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Enhancing Adaptive Capacity in Bhutan and Nepal

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ADAPTATION KNOWLEDGE PLATFORM

REGIONAL CLIMATE CHANGE ADAPTATIONKNOWLEDGEPLATFORM for Asia

This Policy Research Brief draws on work in progress related to Adaptation Knowledge Platform to disseminate and exchange adaptation knowledge with a wider audience. We welcome your suggestions or comments.

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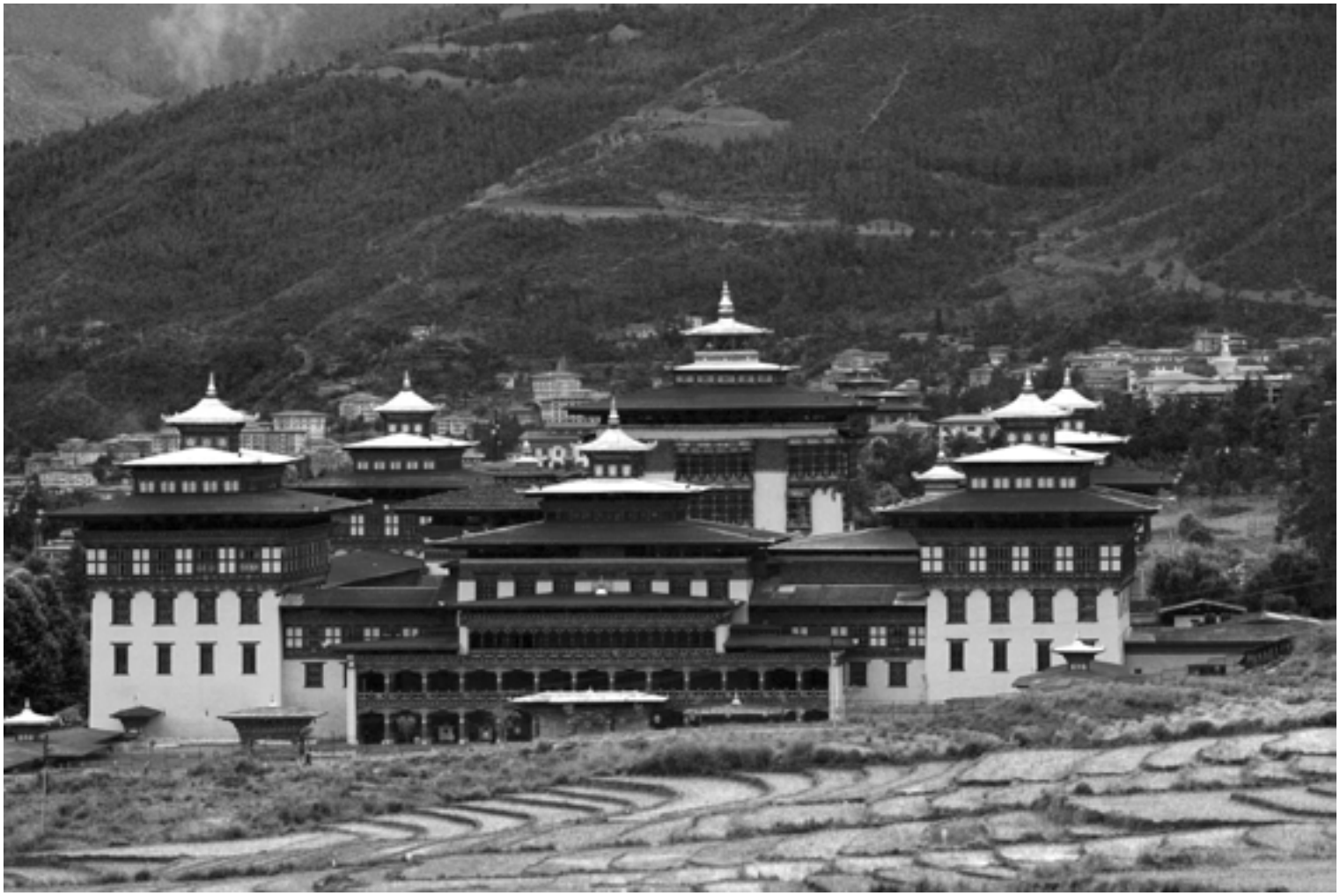

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OVERVIEW

Both Bhutan and Nepal understand the importance of addressing climate impacts. They have strengthened their commitment to managing the impacts of climate through several efforts including the development of their respective National Adaptation Plan of Action (NAPA). They have also shown increased regional solidarity in addressing climate change impacts in a coherent manner through declarations at forum like South Asia Association for Regional Cooperation (SAARC Thimpu Declaration 2010). These activities are the first step in an ongoing, evolving process to reduce their vulnerability to climate impacts. However, in order to effectively address the challenges that changing climate will bring, adaptation has to take place at a much more rapid pace than is happening at the moment. And, rather than looking at adaptation as a separate or novel idea, it has to be seen as complimentary to, an integral part of, development planning. Adaptation planning is similar to conventional development planning but adaptation planning has an extended horizon of timeframe as climate change impacts become visible only in the long-term. It also means planning for greater uncertainty, which in turn means more flexibility and less prescriptive forms of planning.

In countries like Bhutan and Nepal, a majority of the adaptation activities happen at local level but then 'how to do it' is often the question. Building adaptive capacity or resilience could be the most effective adaptation strategy at local level for the two countries where community based institutions such as community forestry user groups and alpine herders groups have already shown great resilience to socio-political and environmental changes. A separate prescriptive set of adaptation activities will not be an answer in an already complex situation to which a dimension of uncertainty has been added by the changing climate. The need of the time is to build on what is already happening on the ground and work towards enhancing adaptive capacity and resilience through working with existing institutions at a local level.

This research brief outlines how Bhutan and Nepal can advance with adaptation planning in respective context of socio-economic, political and climatic changes. Some main policy implications that have been drawn are:

1 Adaptation is not about crafting something new but it is about building on experiences and scaling up those resilience-building activities that are already happening.
2 In the context of limited science-based knowledge of mountain systems, diversity and dynamism of local level scenarios coupled with complexity and climate uncertainty, the use of both climate models and vulnerability approach would help to better understand and integrate climate into development planning processes.
3 Understanding the potential utility of the concepts of exposure, sensitivity and adaptive capacity is vital for these countries where there has been a greater concern about how to proactively plan for adaptation activities. Building 'adaptive capacity' or 'resilience' of community based institutions could be the first step towards adaptation planning.
4 Adaptation decision-making requires cross-sectoral and cross-level interactions so that policy actions, development planning and local processes are better linked. Effective subsidiarity, where decisions are taken at the lowest appropriate level, is an essential part of this.
5 In addition to the national level adaptation activities, Bhutan and Nepal may also need to undertake activities that have regional scope. The national level focus may create mal-adaptations across borders especially given that ecosystems do not lie within sovereign national boundaries. In this case, Bhutan and Nepal's long experience in landscape approach to planning can significantly add value to planning for adaptation in general.

CLIMATE CHANGE AND DEVELOPMENTAL OUTLOOK

Bhutan and Nepal are both mountainous countries situated at the heart of the Eastern Himalayas. Bhutan's land area is 38,394 square kilometers and stretches from elevations ranging from about 150 meters in the south to as high as 7500 meters in the north. Nepal's land mass is almost treble Bhutan's but the physiographic character is mostly similar except there is a larger proportion of flatter, plains area in the southern Terai. Nepal's north-south stretch covers altitudes as low as 60 meters to as high as the height of Mt Everest, 8848 meters. Such short-range sharp altitudinal rise in both of the countries gives them variable microclimatic and ecological zones including tropical (southern plains), temperate (hills and mountains) and alpine (Himalayas). This feature reflects rich and unique biodiversity, many of which are endemic and can be associated only with a certain micro-climatic zone. Sharp rises of altitude over a short distance is a notable factor for climate change impacts because even a small degree of temperature or rainfall variation would have significant impacts on microclimatic zones and consequently on the distribution of ecosystem types such as alpine grasslands, forest, water and agricultural ecosystems; in turn affecting the ecosystems services provided by them. Consequently, both the isolated and cumulative impacts would magnify at the community level where resilience to cope with any kind of anticipated changes including climate change and socio-economic and political changes seems to be inadequate. Low human and institutional capacity at national and sub-national level, inadequate resilience capacity at community level and the absence of a science-based knowledge system and communications are the primary factors that pose a challenge to integrate climate risk, change management and adaptation planning in both countries.

In terms of development, both Bhutan and Nepal are categorized as Least Developed Countries. Nepal ranks at 144 and Bhutan ranks at 132 according to the 2007 Human Development Index (UNDP 2009). Democracy in both the countries is young. In Nepal, the decade long violent civil conflict affected progressive institutions such as community forestry and water user groups. Although these institutions were the most resilient community institutions and survived the crisis, they experienced severe setback in their progress. In Bhutan, local level institutions are not very robust but are sprouting amidst country's evolving decentralization policy and the underlying developmental philosophy of Gross National Happiness (GNH) which aims to secure a synergistic and harmonious balance between the material well-being and the spiritual, emotional and cultural needs of an individual and society (GNH 2009).

COMPLEXITY, UNCERTAINTY AND CLIMATE ADAPTATION

One of the critical challenges to adaptation planning that emerges in the context of Bhutan and Nepal is that of complexity, particularly arising from the inherent dynamic nature of climate, ecological, socio-economic and political systems. There is also a pervasive uncertainty imposed by climate change knowledge gaps and dynamics of both natural and socio-economic systems. Hence complexity and uncertainty are two dimensions which characterise developmental decision-making and adaptation planning in these countries. Complexity and uncertainty are going to be significant drivers of development decision-making and moderators of adaptive behavior in future. At this stage, it is important for us to know how complexity and uncertainty have been factored into the emerging climate knowledge frame. In the scientific domain, there are two ways in which climate knowledge gaps are being addressed. First, downscaling climate data which is predominantly a model-based approach to predicting long-term biophysical future scenario and, second, vulnerability and resilience assessment which is a qualitative approach to analyzing the short and long-term future state and susceptibility to change of a system (ecosystem and social system).

There are a range of heuristic methods including computational models and game theories that can identify scenarios and probabilities and thus aid decision-making in the light of potential complexity of situations (Guestello 2004/Rev.2006). However, information solely based on models and projections of scientific evidence would have epistemological biases in that they provide only a limited view of complexity and may not reflect alternative perspectives and catch side-effects. For instance, widely used statistical downscaling method such as General Circulation Model (GCM) and Regional Climate Model (RCM), in general, can give fair projections about spatial-temporal temperature and precipitation at a regional level over a long term. However, these projections alone may not give a true picture of a future scenario because they normally predict a stronger effect of global warming in mountains than lowlands due to consideration of fragile ecosystems which are characterised by strong spatial gradients (Buytaert et al 2010). Furthermore, even when climate model research do have an applied element, consideration is seldom given to how results might enable stakeholders and managers to make more informed, robust decisions on adaptation in the face of deep uncertainty about the future (Fowler and Wilby 2007).

Alongside model-based approaches, the role played by community and ecosystems has increasingly emerged in climate change discussions. This includes a qualitative approach to analyzing vulnerability and resilience. Vulnerability entails the 'architecture of entitlements', the social, economic and institutional factors that influence levels of vulnerability within a community or nation and promote or constrain options for adaptation (Kelly and Adger 2009). In the context of both Bhutan and Nepal, vulnerability analysis can help understand how and where vulnerabilities at local level can be reduced but that might not be enough to motivate national or even international level actors to implement actions to address these vulnerabilities. Since vulnerabilities are tied to a range of entitlements at community level, the implementation of reducing

vulnerabilities has to be framed within a broader framework of governance reform. However, this might lead to undertaking a blanket approach to adaptation and development without any specific measures taken for reducing climate change vulnerability and thus blurring both the development and adaptation outcomes. Resilience approaches, on the other hand, originate from the concept of ecosystem resilience and now extended to human systems, is concerned with long-term survival and having capacity to survive and function in changing or fluctuating environments (Handmer and Dovers 2009). Such resilience in countries like Bhutan and Nepal can be considered equivalent to the resilience of ecosystems and community institutions, whose robustness often reinforces actions to sustainably interact with physical and ecological systems. For instance, Nepal's community forestry user groups and alpine herders groups are perhaps the most resilient forms of community institutions which have survived to date despite decade-long civil conflict, economic crisis and natural hazards that have accompanied the country's developmental process. However, vulnerability approach to climate change is also a 'trial-and-error' approach and therefore not without challenges. Uncertainty and complexity are inherent in vulnerability approach as well and often the danger is that adaptation may be confused or mixed up with climate proofing of development by introducing biophysical adaptation measures alone. That can lead to either undermining the benefits of building resilience and adaptive capacity of ecosystems and communities or pursuing a business as usual development planning for a predictable future.

Photo credit: Phurba Lhendup

For Bhutan and Nepal, not one approach alone would be appropriate. While on one hand, risk assessment and risk information generated by models, could be the first crucial step in any adaptation strategy (Ranger et al 209); on the other hand, knowledge and capacities to understand how and where existing planning and development decisions need to change to strengthen resilience and reduce risks will define the ability to adapt to the potential effects of climate change (Adaptation Knowledge Platform 2010). Therefore, the use of both biophysical and community or social vulnerability approaches would pave a way for understanding and integrating climate into the development process. As things stand now, we cannot afford to neglect the idea of integrating climate change into policy and programmes. We have to find a right way and to do so is by applying what both these approaches have already achieved to tell us. Heuristic models can best tell us about climate change impacts at larger scales and vulnerability approach can guide us where and how adaptation, at smaller scales, can be planned. Hence, a combination of the approaches will be required to effectively respond to climate change impacts.

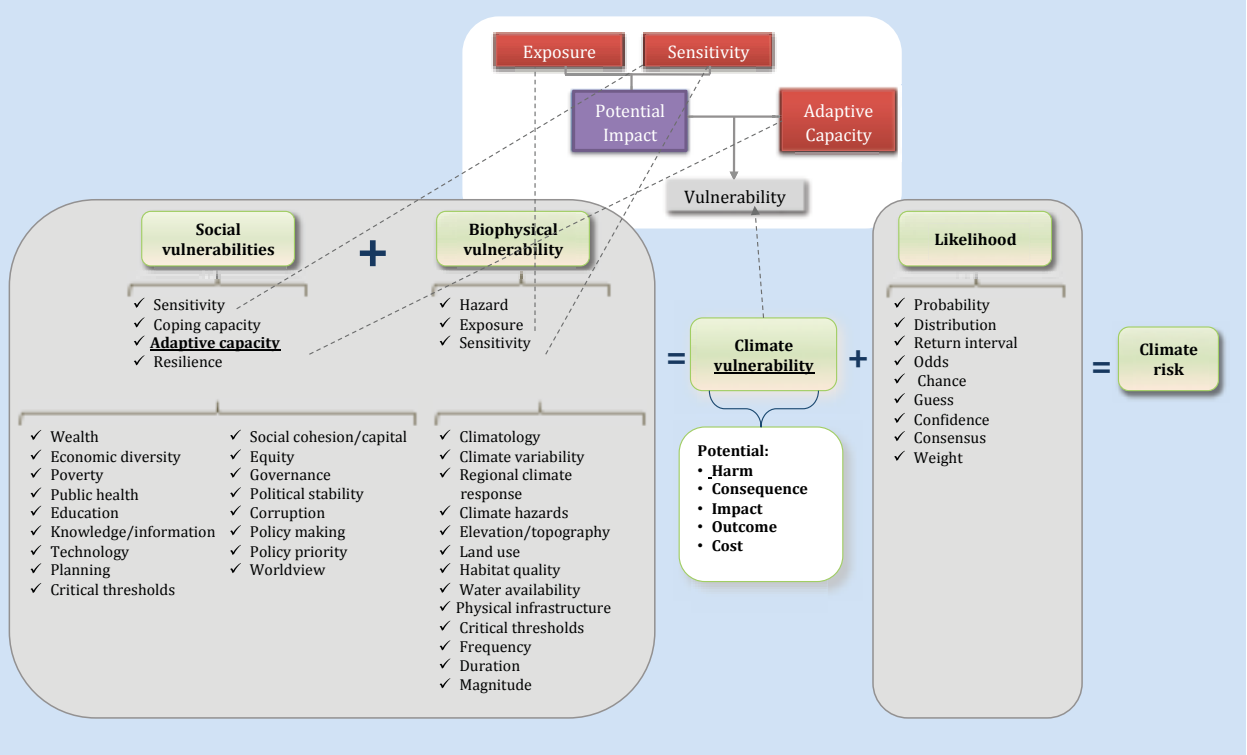
VULNERABILITY AND ADAPTIVE CAPACITY

Ecosystem and human systems, as discussed in the previous sections, are strongly interwoven and dynamic. Ecosystem services are the capital bases for human systems and therefore they help to reproduce human systems, their well-being and economic activities. On the contrary, ecosystem services cannot be generated by human systems. Albeit both the systems imply some degree of resilience, ecosystem

is a very fragile system and once it degrades, recovery to the previous state is either very difficult and costly or impossible. Since this relationship between the two systems is already an established notion in Nepal and Bhutan, such understanding will help us to define our approaches to dealing with climate adaptation. In addition, what this relationship tells us is the underlying vulnerabilities of human systems and ecosystems. The crucial thing to understand here is how human system will respond to climate change in the context of changing ecological systems. As evidenced by anecdotal accounts, communities have responded to direct and indirect impacts of climate change (WWF Climate Witness Programme; Personal communication in Thimpu 22-28 June 2010) alongside socio-economic and political changes. However, as with natural systems, the capacity of human system to respond to changes cannot be indefinitely stretched, especially in conditions of increased thresholds of climate change. This point is when a composite human and ecosystem becomes vulnerable: vulnerability to climate change is the degree to which systems are susceptible to, and unable to cope with, the adverse impacts (IPCC 2007).

In Bhutan and Nepal, vulnerability is perhaps the more debated and researched area. However, people have continued to discuss what vulnerability to climate change means for these countries. To make it simpler and easy to understand, Preston and Stafford-Smith (2009) describe it through a framework which takes into account three determinants of vulnerability – exposure, sensitivity and adaptive capacity.

Figure 1: Adapted from Preston and Stafford-Smith (2009)



BOX_1 Adapted from IPCC 2001

Vulnerability: a measure of a system's susceptibility to climate change - a function of the system's exposure, sensitivity and adaptive capacity
Exposure: the extent to which a climate-sensitive sector is in contact with climate.
Sensitivity: the degree to which a system is affected by climate change.

Understanding the niche of exposure, sensitivity and adaptive capacity is vital for Bhutan and Nepal where there has been a greater concern about how to proactively plan for adaptation activities. This is important

in the context wherein some groups of people have been debating if it would be sufficient to rely on some of the current reactive adaptation measures undertaken by communities (seasonal forecasting, tree plantations and so on) and if communities need to adapt to climate changes at all. Given the context of already observed climatic changes and impacts, early action and proactive adaptation would be more beneficial than no action. Building 'adaptive capacity' or 'resilience' could be the most effective adaptation strategy for the two countries where community based institutions have a proven track record of adaptation to changing environments – be it social, political, economic or policy changes. Community forestry user groups are a prominent examples that have adapted to a series of changes in the course of their growth and development (Thapa et al 2007). Therefore, rather than a separate prescriptive sets of adaptation activities, what we need in these countries is to enhance adaptive capacity and resilience of the already functioning institutions and communities. Flexible social networks and organizations that proceed through learning-by-doing are better adapted for long-term survival than are rigid social systems that have set prescriptions for resource use (Folke et al 2002).

ADAPTATION DECISION-MAKING

Socio-cultural and biological diversity are the inherent characteristics of both Nepal and Bhutan and therefore adaptation decision-making would require cross-sectoral and cross-level interactions so that policy actions, development planning and local processes are better linked. It has to move beyond the purview of conventional environmental sector and include all other sectors. Above all, it needs to give as much scope for decisions to be made at the local level as possible where the specifics of local climate change impacts and adaptation opportunities are most likely to be understood. Adaptation decision-making requires a holistic approach to solving climate change problems as they are characteristically complex and not amenable to scientific fixes alone. The main strength of such interdisciplinary decision-making process is its scope for creativity (Marchi and Ravetz 2001) and for allowing all possibilities to be considered. The broader participation by stakeholders allows different perspectives and insights to developing a new way of looking at an issue. Such an approach is a democratic process in itself and has a greater prospect for arriving at a decision that is unique, novel and owned by stakeholders.

Both Bhutan and Nepal have a history and experience of developmental decision-making, particularly practical learning that people's participation ensures the achievement of developmental results and makes the process robust. Like any development decision-making process, adaptation decision-making is also a social and political process and acceptance of a decision requires that stakeholders from diverse sectors and levels are adequately involved and consulted. All interested or affected parties should participate in the framing of the decision and be able to contribute elements for clarification and analysis. In adaptation decision-making, scientific knowledge is essential. But because the adaptation arena is complex, scientific knowledge should be supplemented by information from all possible sources, including life experiences and anecdotal history taking from communities. This will make a decision robust in terms of acceptance and ownership. It is a balancing act which needs to accommodate differing and sometimes conflicting perspectives and priorities. Reciprocal understanding between scientific and non-scientific communities can make the decision-making process efficient by helping to interpret and clarify different perspectives. Hence information and knowledge sharing is an important part of adaptation decision-making. When we consider Bhutan and Nepal's context it is likely that there are a huge number of adaptation stakeholders and it might not be feasible, within the given time and resources, to include all of them in the decision-making process. In this situation, stakeholder selection and prioritization should form the first step of decision-making. However, this should move away from the danger of 'bureaucratic capture' – that is, involving people in discussions as a means of controlling outcomes or for manipulative and disguised stakeholder participation (Marchi and Ravetz 2001). Adaptation decisions will be more sustainable and have greater stakeholder ownership if they genuinely engage and empower people.

Adaptation decision-making under complexity and uncertainty takes the form of a highly dynamic learning process which needs to be flexible and adaptive (Munda 2000). To capture the richness of the learning process, institutions and communities cognizance capacity has to be built considerably. For Bhutan and Nepal, it will mean raising awareness on climate vulnerability at local, sub-national and national level so that institutions

and communities can make decisions based on informed choices and reasoned dialogue. At these levels, simpler and suitable tools and methods according to the cognizance capacity of stakeholders at different levels have to be used. For example, the use of visual and pictorial tools could be more helpful for raising awareness at community level. This kind of procedural rationality can enrich the learning process leading to more self-practice and innovations. For Nepal and Bhutan, the best possible way forward for enhancing adaptation decision-making is to begin with expanding the current learning process with the use of whatever expertise and experience is currently available and to build up on it as the process moves forward.

POLICY RECOMMENDATIONS

1. The inherent complexity and uncertainty in ecosystems and communities characterise developmental decision-making and adaptation planning in Bhutan and Nepal. And, given that they have a history and experience of developmental decision-making, particularly practical learning about community-based conservation, adaptation planning should not be considered as a new vocabulary in their developmental dictionary. For adaptation planning, what they currently need to do is to simply strengthen and scale up some of those activities that reinforce resilience and build adaptive capacity in the face of uncertainty imposed by climate change. For these countries, climate change is not to be portrayed as a "development ghost" but as a "development opportunity" that is holistic, more coordinated and focused on addressing uncertainties of economic, social, political, environmental and climatic changes.

2. In the context of limited science-based knowledge of mountain systems, the use of both model-based and vulnerability approach would help to better understand and integrate climate into development planning processes. Climate models can be relevant for proactive and reactive decision-making for short term uncertainties such as monsoon related climatic variability. Community and ecosystem vulnerability could be a useful approach for making responsive decision-making to cope with or plan for greater climatic uncertainties and surprises.

3. Understanding the potential utility of the concepts of exposure, sensitivity and adaptive capacity is vital for these countries where there has been a greater concern about how to proactively plan for adaptation activities. Building 'adaptive capacity' or 'resilience' of ecosystems and community based institutions could be the first step towards adaptation planning.

4. Adaptation decision-making requires cross-sectoral and cross-level interactions so that policy actions, development planning and local processes are better linked. Effective subsidiarity, where decisions are taken at the lowest appropriate level, is an essential part of this.

5. In addition to the national level adaptation activities, Bhutan and Nepal may also need to undertake activities that have regional scope. This is because there could be unforeseen consequences of a 'silo' sector approach and a national level focus may create mal-adaptations across borders especially given that ecosystems do not lie within sovereign national boundaries. Bhutan and Nepal's long experience in landscape approach to planning, for instance Bhutan Biodiversity Conservation Complex (B2C2), Terai Arc Landscape (TAL), Kangchenjunga Landscape (KL), Sacred Himalayan Landscape (SHL), can significantly add value to planning for adaptation in general. Hence, adaptation in these countries is not about crafting something new but it is about building on their experiences and scaling up those resilience-building activities that are already happening.

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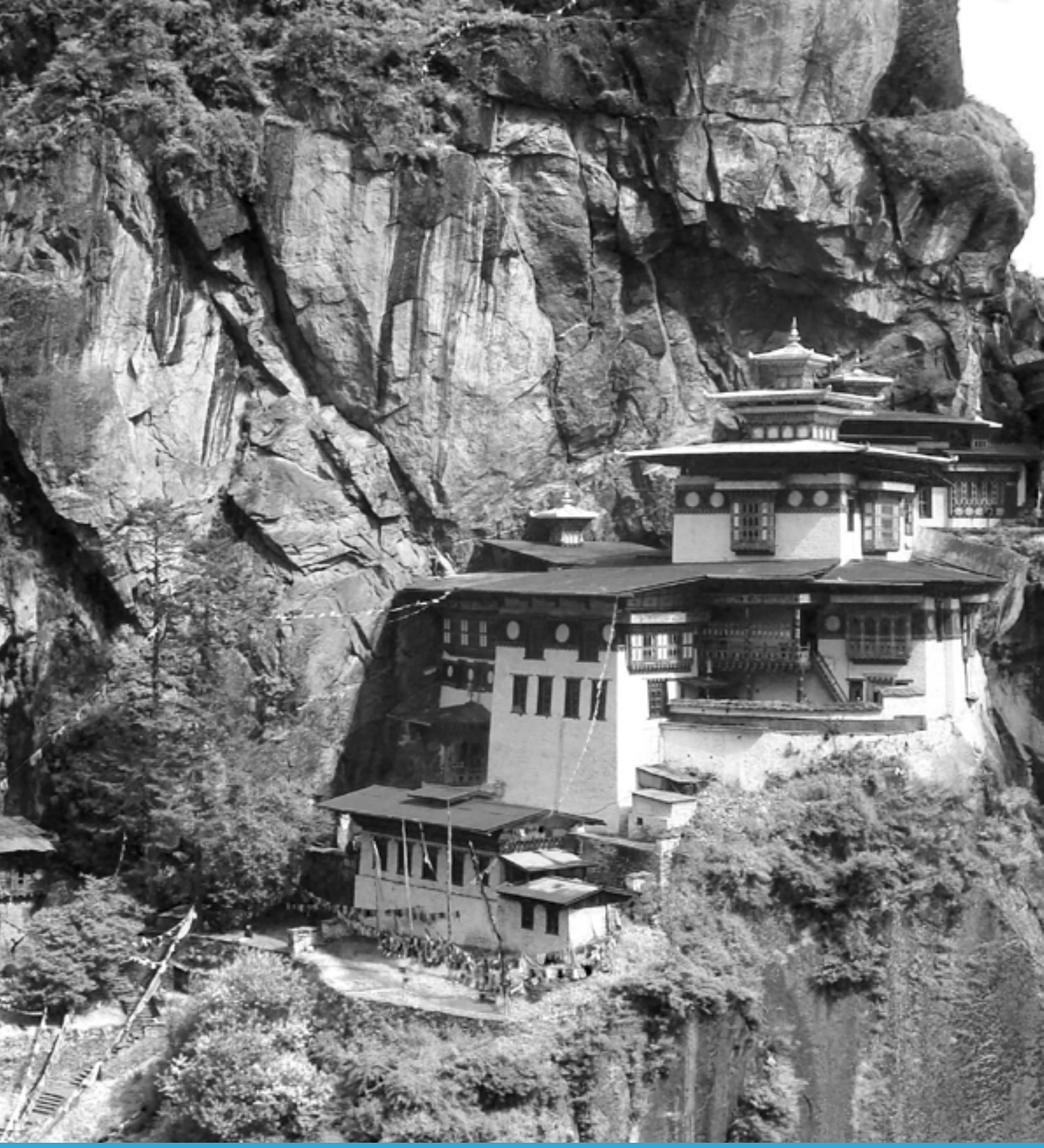

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