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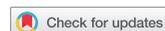


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## Time to change? Technologies of futuring and transformative change in Nepal's climate change policy

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### ABSTRACT

This paper calls for a more critical analysis of implicit social values in time-based projections of transformative change in climate change policy in developing countries. The paper argues that transformative change is a form of socio-technical imaginary, in which contemporary visions of social order influence supposedly technical, and apolitical policies and timelines. To analyse these imaginaries, the paper applies the framework of 'technologies of futuring', or the processes in which projections about the future are imbued with implicit values, to different theories of change used to propose responses to climate change in Nepal. The paper shows that projections of future change are linked to assumptions about physical risks and social agency that reflect different, and contestable, worldviews. This chapter concludes that discussions about transformative change need to make assumptions about risk and society more transparent when proposing urgent deadlines based on assumptions about the future.

### KEYWORDS

Transformative change; socio-technical imaginary; Nepal; climate change; STS and time

### Introduction: time to change?

There's an old joke about a traveller who asks a passerby for the best route to their destination. The passerby thinks for a moment, then says: 'I wouldn't start from here.'

This dialogue is similar to current debates about transformative change in environmental policy. In recent years, expert bodies such as the Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) have used the concept of transformative change to refer to comprehensive social and economic changes needed to achieve sustainability (Pereira et al., 2019). Commonly, these debates are attached to urgent timelines. For example, the IPCC Special Report on Global Warming of 1.5 degrees argued that the world has 12 years to keep warming at this level, or face significantly worse risks of drought, floods, heat and poverty (Masson-Delmotte et al., 2018; Watts, 2018).

But are these projections starting in the right place? Various social scientists argue that transformative change requires rethinking how we understand risk. This raises three challenges for understanding transformative change. First, how far do current projections of physical environmental *change* allow us to understand how people with diverse capabilities, values, and objectives experience these changes as *problems*? (Pelling, 2011; Pelling et al., 2015). Second, do current projections for future transformative change carry implicit values about current development objectives and appropriate levels of risk? (Andersson & Keizer, 2014; Andersson & Westholm, 2019). And

third, does ‘deadline rhetoric’ of urgent timelines undermine the process of seeking this broader understanding of transformative change? (Asayama et al., 2019).

This paper contributes to the debate about transformative change in two ways. It places attention onto the generally ignored field of rapid rural change in developing countries, and the options for poorer people in the face of climate change. It also applies the analytical concept of ‘technologies of futuring’ (Hajer & Pelzer, 2018) to some of the theories of change used within development interventions to undertake transformative change in Nepal. Technologies of futuring are the practices by which social values are woven into projections for future change, and which need to be made more transparent in order to reflect a broader understanding of climate risk.

The paper is divided into four sections. First, it reviews the implicit social values that might underlie visions of transformative change and technologies of futuring in climate change policy. Second, it applies this analysis to general debates about livelihood transitions and projected risks in developing countries, and the theories of change proposed to address these by governments and development agencies. Third, it illustrates this analysis with a more detailed case study of Nepal, using three current reports that project different pathways to transformative change and sustainability.

The paper argues that climate change policy in developing countries is beset with assumptions about future transformative change that can restrict how we understand climate risks and potential responses. A greater attention to how technologies of futuring occur, and how theories of change can be made more self-critical, will help diversify options for transformative change. It will also change the emphasis of transformative change from current deadlines based on existing definitions of risk, towards timelines for achieving a more grounded understanding of how climate change impacts on poorer people.

## Transformative change and technologies of futuring

Transformative change refers to the changes needed in order to achieve future sustainability. It has been defined as ‘adaptive actions that have the reach to shift existing systems (and their component structures, institutions and actor positions) onto alternative development pathways, even before the limits of existing adaptation choices are met’ (Pelling et al., 2015, p. 114). But how do planners identify ‘alternative development pathways’, or which ‘existing systems’ need to be shifted? These questions produce varying answers from different analysts and organizations (Few et al., 2017). The 2019 IPBES Global Assessment Report seems to assume that objectives are already known, and hence, ‘goals for 2030 and beyond may only be achieved through transformative changes across economic, social, political and technological factors’ (IPBES, 2019, p. 21). Other organizations have urged ‘transformation processes’ to develop ‘social innovations, including economic and social diffusion processes’ (German Advisory Council on Global Change, 2011, p. 322).

But for other analysts, there is a need to beware predefining environmental outcomes, because this can fail to recognize the roles of politics or social circumstances in producing risk (Blythe et al., 2018; O’Brien, 2012). In particular, these analysts highlight the social production of vulnerability, such as specialists in disaster risk reduction (Ribot, 2011; Wisner et al., 2004). But they can also include social analysts of science, who highlight how projections of risk based on systems thinking, or linear linkages between environmental changes and social impacts, can hide the assumptions used to make such projections (Gillard et al., 2016; Hulme, 2010). These concerns are especially challenging, because they demonstrate the tacit role of normative values in how supposedly neutral indications of risk are made. Moreover, they demonstrate how fixed visions of environmental risk can also close down options for changing current societies in order to make environmental change less threatening.

One infamous example of this challenge is the debate about the book *Limits to Growth* (Meadows et al., 1972). This book is frequently cited because of its explosive impact in the early 1970s. Using a global predictive model, Meadows et al. argued that current predicted rates of resource use, economic growth, and population increases will rapidly overtake the ability of known resources to support this growth. The book concluded with this warning: ‘Short of a world effort, today’s already explosive gaps and inequalities will continue to grow larger. The outcome can only be disaster’ (Meadows et al., 1972, p. 195).

The book appeared at a time when global models were emerging as scientific tools but not as tools of political persuasion (Ashley, 1983). The model used was criticized by physical modellers who showed how aspects of natural resources, population, pollution and agriculture were connected to build a global picture, with problematic assumptions of linear causality and the application of simple fixes to symptoms rather than more complex and deep-set causes (Edwards, 2010). Social scientists also highlighted how the *Limits* model could only be seen as ‘global’ by assuming all people acted in a profit-maximizing and competitive way: evidence actually shows otherwise (Taylor & Buttel, 1992). Meanwhile, a variety of debates have emerged about how societies and individual actors respond to resource scarcity, and the ability of different actors to cope, substitute resources, and/or bypass scarcity altogether by changing activities (Boserup, 1965; Mehta, 2010). Increasingly, these processes are called transformative adaptation – or when historic scarcities matter less because economic activities and livelihoods now depend on a different set of resources (Warner & Kuzdas, 2017). The crucial point for transformative change, however, is that the timeline and urgent actions recommended by *Limits to Growth* were all based on assumptions about resource use, social agency, and scarcity that have been questioned since. Accordingly, the timeline, and the proposed actions arising, have changed as well.

For these reasons, social analysts of science have argued that the framework of transformative change should also be seen as a socio-technical imaginary, or a ‘collectively held, institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology’ (Jasanoff, 2015, p. 4). Understanding transformative change as an imaginary demonstrates how the projection of future change is also based on visions of shared values, which might be cognitive or tacit.

A further analytical framework sees acts of devising transformative change as technologies of futuring, or as ‘practices bringing together actors around one or more imagined futures and through which actors come to share particular orientations for action’ (Hajer & Pelzer, 2018, p. 222). Some of the more obvious examples of technologies of futuring include operations such as building predictive models (such as *Limits to Growth*), future scenario planning, and theories of change used by development organizations. But these very cognitive processes of planning futures can also be based tacitly upon older models, or assumptions about environmental cause-and-effect, which also have simplifications and exclusions. As the next section shows, planning futures based on pre-existing models and assumptions can reproduce selective visions of how futures might evolve. This challenge is even more abrupt in developing countries, where environmental planning commonly relates to people with high levels of social inequality and limited forms of expression in planning processes.

## Environmental futures and theories of change in developing countries

The challenges of predicting future risks from climate change, and pathways to transformative change, are shown in the analysis of the impacts of climate change on rural livelihoods in rapidly

developing countries. As with other areas of environmental debate, many studies predict linear impacts of climate change based upon how people currently make a living and protect themselves against scarcity. For example, one study entitled, *Up in Smoke* (Reid & Simms, 2007) presented the findings of a coalition of environmental and development organizations including ActionAid, Greenpeace, Oxfam, Practical Action, and the World Wide Fund for Nature. Talking of Asia, the report states: ‘in a region whose population is still rising, if the ability to grow food is weakened by climate change, the health and livelihoods of millions of people will be at risk’ (Reid & Simms, 2007, p. 3). Other statements include: ‘scientists estimate that future scenarios of water availability would see 59 per cent of the global population facing shortages of water from rivers and irrigation by 2050’ (Reid, 2014, p. 50), or ‘whether climate change brings increasing floods, storms, or worse drought, it will create havoc for poor farmers’ (Reid, 2014, p. 63).

While statements like these point to the unquestioned need to be concerned about the impacts of anthropogenic climate change, they are also very vague. They do not discuss how far impacts might be mediated by adaptive capacity (or more specifically, the creation and support for adaptive mechanisms). Moreover, they do not refer to underlying processes of transformative adaptation – or how social and economic change influences how which livelihoods are affected by environmental changes, and who is at risk. Transformative adaptation is rarely a uniform change affecting all people in a society. Rather, it demonstrates the dynamism by which projected environmental changes actually become risks for people engaged in different activities. The problem with the projections of the *Up in Smoke* project are that they assume that projected biophysical changes such as in rainfall will present a uniform risk to people, rather than acknowledging how exposures to specific environmental changes vary because of dynamic socio-economic change. Understood; please provide an example.

But how can discussions of transformative change acknowledge a more diverse approach to risk? One additional challenge is that much research and policymaking in rural areas of developing have been influenced by other frameworks that also discuss notions of transition, but in ways that are also challenged. For example, the so-called agrarian transition has dominated debates about rural development since the 1950s (Lewis, 1954). It predicts that rural zones will undergo modernization in accordance with economic logic. Hence, as rural zones become more affected by markets, large numbers of smallholders will be replaced by larger, more efficient farms; wages for rural labour will increase; and labourers will be drawn increasingly to industrial and urban sectors (Hazell et al., 2010). Indeed, some analysts have argued that these changes will also increase food production, and access to food, for millions of people (Collier & Dercon, 2014).

Research, however, has indicated that the agrarian transition might not occur in this way. In particular, smallholder agriculture might persist despite modernization and access to markets; indeed in Southeast Asia, research has suggested that the numbers of farms are growing, and their average size is declining (Rigg et al., 2018, p. 327; Rigg, Salamanca, et al. 2016). Analysts have theorized that farm ownership is not just influenced by economic returns, but also by legal, emotional and cultural reasons. Moreover, the ability to transform livelihoods might depend on the availability of alternative occupations, and the ability of poorer people to access them rather than changes in labour and land prices alone (Belton & Filipiski, 2019, p. 167; Bryceson et al., 2000).

Another example is the so-called forest transition (Mather, 1992), which has been proposed as the point when a country can increase its food production without reducing its forest cover. This principle has been used to design climate change policies using Reduced Emissions from Deforestation and Forest Degradation (REDD+) – which is the intention to integrate forest protection and planting into national carbon targets (Angelsen & Brockhaus, 2009). Yet, the narrow definition of

this 'transition' has been questioned for simplifying how food can also be supplied through trade; how forest degradation can be driven by numerous factors outside of food; and how some poorer forest users have undeveloped capacities for intensifying agriculture, including different property rights over land (Springate-Baginski & Blaikie, 2007).

As with *Limits to Growth*, the agrarian and forest transitions give a supposedly factual prediction of change including resources and livelihoods. But these representations of transition are also socio-technical imaginaries that protect future outcomes based on a vision of what is considered appropriate by modellers. Yet, the assumptions are simplistic, and threaten to overlook how changes present hazards to people who are most vulnerable.

A more specific means of projecting transformative change is in the concept of theories of change (ToCs). Theories of change are a long-standing model in development organizations as a way to connect their activities with intended outcomes. They are 'a theory of how and why an initiative works' (Weiss, 1995, p. 65), or 'an explanatory model that links actions with results via causal mechanisms and pathways' (Brooks & Fisher, 2014, p. 16). For example, the theory of change of an organization seeking to achieve long-term transitions to low-carbon energy might include various steps of providing low-carbon technologies and educating users about their benefits. Theories of change can be developed by an organization or government using its own expertise, or collaboratively with stakeholders.

According to some debates in environmental policy, 'broader adoption of theories of change in sustainability science is a crucial step towards realizing the transformative ambitions and expectations of science in the 2030 Agenda' (Oberlack et al., 2019, p. 110). According to these authors, theories of change can build future transformative change through a variety of steps. For example, the process of developing theories of change can establish a shared and participatory vision of attainable sustainable development. They can provide a platform for articulating how scientific knowledge can be implemented through societal transformations. They help solve so-called attribution gaps in terms of which actors should take responsibility, or how change is made. Yet, simultaneously, theories of change also need to achieve learning and reflection about experiences and potential surprises in order to improve the underlying assumptions and actions adopted by theories of change and within organizations (Oberlack et al., 2019, pp. 108–109).

But theories of change, patently, are also technologies of futuring. Moreover, there are ongoing debates about how far theories of change can achieve inclusive and transparent models of intervention. For example, some analysts have proposed optimistically that they 'an ongoing process of reflection to explore change and how it happens' (James, 2011, p. 1). Critics, however, have suggested this is 'an illusory process' (Valters, 2014, p. 18). They ask whether stakeholder engagement actually involves targeted beneficiaries, and if theories of change are driven more by donors than local people (Rogers, 2014; Weiss, 1995, p. 87).

Consequently, there are many important questions to ask about how far debates about transformative change in developing countries reflect local values, or carry tacit assumptions. These models and projections for transformative change are technologies of futuring because they carry ideas for how to shape future change based on visions of appropriate life or socio-technical imaginaries. There is a need to question how far discussions about transformative change under future climate change can be made more transparent and more inclusive of different values and priorities. A core part of this is to consider how far projections for transformative change include alleged facts about climate change impacts, or social behaviour under socio-economic transitions (e.g. the so-called agrarian and forest transitions), which need to be questioned and updated.

## Example: rural development under climate change in Nepal

Nepal is officially classified as one of the world's least developed countries.<sup>1</sup> It is especially exposed to anthropogenic climate change on account of its mountainous landscape and annual weather, which experiences a long wet-monsoon period from June to September and relatively dry months at other times. The country's dependency on rain-fed agriculture and hydro-electric power, and its high levels of poverty also make the country highly vulnerable to likely changes in climate (Karki et al., 2012; Nightingale, 2018; Rigg, Owen, et al., 2016).

Yet, despite these significant challenges, Nepal has also been the site of long-standing debates about the cause-and-effect of environmental problems. During the 1980s, various analysts pointed to what they called the Theory of Himalayan Environmental Degradation, and the commonly heard belief that population growth in the Middle Hills (the areas below the High Himalaya) was driving deforestation and intensive land use, which in turn were enhancing landslides and soil erosion. These factors then encouraged hill farmers to undertake more deforestation. All of these changes led to a long-term downward cycle of environmental degradation in the Middle Hills, which contributed to sedimentation and flooding in the lowland Ganges basin (including Bangladesh), and the likely long-run degradation of living conditions throughout Nepal. A classic summary of this cycle was expressed in the 1970s:

Population growth in the context of a traditional agrarian technology is forcing farmers onto even steeper slopes, slopes unfit for sustained farming even with the astonishingly elaborate terracing practiced there. Meanwhile, villagers must roam further and further from their houses to gather fodder and firewood, thus surrounding villages with a widening circle of denuded hillsides. (Eckholm, 1976, p. 77)

These concerns have, however, been widely criticized for simplifying the uncertainty of environmental change in the Himalayas, or how local people lived with environmental change. For example, one of deforestation estimates between 1965 and 1981 revealed these projections varied by a factor of 67, even after excluding some apparent typing errors (Donovan, 1981). Anthropological work showed, for example, that landslides and erosion did not necessarily carry the same threats for local farmers as ecologists predicted because farmers allowed for land failure in their planning, and some even took the opportunity of landslides to build rice terraces, or renew the fertility of soil (Kienholz et al., 1984). Multiple observations such as these led some analysts to identify the Theory of Himalayan Environmental Degradation as a social artefact that persisted within policy circles despite the absence of persuasive evidence that it was a persistent or universal reality (Ives & Messerli, 1989). According to some social analysts of science, the Theory persists because it allows experts and expert organizations a specific worldview to simplify the underlying uncertainty of environmental change by selecting measurements that reflect their viewpoint (Thompson et al., 1986). Others have proposed that the Theory is another example of a so-called environmental narrative, which allocates ideas of cause-and-effect, blame and responsibility to different actors, and which have become accepted as unquestioned truth, especially concerning the alleged 'ignorant and fecund peasant' cutting trees on fragile hill slopes and deforesting the Himalaya (Forsyth, 1996; Hajer, 1995, p. 65; Thompson et al., 1986). Under these conditions, it is important to ask how the Theory still remains unchallenged; which individuals and organizations uphold it and why; and what alternative explanations of environmental change might exist, with different implications for policy and people.

Some of these concerns affect debates about transformative change and climate change in Nepal. Different organizations and experts interpret water supply in contrasting ways. For example, some

policymakers have claimed that Nepal has achieved high levels of access to drinking water in the Middle Hills because they have invested in PVC piping between springs and villages. Alternative research based on field surveys has shown, however, providing pipes has not yet impacted on United Nations' targets defined in terms of a fetching time for water of less than 15 min, leading to a supply of at least 45 litres per person per day (Gyawali & Thompson, 2016, pp. 181–182; Pokhrel, 2017). There is also growing concern that water springs in the Middle Hills are going dry because of climate change. But analysis is showing that other drivers are responsible, such as the increasing use of PVC pipes and electric pumps, and agricultural changes (including a move away from dryland maize and millet into water-intensive marketable vegetables) (Sharma et al., 2016). Research also shows that the availability of groundwater has also been negatively affected by the decline in livestock in the Middle Hills, with an according decrease in wallowing ponds for buffaloes, and by local authorities filling in wallowing ponds to fight malaria, or to build new schools or similar buildings (Gyawali & Thompson, 2016, p. 182).

The point of these criticisms is not to suggest that Nepal, or other vulnerable developing countries, do not experience significant problems arising from environmental change. Rather, it is to highlight how ideas about the nature, cause, and ways of solving environmental risks get stabilized within policy processes in ways that can be reductionist. These representations of risk frequently reflect visions of who is at risk, and why. They also lead to proposed solutions that can be ineffective in addressing the causes of risk, and even pose restrictions on local people's livelihoods and ability to respond (Forsyth, 2003; Forsyth & Evans, 2013). There is consequently a need to consider how far discussions of transformative change addressing risks connected to climate change carry problematic, fixed visions of risk, and to devise ways to see how risk and associated social agencies are linked.

This challenge has been noted in relation to interventions seeking to build resilience to climate change in Nepal. One study (Ayers et al., 2011) conducted research on what resilience meant to different people in zones where the World Bank Pilot Project on Climate Resilience had undertaken projects. The World Bank investment had mainly been used on maintaining Nepal's infrastructure such as the Guija bridge to ensure that transport and economy could continue working in the event of severe storms or floods. While these interventions were obviously important, the research found that local citizens defined resilience in terms of the ability to access medical care for family members during weather events, which these interventions did not achieve. Moreover, engineers and World Bank representatives did not see these social development concerns as relevant to their immediate concerns.

The authors of these various critical studies agree that long-term anthropogenic climate change poses significant threats. But focusing only on climate change alone as a driver of risk threatens to foster 'the delusion that, if it wasn't for climate change, all would be fine' (Gyawali & Thompson, 2016, p. 182). Other sources of vulnerability – local values about how to manage change, and social inequalities – are overlooked or simplified in these analyses of environmental change, water scarcity, or resilience. In particular, it is important to note how rural people's livelihoods are changing rapidly because of economic change. For example, outward migration for long- or short-term employment is radically changing how many rural households achieve livelihoods. By 2017, Nepal had the fifth highest ration of remittances to national gross domestic product in the world, of approximately one third of national income, and in some areas of up to 50 percent (Sapkota, 2013). This income has implications for the extent to which rural people depend on traditional rice terraces. It also affects which people are exposed to traditional hazards such as landslides (frequently it is women who stay behind while partners work overseas). It also affects

how people respond to hazards: after the 2015 earthquake in Nepal, remittances almost doubled to help families respond (Maher, 2018).

These new socio-economic trends are still being acknowledged in national assessments of risk and vulnerability. In 2001, the United Nations Framework Convention on Climate Change (UNFCCC) created a work programme for least developed countries, which included creating National Adaptation Programmes of Action (NAPAs). In the UNFCCC text, the purpose of NAPAs was to ‘focus on urgent and immediate needs ... for which further delay could increase vulnerability or lead to increased costs at a later stage’.<sup>2</sup> The text also asserted ‘the NAPA process includes participatory assessment of vulnerability to climate change variability and extreme events’. Yet it also stated ‘NAPAs should use existing information; no new research is needed.’ The desire to address local vulnerability in a participatory way – yet exclude new information – seems to be a contradiction, and to misunderstand how participatory research aims to yield new information. Of course, many international agreements and policy processes include statements that look questionable under a microscope. But there has been concern about whether NAPAs, or similar attempts to deal with vulnerable people, sufficiently challenge existing narratives or work to represent less powerful voices (Huq & Khan, 2006).

In Nepal, the challenges of participation in the NAPA process were addressed through the strategy of holding participatory workshops, and identifying so-called reference groups to address different themes of concern (Ayers, 2010, pp. 171–173). Yet, concern was expressed that too much discussion was held without sufficient knowledge of likely climate change impacts on biodiversity and forests. There was also concern that too much discussion was focused on projections of risks from glacial lake outflow floods, when participants believed these risks were overstated (Ayers, 2010, pp. 160–162). According to one of the participants, these concerns led to a rather muted approach to future projections. She wrote, ‘The result was an emphasis on existing climatic stresses, and an emphasis on knowledge of vulnerability and development, rather than projected climate change impacts’ (Ayers, 2010, p. 188).

At the same time as the NAPA process, Nepal also developed Local Adaptation Programmes of Action (LAPAs). These were intended to be more localized platforms for understanding how climate change posed risks for vulnerable people. The government of Nepal could then integrate this information via the Local Self Governance Act, 1999 to create a more locally focused form of planning (Chaudhury et al., 2014, p. 23). By 2012, this process had identified local priorities including agriculture, livestock and food security; forest management and biodiversity; water resource and energy; livelihoods and health (UNDP, 2012). This information has, in turn, influenced various projections for how Nepal can undergo future development, or transformative change.

## Theories of change, technologies of futuring in Nepal

The question posed by this paper is whether transformative change for climate change should really start from its current assumptions. This challenge is shown in some examples of projected future risk management in Nepal, and how projections are shaped by assumptions about risk. Many government projections in Nepal focus on predicted changes in physical factors such as rainfall and temperature. Climate change scenarios, for example, include projections that average annual precipitation and average temperatures are likely to increase across Nepal; yet rainfall intensity will grow, meaning that numbers of rainy days are projected to decrease. Duration of warm spells for more than six days will also increase, as cold spells will decrease (Government of Nepal, 2019; Rajbhandari et al., 2017). These projections, in turn, indicate the same kind of harsh impacts

on rural livelihoods as those discussed above in the *Up in Smoke?* report (Reid & Simms, 2007), which calculated impacts by taking future projections for climate change and relating these to current livelihoods.

The government analysis of scenarios does not propose a theory of change (ToC) about impact on livelihoods. But its analysis focuses on physical transitions alone. Other reports do propose future transformations in social and economic practices, but with different interpretations of pathways. The Climate Alliance of Himalayan Communities (Sherpa et al., 2015) connects future climate change scenarios with additional information from different districts of Nepal. But it does so with an emphasis on tradition and community. It writes: ‘For thousands of years mountain communities have maintained a close relationship with the environment, depending on ecosystem services for their agrarian livelihood’ (Sherpa et al., 2015, p. 6). It also draws on notions of environmental degradation familiar to the Theory of Himalayan Environmental Degradation:

Drying of natural springs, ponds, rivers especially during winter season is adding stress on women and children because they are forced to travel far to collect water. Extreme monsoon rainfall on the other hand is causing flash flood, excessive soil erosion and frequent landslides threatening the livelihood. ... Firewood is the prime source of energy in the mountains, due to decreasing forest cover, women and children now forced to travel far to collect firewood. (Sherpa et al., 2015, p. 108)

A further report by the Food and Agriculture Organization of the United Nations carefully reviews likely physical risks and ongoing socio-economic transformations (Selvaraju et al., 2014). It highlights the risks to food security of a more extreme weather system, especially where agricultural ecosystems are fragile or easily impacted by events such as landslides. The report highlights ongoing agrarian transitions, especially commercialization of agriculture, and trends for remittances (Selvaraju et al., 2014, pp. 109–110). These transitions offer both risks and potential means of managing food insecurity and household vulnerabilities. The emphasis is on identifying general trends in environmental and economic changes, and using these to advise areas where both can be managed.

A further analysis of development futures in Nepal comes from the initiative known as BRACED (Building Resilience and Adaptation to Climate Extremes and Disasters). This initiative has been funded by the United Kingdom Department for International Development (DfID) and has comprised 15 projects across the African Sahel and South and Southeast Asia (BRACED, 2015). BRACED, as such, is not an overview of all changes affecting different regions in Myanmar: it is a focused series of interventions to address climate risks in a number of districts in western Nepal (Lovell, 2019). BRACED, however, adopts a different theory of change for interventions, by focusing on building social capacities and agencies among men and women who are affected by both environmental and economic changes. The BRACED work in Nepal has implemented this approach by seeking to build capacities for greater economic agency by smallholders (including women) to participate in new initiatives of climate-smart agriculture (IDE, 2017). This work, in turn, reflects more general actor-focused development work on building resilience in developing countries, which might include enhancing the so-called 3As of anticipatory capacity (of knowing in advance when hazards come), absorptive capacity (dealing with hazards), and adaptive capacity (longer-term lessons for reducing vulnerability) (Bahadur et al., 2015).

While this discussion of these three reports is relatively brief, the point is to highlight how different projections about future action can look so different, and adopt such varied, yet unquestioned assumptions. Each report has adopted different starting points for making suggestions about risk management and future (or transformative) change under the shared framework of anthropogenic climate change. Yet these different perspectives also carry co-produced visions of risk and social

agency. The Climate Alliance of Himalayan Communities emphasized notions of community and tradition, as well as a vision of risks that reflects earlier thinking about the Theory of Himalayan Environmental Degradation. Accordingly, its key objectives are to protect fragile and traditional communities against risks that threaten them.

The report from the Food and Agriculture Organization focused instead on transformations to society and economy. It highlighted longer-term agrarian transitions and commercialization and the ways these transitions will impact on risk or solutions to risk on a macro-scale. In this case, the pathway to solutions lies in appropriate national planning and management of economic opportunities and changes for overall development.

The BRACED work, instead, focused on the connections between communities and broader economic transitions. For BRACED, the pathway to a more sustainable future lay in a more malleable idea of community agency and capacities. Unlike the Food and Agriculture Organization, it focused on the local experience and responsiveness to risks. But unlike the Climate Alliance, it perceived community agency to be a project of future change rather than protection of traditional livelihoods and lifestyles. Under this scenario, the risks posed by environmental and economic change are not fixed because communities and individuals will be better able to transcend them if they have the appropriate skills and capacities. Reducing vulnerability, rather than responding to fixed risks, is the objective of BRACED.

Each report rightly highlights the potential risks in Nepal that are likely under anthropogenic climate change. But each report has a preoccupation, or development perspective, that couples different interpretations of risk simultaneously with different visions of social agency. For example, by most accounts, Nepal is likely to experience more landslides in the Middle Hills because of more intense rainfall in the future. What is not certain is how far those landslides represent risks when some households are not as dependent on agricultural land as they used to be. Projections of future risk should not adopt fixed visions of physical risks and social vulnerabilities, but instead ask how far these are changed by socio-economic transitions. For example: do new economic changes mean that old physical risks such as landslides are no longer as threatening? Are there specific people who are unable to participate in new changes, and hence remain vulnerable? What new risks are faced by these groups who engage in socio-economic transitions? And, perhaps most importantly, how do underlying assumptions about social order influence what we think is a risk? For example, the work of BRACED reflects much thinking within recent development studies about the need to build capabilities and economic agency as a means of reducing vulnerability (Ellis & Freeman, 2005). Yet, some critics have also said that these agency-based approaches to reducing poverty serve only to uphold neo-liberal visions of world order by making individuals better able to participate in markets that are controlled by others (Chandler & Reid, 2016). Hence, rather than rushing to predict what changes are needed to make the future more sustainable, there is a need to look more critically at the hidden assumptions in these projections. Theories of change are, in effect, technologies of futuring.

## Conclusion

This paper adopts the perspective of the opening anecdote. Much discussion about transformative change adopts a position of urgency and timelines. But, rather than rushing to achieve those timelines there is also a need to ask, should we start from here? Projections about climate impacts are different from predictions about rates of physical environmental change. Building scenarios for transformative change can also adopt models of impacts that can hide the social context under

which environmental changes are experienced as hazardous. Moreover, there is a need to see how current discussions of environmental risks carry predefined ideas of environmental cause-and-effect, or the social character of people at risk, which need to be updated. As Andrea Nightingale (2018, p. 141) has noted in relation to Nepal: ‘A sense of urgency over adaptation needs is not conducive to careful scrutiny. Rather, it forces local people, facilitators, and national-level project managers to move faster than their confidence allows.’

The analytical frameworks of socio-technical imaginaries and technologies of futuring offer insights to show how projections of future change can replicate and hide current social values about appropriate levels of risk, expected agencies of affected people, or historic narratives of environmental degradation. This is especially relevant for rapidly developing countries with high levels of social inequality and change such as Nepal. There is a need to understand that responses to risks such as climate change ‘should be done with a deeper awareness of the social, economic, cultural, and political factors that frame [people’s] actions, incentives, opportunities, and limitations for action’ (Christoplos et al., 2009, p. 3). But there is also a need to consider how different analysts, organizations, and research networks might influence understandings of risk and response through tacit assumptions or worldviews (Hajer & Pelzer, 2018; Hulme, 2010; Thompson et al., 1986). Urgent action on climate change is needed, and there is also a need to develop more effective ways to make assumptions and implicit values more transparent, so that projections about tomorrow are not curtailed by how we see the world today.

## Notes

1. [https://www.oecd.org/dac/financing-sustainable-development/development-finance-standards/DAC\\_List\\_ODA\\_Recipients2018to2020\\_flows\\_En.pdf](https://www.oecd.org/dac/financing-sustainable-development/development-finance-standards/DAC_List_ODA_Recipients2018to2020_flows_En.pdf)
2. [http://unfccc.int/national\\_reports/napa/items/2719.php](http://unfccc.int/national_reports/napa/items/2719.php)

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