actors are engaged.

## Advancing a Contextualised Contingency Planning Approach in Spatial Planning to Deal with Unexpected Events

In this article, we have shown how spatial planning and humanitarian response conceptualise, perceive, discuss, and deal with uncertainty by explicating three facets of uncertainty, namely ontic uncertainty, epistemic uncertainty, and ambiguity. By combining literature on uncertainty, spatial planning, and humanitarian action from the Global North and situating it within specific development and planning conditions in the Global South, we have shown how institutional capacity, access to resources, chronic vulnerabilities, decentralised governance, and community resourcefulness are important factors that influence understandings of uncertainty and responses to it. Following our empirical findings relating to the unexpected floods in Wayanad, we argue for the value of case-based research and have shown how events with a low probability of occurrence and a low degree of predictability represent a useful case for better understanding of various facets of uncertainty and the relations between them that are prevalent in developmental contexts. Our case study findings also show how the compounding of the three facets of uncertainty and their interrelations led to ambiguity "in action" on the ground. This discordance had prevailed before the floods as a result of differences in mandates between domains, between organisations, and within organisations.

Furthermore, our empirical observations correspond to the growing demand for recentring and reframing planning when faced with significant crises (Robinson, 2016), and offered clues for new approaches to address uncertainty, which is conceptualised in this article as a contextualised contingency planning approach. In addition to disaster management plans that have recently become mandatory in many vulnerable areas, we argue that a contextualised

contingency planning approach can both enable humanitarian organisations to make timely decisions, while simultaneously connecting with local and national planning efforts and time frames, and enable planning organisations to collaborate proactively with humanitarian organisations. Such dynamic changes in the organisational structure could also accommodate incentivising existing community voluntary efforts for the long-term. However, as shown by the Wayanad case, inherent vulnerabilities and national-level legislation and policies complicate local context-specific challenges that cannot be solved through the aforementioned approach. While we have not provided a finite definition of a contextualised contingency planning approach in this article, we propose the following multipronged strategies that could be useful in operationalising contextualised contingency planning, and the conditions that could facilitate that operationalisation:

- Incorporating the element of chance and making sense of uncertainty through flexible and adaptable decision-making based on fast and frugal heuristics.
- Multiscalar and cross-sectoral ways of working and bridging strategies across siloed and contradictory vertical and horizontal mandates.
- Cross-sectoral analysis of policy reflected in governance structures.
- Matching demands and needs through decentralised action coordinated by inter-agency groups.
- Making space for individual decision-makers and community actors with leadership qualities.
- Making space for collective organisational capacities of local communities in decision-making by strengthening community action and taking local knowledge into account, supplemented by social learning through the experience of uncertainty.

It should be noted that a contextualised contingency planning approach works best in contexts with decentralised governance structures that function in a flexible and transparent manner, and with politically engaged local communities, which allows for downward accountability and coordination. We argue, however, that despite these contextual imperatives, aspects of the approach contribute to "conceptual rethinking" (Brugnach et al., 2008) to address uncertainty and could be relevant for planning theory and practice more generally. Accordingly, we present three dimensions observed from the case study as contributions to the planning field. *First*, using uncertainty as an analytical lens, and viewing planning for uncertainty in a relational manner enables contextual complexities to be taken into account (see Figure 2). *Second*, as shown in Figure 1, an increase in extreme events due to vulnerabilities, urbanisation, natural hazards, economic crisis, unstable political regimes, forced migration, armed conflict, pandemics, and environmental crises posed by climate change makes it pertinent to embrace planning approaches that are less static and prescriptive, and more flexible and adaptable. This partly calls for seeking inspiration from planning traditions that shed light on an enhanced understanding of "wicked problems," and as observed from the case study, an organic, adaptive, contingent, flexible, heuristic way of planning (e.g. Alexander, 2017; Chakraborty et al., 2011; Rauws, 2017; Skrimizea et al., 2019). *Third*, the blurring of mandates, actors, and their interactions at the microlevel yields lessons for spatial planners regarding the importance of incorporating local, contextual, decision-making dynamics into long-term development perspectives. When spatial planners are forced to make decisions in the face of powerful or entrenched interests, continuously evolving values, means and norms, and incomplete and conflicting data during unexpected events, spatially relevant

knowledge alone is insufficient for them to make decisions. Therefore, spatial planners and humanitarian actors need to engage in rigorous debate and to adopt a dynamic mindset and collaborate in order to overcome "long-standing attitudinal, institutional and funding obstacles" on the ground (OCHA, 2017).

We argue that prioritising research in what constitutes as a contingency approach in spatial planning enables bridging theoretical and empirical understandings of uncertainty and ambiguity. This could facilitate the embracing of decision-making frameworks that would ameliorate ambiguity "in action" through iterative social learning and action. It is our hope that a contextualised contingency planning approach in spatial planning will enable spatial planners and humanitarian actors to collaborate better through cross-sectoral dialogue and flexible and adaptive frameworks to deal with uncertainty caused by unexpected events. This would strengthen the adaptive capacity of long-term planning (Balducci et al., 2011) and make it possible to deal with unexpected events that occur at the intersection of uncertainties and chronic vulnerabilities.

## Notes

1. The terms Global South and Global North are used in this article to describe the relationship between low-income and high-income countries. The terms are not geographically accurate, as many low- and middle-income countries are north of the Equator, but they refer to a colonial and developmental history characterised by inequalities in living conditions and access to and control over resources.
2. Jurisdiction refers to the responsibility and power of an organisation to make decisions based on laws and rules.
3. The interviewees were anonymised and numbered in the order in which the interviews were conducted with letters a and b signifying that the interviewee was interviewed both in 2018 and 2019 respectively. Interviews were conducted in both English and Malayalam and translated into English by the lead author.
4. In addition to the above conceptualisations, recent progressions in the debate have included "embodied uncertainty," which symbolises social norms, identities, belief systems, and past experiences (Sword-Daniels et al., 2018), and "discursive uncertainty," which pertains to disagreements regarding the uncertainty of a particular phenomenon (Zandvoort et al., 2018. In this article, the former is understood as a subset of ontic uncertainty and the latter as a feature of ambiguity).
5. See, for example, the relief-development debate in the 1990s (Buchanan-Smith & Maxwell, 1994).
6. A *tahsildar* is a local government official who functions as the executive magistrate of a *tehsil* (administrative sub-unit within a district, city or town).
7. We do not aim to overstate the relevance of communicative planning and we acknowledge the distortions in planning decision-making as a result of permanent "conflict, non-reciprocity and domination," which is particularly prominent in developmental contexts (Hillier, 2003).

## Acknowledgements

## Disclosure Statement

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