

# SCALING LOCAL AND COMMUNITY-BASED ADAPTATION

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## 1. Executive Summary

Climate change continues to pose serious threats to inclusive and sustainable development across all scales. The adverse impacts of climate change are manifested largely at the local level. The underlying drivers of vulnerability—including socio-economic, ecological and human resources, institutions, governance and infrastructure—are inherently context-specific and reflected at local scale. Hundreds of millions of people in both developing and developed countries are vulnerable to the direct and indirect impacts of climate change. Communities whose livelihoods are largely reliant on natural resources are the most vulnerable and are therefore disproportionately affected by the impacts of climate change. Rapid unplanned urbanization is resulting in increasing numbers of urban people living in poverty and hazard-prone areas.

Evidence suggests that local communities, in partnership with local governments, the private sector and civil society organizations, are undertaking adaptation strategies at local and community level. These strategies stimulate collective actions to address climate risks, including planning, which to some extent allows the voices of the poor and vulnerable people to be heard; development of cost-effective and socially acceptable solutions that are closely aligned with development priorities; and strengthening of partnerships between communities and a range of stakeholders at different levels.

While many policies and institutions acknowledge the need for local action and community-based adaptation (CBA) in response to climate change, in practice, community initiatives, experiments and activities have been poorly actualized and generally are not carried out in a manner that can achieve scale. Achieving scale will require moving from

### About this paper

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short-term, top-down project-based initiatives to locally led, long-term adaptation programs involving decision making that makes optimal use of indigenous and experiential knowledge. It also requires strengthening and institutionalization of processes and practices that fully take into consideration of the needs of the socially disadvantaged groups such as the elderly. Scaling local actions and CBA interventions will require real ambition, long-term commitment, and targeted mobilization and deployment of resources, including:

- devolved financing that reaches the poor and vulnerable in a flexible manner;
- a shift from technocratic solutions to prioritization of people's well-being, aspirations and enhancing existing capacities through genuine collaborative processes that foster the inclusion of different types of knowledge;
- transformative policies and programs to ensure uptake of appropriate technologies that support resilience building;
- programs to make climate information accessible and available at the local level;
- systematic assessment frameworks to enable transformative learning across scales and sectors;
- work to strengthen, including investing in long-term strategies for technical capacity for local action and CBA initiatives;
- work to strengthen links between local interventions across scales and sectors. This requires embedding adaptation considerations within decentralization planning and within broader government and institutional reforms;
- proactively exploring the market opportunities that make local and community-based adaptation sustainable; and
- putting in place systematic monitoring and evaluation systems to understand the effectiveness of adaptation initiatives and facilitate learning at local level.

Opportunities and experiences exist across the public and private sectors to help to enhance and scale up such efforts that enable local action. Decentralized governance processes and systems can be effective ways to build and sustain resilience and enable bottom-up adaptation planning, implementation and learning.

This paper makes a case for local actions and community-based adaptation by showing what adaptation success looks like at the local and community level. It recognizes that successful adaptation is process-driven and requires longer-term engagement along a full spectrum of actions, including visioning, planning, implementation, monitoring, evaluation, and learning. This paper identifies key enablers and barriers for successful adaptation actions at the local level, focusing on climate information and knowledge sharing as critical enabling factors, and also examining capacity development, institutional arrangements, and financing. It recommends that local action and CBA be locally led to ensure that adaptation and adaptation financing truly address the priorities and needs of the most vulnerable to the impacts of climate change and encourage equity and social justice. Progression toward locally led action will require devolved decision-making in ways that promote ownership of adaptation processes and outcomes at household and community levels.

## 2. Introduction

Climate change is derailing global efforts to reduce poverty. It adds another layer of complexity to existing development challenges, such as high levels of inequality, rapid population growth, underdeveloped financial markets and weak governance systems.<sup>1</sup> Access to basic services such as food, water, sanitation and shelter is being undermined due to low adaptive capacity. Rain-fed agriculture, which supports 60 percent of the world's agricultural production and many livelihoods in least developed countries, is under threat.<sup>2</sup> Low-income countries are expected to face a food deficit by 2025.<sup>3</sup> In urban areas, an increasing number of families living in poverty are also highly exposed to climate-related shocks and stresses that cost lives, damage assets, disrupt livelihoods, and lead to the loss of income. Without rapid, inclusive, and climate-informed development, an additional between 35 and 122 million people could be pushed into extreme poverty by 2030 due to climate change.<sup>4</sup>

The impacts of climate change are not only being felt in low income countries. There are vulnerable communities in wealthy countries that are also exposed and face challenges in adapting appropriately. Hurricanes Harvey and Irma caused almost USD 200 billion in damages in Texas and Florida, respectively. The 2019-2020 wildfires in Australia took a devastating toll on forests, wildlife and human lives.<sup>5</sup> London is exposed to extreme rainfall, coastal flooding, storm surges, droughts, and cold and heat shocks.<sup>6</sup> Tidal floods pose a particular risk to people living in London, with both high and low-income Londoners living in at-risk areas, and the poorest 10 percent at greater risk.<sup>7</sup>

While the socio-economic consequences of climate change are being felt across all scales and sectors, they disproportionately affect vulnerable communities at the local level.<sup>8</sup> Households and communities are on the frontlines of dealing with climate change, and the imperative to understand and support local-level adaptation has never been greater. Moreover, the vast majority of adaptation solutions will be identified and implemented at the local level. This does not negate the shared global challenge of and responsibility for adaptation. On the contrary, it shines a light on the tangible needs that must be addressed and the capacities that should be harnessed to realize meaningful adaptation action at scale.

It is also critical to recognize that local and community-based adaptation cannot occur in isolation. It is often the influence of factors that occur at different governance scales that can enable or prevent communities, and particularly the most marginalized from adapting<sup>9</sup>. These include factors like unequal power structures, unjust market incentives, top-down planning that does not take into consideration (or clashes with) local realities, insecure land tenure, patriarchal norms, or lack of capacity and resources to undertake more participatory decision making<sup>10</sup>. For community-based adaptation to be sustainable, empowering, inclusive and more locally-led and owned, it is essential to question and begin addressing the systemic causes of vulnerability that prevent more transformative solutions from being able to flourish. A shift from purely technical solutions, to a more holistic focus that puts people's well-being, needs and aspirations first can ensure that adaptation actions and policies are more effective.<sup>11</sup>

## 2.1 Why the local and community levels matter

Local action and community-based adaptation processes (see Box 1 for definitions) are important for many reasons.

First, they capture more granular, firsthand local knowledge—from both women and men, and from other social groups—that is foundational to designing and implementing successful adaptation strategies. This knowledge can help capture and validate the historic and observed changes in weather patterns; determine the extent to which people, assets, and livelihoods are exposed to climate-related shocks and stresses within the context of wider local development; call attention to the social norms (such as women's social, reproductive, and productive roles in the community) that contribute to vulnerability; and underscore the local skills, practices, and resources for dealing with shocks and stresses, which can be turned toward climate change adaptation. Critical to these efforts is to pay appropriate attention to understanding how different factors like age, marital status, ethnicity, gender, or class affect how people (and even different members of the same household) experience and respond to risks.<sup>12</sup> The interaction between these different dimensions of people's identity and factors like social norms, market signals, laws and policies, further influence people's vulnerability to climate change and their ability to adapt. Acknowledging the role of these different factors and leveraging local knowledge for adaptation solutions can help to improve the inclusivity, uptake and sustainability of these solutions, as well as increase communities' sense of ownership.<sup>13</sup>

Second, adaptation solutions need to reflect and manage the uncertainties associated with climate risk in ways that are tailored to specific locations. With localized adaptation, communities can adopt flexible and incremental solutions that provide wider development gains in the immediate term while being flexible enough to accommodate possible changes in hazard intensity and frequency.

Third, local and community-based adaptation solutions tend to be implemented in the context of wider local development priorities. Communities facing poverty often see the interlinked elements of climate, disasters, vulnerability, poverty, and development failures as a single collective

**Local action (for advancing adaptation)** is a combination of complementary interventions undertaken by government, development partners, civil society organizations, and private sector groups that explicitly aim to support **households, communities, and/or local governments** as they adapt to the adverse impacts of climate change and strengthen resilience. These interventions can be designed at any level—national, subnational, or local—but are implemented at the local level in close consultation with local stakeholders.

**Community-based adaptation (CBA)** is an empowerment-based approach that encourages community level leadership in assessing risks, planning strategies, prioritizing the use of investment resources, implementing measures, and monitoring the results of climate change adaptation-related interventions. The approach targets communities as a whole: people who live in a defined administrative unit, share a common culture, values, and norms, or are exposed to shared shocks and stresses. CBA involves the use of participatory processes to engage and empower community members, especially marginalized people and those living in poverty; to build close partnerships with local governments; and to strengthen community leadership and local capacities, including by providing flexible resources—such as financing—directly to communities to help them implement adaptation solutions.

experience.<sup>14</sup> As such, local adaptation solutions are more likely to achieve multiple gains, such as poverty reduction and inclusive socioeconomic development.

Fourth, the economic benefits of community-based adaptation measures are greater than estimated costs<sup>15</sup> and can contribute to three types of dividends: avoiding damage and losses from shocks and stresses; unlocking development potential for the area due to reduced risk; and generating development co-benefits related to improved health, education, and more.<sup>16</sup>

Lastly, when implemented in conjunction with wider governance reforms that foster collaboration across formal and customary authorities, intermediaries and diverse local actors, community-based adaptation enables more sustainable and equitable solutions through the participation of the poorest and most vulnerable in decision-making processes.<sup>17</sup> Important reforms include those targeting wider local governance (such as decentralization making it possible to roll out bottom-up planning and budgeting processes). At higher levels, reforms are needed to deal with perpetuation of factors like predominant social norms, irreversible lock-ins<sup>18</sup> or perverse subsidies.<sup>19</sup> In addition, there is need for innovative and truly participatory methods that seek to integrate marginal voices into the mainstream<sup>20</sup>, hence, shifting the role of communities from passive beneficiaries to drivers of development, which is critical for achieving the transformative agenda of 2030.<sup>21</sup>

## 2.2 Purpose of the paper and framework

Recognizing the critical need to enable adaptation at the local level, the purpose of this paper is to inform the Global Commission on Adaptation's efforts to accelerate adaptation action and support. This paper specifically makes a case for local action and CBA by highlighting what adaptation success looks like at the local and community level. The paper provides examples that demonstrate how effective adaptation is local by nature, with households and communities serving as natural loci of response for transformative change. In addition, it shows that such success often depends on concurrent enabling factors that cut across scales and sectors. The paper provides a synthesis vision and key recommendations on how to better scale up local action and community-based adaptation.

This paper draws on information from a wide range of climate change adaptation actors and literature to establish what has happened in the past and what is happening now across geographies, scales, and sectors. The information presented was obtained through a literature review and consultations with individuals who have vast experience in local-level and community-based adaptation. Consultations also included feedback sessions during the International Conference on Community-based Adaptation that was held in April 2019 in Addis Ababa, Ethiopia.

**FIGURE 1** The adaptation process and its enabling factors



Source: Adapted from NAP Global Network (Angie Dazé, Hayley Price-Kelly, and Nikola Rass).

In this paper we look at adaptation action in terms of the process depicted in Figure 1 below. Adaptation action is an ongoing, iterative process that can be largely divided into three phases: planning, implementation, and monitoring and evaluation (M&E).<sup>22</sup> During the planning phase, vulnerabilities and risks are assessed; adaptation options are identified, prioritized, and selected; and strategies are developed for implementation. The latter need not always lead to new, stand-alone strategies or plans; assessment results and adaptation options can also be integrated into existing strategies or plans. During the implementation phase of the adaptation process, the strategies for putting the selected adaptation options into place are more carefully mapped out. Financing is secured, and technical and human resources are procured and deployed. The M&E phase of the adaptation process involves tracking progress in implementing the adaptation options, especially in terms of their desired outcomes vis-à-vis vulnerability reduction and climate-resilient development. The results and lessons should, ideally, feed into subsequent efforts to assess risks

and identify adaptation options, through a process of monitoring and evaluation for learning (MEL).

Critical to making sure this process advances and leads to desired adaptation outcomes is a set of enabling factors. These include:

- **Institutional arrangements**, or the set of laws, regulations, and agreements that identify the different roles and responsibilities of agencies or parties in coordinating and delivering adaptation activities. These can range from informal to formal, involve all levels of decision-making, and help provide structure and confidence in the adaptation process.
- **Information- and knowledge-sharing** refers to the data, information, and knowledge needed to identify climate-related vulnerabilities and risks, define adaptation priorities, design appropriate strategies, and track the progress and results of implementation. This information must be both available and accessible, and

must consider indigenous, traditional, experiential, and scientific sources.

- **Capacity development** refers to acquiring, improving, and retaining the necessary human and technical resources needed to implement adaptation actions.
- **Finance** refers to the financial resources needed in order to design and deploy adaptation actions. The sources of finance can be public or private, domestic or international.

The adaptation process and enabling factors described above are relevant to all levels of decision-making, including the local level. However, actions at these different levels do not take place in isolation from each other. Indeed, they can be interactive and mutually reinforcing. In other words, local adaptation action is often supported by enabling factors that exist at multiple levels. This speaks to the importance of “vertical integration,” whereby deliberate and strategic links are made among community, local, sub-national, and national adaptation plans.<sup>23</sup>

Following this introduction are four sections. The first one describes the state of local action and CBA planning, implementation, and learning through monitoring and evaluation. This section provides a review of literature and evidence on the state of existing knowledge on local action and CBA, including examples of relevant adaptation efforts planned or implemented at different scales and in different geographies. The evidence covers rural and urban places and communities in both developed and developing countries on a worldwide scale. The section ends with a summary of the identified enablers and barriers to local action and CBA. The second section discusses case studies that provide insights mainly on implemented approaches and actions that demonstrate the concrete impacts or dividends of these responses to key climate risks. The third section addresses visions for the future. This section looks at how significant progress can be made on local action and CBA, including learning from past experiences to identify what can be

done differently for better-adapted places and communities. The paper ends with a fourth section that provides conclusions highlighting the key opportunities that exist for more effective local action and CBA. It also highlights ways to overcome barriers and take advantage of enablers to move toward realizing the desired future presented in section three.

The sections are aimed at providing lessons to inform pathways for scaling up local action and CBA. In this paper, the idea of scaling encompasses a variety of processes that are both vertical and horizontal in nature. The first type, “vertical scale-up” or “scaling up,” concerns the notion of scaling up adaptation initiatives from the local or community level to higher levels of decision-making within a country or globally. This includes, for example, using lessons from local action and CBA to integrate climate change adaptation into sectoral policies and informing decision-making at higher administrative and organizational levels for wide-reaching impact. Scaling up also includes enhancing the integration of local action and CBA into wider development processes, where stand-alone adaptation initiatives are avoided as much as possible.<sup>24</sup> The second type, called “horizontal scale-up” or “scaling out,” refers to expanding local action and CBA over a larger geographical area. This could involve, for instance, broadening the scope of a small-scale project intervention or initiative, based on lessons and experiences, into a large-scale endeavor. The expansion could involve a large number of new but replicated local-action and CBA initiatives based on initial interventions. It could also involve a large number of beneficiaries or whole regions as opposed to a single or few targeted communities.<sup>25</sup> Finally, a third type of scaling, known as “scaling deep” encompasses a reframing of paradigms or deeply held norms and beliefs related to the social issues in question.<sup>26</sup> This can be achieved through engaging in collaborative learning processes which can lead to transformations in practices, knowledge and understanding, such as through the use of different participatory tools.<sup>27</sup>

### 3. State of local and community-based adaptation

This section presents a review of the literature and evidence on local action and CBA following the framework presented above (section 2.3). The review covers the period from 2003 to 2019 to capture trends from the time CBA started emerging as a perspective on community-based development in the late 1990s. The content is presented under five subsections. First are examples of local-level adaptation planning and how they can serve as a learning basis for involving communities in designing adaptation programs that are responsive to local-level priorities. The second subsection presents different efforts and approaches to local and community level implementation of adaptation interventions. It also sheds light on the importance of involving local-level actors across sectors and geographies. Third are examples of how current M&E practices can offer learnings to inform future MEL systems for improved adaptation programming. The following subsection uses examples to make a case for localized climate information that is relevant to decision making needs of local-level actors. The sections end with highlights of the key factors that shape local action and CBA, including both enablers and barriers.

#### 3.1 Planning

While global adaptation planning initiatives have largely focused on the national level (e.g., through National Adaptation Plans of Action, or NAPAs), attention to local-level planning is gaining some traction. More examples of planning processes are emerging, featuring resource mobilization, activity coordination, information-sharing, and institutional arrangements for local-level action and CBA.<sup>28</sup> For example, in Nepal and Bangladesh, adaptation action planning is taking place through locally led coordination, mobilization, and learning with support from a flourishing NGO sector.<sup>29</sup> Local Adaptation Plans of Action (LAPAs) have been established in Nepal with some effort for collectively owned gender-inclusive decision-making processes that focus on local priorities and capacities.<sup>30</sup> The process for the LAPAs has aided local-level adaptive capacity-building and experiential learning facilitated by local and community facilitators.<sup>31</sup> Bangladesh is shifting focus towards scaling up experiences and lessons from local adaptation plans into NAPAs.<sup>32</sup> In South Africa, since 2010, sector-specific

Municipal Adaptation Plans (MAPs) have been developed in the eThekweni municipality of Durban focusing on biodiversity, health, water, and disaster management with the active involvement of local stakeholders.<sup>33</sup>

The establishment of the International Council for Local Environmental Initiatives (ICLEI), a transnational network whose explicit goal is to facilitate local action on climate change globally, has shaped the adoption of community adaptation planning.<sup>34</sup> For example, with support from the ICLEI's Cities for Climate Protection program, the city authorities of Prince George, British Columbia have worked on local-level community adaptation planning for climate change impacts since 2007. The city has been able to develop both short and long-term plans covering interventions for:

- protecting new buildings from hazardous conditions such as flooding;
- enhancing forest management processes to reduce forest fire risks;
- improving storm water management by preserving natural catchment areas;
- protecting undeveloped spaces;
- developing an integrative plan to promote local agriculture;
- enhancing educational outreach programs to promote water conservation and climate change awareness; and
- designing infrastructure that is adaptable to climate change.

The private sector is also starting to get involved in local-level planning. One example is the Localism Act in England, which decentralized how flooding is managed: individual and household businesses have worked with local communities to partner with government authorities in planning and funding flood defense schemes through existing arrangements under Flood and Coastal Resilience Partnership Funding.<sup>35</sup> With similar initiatives in Zimbabwe and Liberia, local governments are using the Special Climate Change Fund (SCCF) to engage the private sector, rural households, and coastal communities in developing regulatory and fiscal incentives to stimulate actions such as community water harvesting, storage, and distribution within the context of variable rainfall patterns and intensity.<sup>36</sup>

These examples of local-level adaptation planning can serve as a basis for involving communities to encourage design of adaptation programs that are responsive to local-level priorities. Critical to their success is the use of participatory tools that bring together diverse stakeholders – both in positions of power and marginalized – to integrate different voices, co-create solutions that are inclusive and equitable, and create strengthened ownership, agency and capacities.<sup>37</sup> The use of participatory vulnerability and risk assessments in Malawi, Botswana and Namibia brought together different stakeholders, for example, helped to shift power dynamics, build relationships across different governance scales, and challenged narratives by enabling marginalized voices to be heard by those at higher levels.<sup>38</sup>

Participatory scenario analyses undertaken in Kenya and Ethiopia indicated the plurality of views evident within communities across different genders and age groups, which often only emerge through the creation of safe spaces (e.g. separate groups) that allow everyone to comfortably voice their concerns<sup>39</sup>. The analysis processes showed disagreements between communities, government representatives and NGOs regarding the choice of adaptation solutions. This reinforces the need for a different type of planning from top-down approaches that are mainly consultative and often favoring the more powerful voices. This helps to include and value different sources of knowledge and perspectives.

## 3.2 Implementation

Since the late 1990s, CBA interventions have increasingly been initiated and implemented through participatory and bottom-up activities spearheaded by international NGOs that mostly operate on a pilot project basis at the local level.<sup>40</sup> For about two decades, these pilot implementation efforts have provided a basis for learning what local-level or community-based adaptation can look like and what it can achieve in different contexts. These projects have covered aspects including flood risk management, farmer field schools, public-private partnerships for community water management, urban green infrastructure, agroforestry, and community-driven development. Such location-specific responses to climate change have demonstrated the importance of forefronting communities' needs and priorities in ways that in some ways encourage community ownership and decision-making.<sup>41</sup>

Regarding flood risk management, for example, communities in the village of Toineke in Indonesia have been able to cope with floods for over 20 years by protecting wells to reduce the risks of cholera and diarrhea and by building flood embankments.<sup>42</sup> In the city of Gorakhpur, India, many residents and business owners are investing to raise buildings above flood levels. NGOs have also supported communities in clearing drainage systems, working with the municipality to improve drainage, and supporting innovations around early warning systems in urban agriculture.<sup>43</sup>

In the agriculture sector, farmer field school projects have become an important vehicle for the implementation of local-level and community-based adaptation. In Nampula province, Mozambique, there are about 50 farmer field schools with over 1,000 farmer participants from vulnerable coastal and inland communities.<sup>44</sup> These schools help communities to address climate change impacts through co-learning about conservation-focused agricultural practices and strengthening resilience to climate change.<sup>45</sup> In addition, farmer field schools have enhanced social support and helped mobilize financial resources by means of savings groups. The savings are used at both household and community levels to finance adaptation initiatives, such as micro-irrigation, that eventually result in increased yields and incomes for farmers.<sup>46</sup> However, some of the initiatives and associated benefits have not lived beyond the support project life span because of to lack of consideration of cultural norms and local context.<sup>47</sup>

The private sector is increasingly involved in implementing local actions and CBA. In Baoshan Municipality, China, using a public-private partnership arrangement, a company constructed two water pumping stations, one for the community and another for the company farm, to address water shortages in Mangadan village. This was undertaken with the supervision and coordination of the town government.<sup>48</sup> For proper management, farmers formed an irrigation cooperative within their customary irrigation management institutions. The cooperative charged an irrigation fee of USD 24 per hectare to cover regular operation costs. Local governments ensured a 37 percent discount on electricity costs to support this initiative.

Local and community level nature-based solutions are also being implemented in some places. Following the clearing of trees and the consequent exposure of crops to the Sahelian winds, heavy rains, and drought, farmers in Niger



are reintroducing centuries-old methods to re-sprout tree species on land that was previously opened up for agriculture.<sup>49</sup> Over the last two decades, such farmer-managed natural regeneration has made almost half of cultivated land in Niger a composite of trees, shrubs, and crops leading to reduced soil erosion and the continuous harvest of fuel, building materials, food, and fodder that benefits over 4.5 million people without need for replanting. In addition, the increase in tree cover has insulated communities against the cyclical droughts that had plagued Niger for the past 50 years.<sup>50</sup> Similarly, since the mid-1990s, the private sector in Zambia has been implementing a native tree species program, called Trees on Farms, through a community-based climate-resilient agroforestry and conservation initiative. By 2013, the uptake of the program had reached over 15,000 farmers in central and southern parts of Zambia.<sup>51</sup>

Community-Driven Development (CDD) programs implemented in many countries across the globe, often with financial and technical support from multi-lateral development banks, are advancing local actions and CBA.<sup>52</sup> These programs have initiated efforts to give community groups involvement in planning decisions and investment resources by providing block grants for local development to improve community infrastructure, including basic social services, access to infrastructure, community enterprise facilities, and infrastructure related to environmental management.<sup>53</sup> Experience has shown that CDD approaches that put communities at the forefront of decision-making are effective and efficient in providing community infrastructure, improving year-round access to services, and reducing vulnerability and overall poverty.<sup>54</sup> CDD projects provide a natural entry point for strengthening the resilience of community infrastructure, which may be exposed and vulnerable to climate-related shocks. CDD projects can also generate employment by involving communities in building infrastructure.<sup>55</sup>

CDD projects in countries such as the Philippines and Myanmar are integrating features to support local action and CBA measures. The features include:

- selecting communities based on a robust understanding of climate risk;
- undertaking climate risk assessment as part of participatory planning processes to identify priority infrastructure; and

- strengthening linkages with programs that work to provide sustainable livelihoods, social protection, financial inclusion, and early warning systems.

In Indonesia and the Philippines, CDD projects have been used to facilitate timely post-disaster recovery and reconstruction processes.<sup>56</sup> They have also helped communities reap the economic dividends from undertaking adaptation initiatives aimed at managing climate-related disaster risks. These different efforts and approaches to local-level adaptation and CBA shed light on the importance of involving local-level actors in the implementation of adaptation programs across sectors and geographies.

Through these initiatives, it is important to gain understanding of which individuals or communities proactively adopt to deal with risks and uncertainties, and that demonstrate innovation in adaptation actions.<sup>57</sup> Going beyond innovations in technology (e.g. drought-tolerant seeds), it is important to recognize how institutional changes (i.e. new ways of doing things), cognitive changes (i.e. new perspectives), and aspirational changes that seek to achieve new goals, can all lead to transformative outcomes. The role played by ecological, socio-institutional and market factors in enabling or curtailing local innovation is critical in understanding how local initiatives could be fostered. In some cases, it is clear that political-economic factors, such as those tied to the disbursement of subsidies can create barriers to the adoption of adaptation measures (e.g. drip irrigation)<sup>58</sup> or, even worse, reduce household well-being and resilience.<sup>59</sup>

### 3.3 Monitoring, evaluation and learning

While local action and CBA are acknowledged to be important in delivering adaptation where it matters most, little evidence exists to date to show its specific effectiveness.<sup>60</sup> Monitoring, evaluation and learning (MEL) involves using methodologies and tools that help to ascertain the effectiveness of adaptation initiatives while learning from them. Communities, local governments, and the actors supporting them need to have an understanding of local and CBA outcomes. This approach to MEL offers an opportunity to bring insights, data and information about local-level adaptation to national and global stocktaking, which in turn would improve decision-making processes and investment in adaptation interventions.<sup>61</sup> However, to date, no specific universal indicators have been created to guide MEL and

quantify adaptation outcomes.<sup>62</sup> As a result, institutions use a range of different methodologies without a common understanding of adaptation outcomes and impacts. There is a need to develop a standard framework and methodology to guide MEL. A common lens for understanding adaptation outcomes and effectiveness of local-level adaptation could support coordinated learning and effectiveness of adaptation across levels. This will require a coordinated development process to design the framework evaluation criteria, methods, terminology, goals, and financing mechanisms, among others.<sup>63</sup> In addition, the MEL systems should be based on clearly defined purpose- and location-specific information needs with a focus on facilitating knowledge-sharing and capacity-building at local levels.<sup>64</sup> Monitoring systems should also be integrated into policies across different scales.<sup>65</sup> That way, a holistic vision for local, community-led adaptation action can be realized.

Despite the lack of established MEL systems for local action and CBA, some countries, including Kenya, Mozambique, Nepal and Morocco, are piloting local-level efforts to assess the achievements of adaptation policies and initiatives. For example, using indicators of adaptive capacity, Morocco is assessing an adaptation program at the local level to inform the country's reporting on the state of the environment and priorities for their national adaptation plans.<sup>66</sup> Local-specific indicators—such as the amount of cultivated surface with drought-resistant varieties, yield of rainfed cereals, and farmers' income in rainfed areas—are used to monitor and evaluate CBA initiatives for incorporation into the NAPA.

Organizations that support local action and CBA have made attempts to learn from implemented projects. For example, in 2012, CARE International's Adaptation Learning Programme for Africa (ALP) carried out a cost-benefit analysis of their activities (e.g., the planting of drought-tolerant varieties, infrastructure development, energy efficiency, and local or traditional resource management practices) used by households and communities while responding to climate change. The analysis established that each GBP 1 invested in Kenya could generate between GBP1.45 and GBP3.03 of wealth for communities (USD1.88 to USD3.94). It also established that in Niger, every GBP1 invested in CBA generates GBP4 to GBP6 (USD 5.20 to USD 7.80) across a range of climate scenarios.<sup>67</sup> CBA was also found to increase revenue from agricultural and livestock activi-

ties in Niger, with average agricultural returns of 40 percent among communities since 2010.<sup>68</sup>

To inform Rwanda's adaptation policy, in 2013, the ministry of agriculture started an evaluation of tea and coffee farmers' locally led adaptation initiatives established through cross-sectoral integrated plans. Lessons learned from the evaluation have been integrated into both local and national adaptation and development priorities. As a result, coffee and tea farmers across the country have been better supported to develop and take up location- and community-specific adaptation solutions, including planting shed trees, intercropping, and diversifying their cash crop base.

The climate-smart village approach has been piloted in Africa, South Asia, Latin America and South-East Asia since 2012 to monitor adaptation outcomes with high specificity to local context.<sup>69</sup> Developed under the Consortium of International Agricultural Research Centers' (CGIAR) Research Program on Climate Change, Agriculture and Food Security (CCAFS), this approach provides a framework to guide communities as they monitor, evaluate, and learn from local action and CBA. The climate-smart village approach uses a climate-smart portfolio that offers a multi-stakeholder participatory evaluation platform for local actions and CBA with links to national and global policy frameworks.<sup>70</sup> The climate-smart villages in Africa and Asia have stimulated collaboration between researchers, international and local NGOs, governments, community groups, rural agro-advisory service providers, village officials, and farmers to evaluate, learn, and maximize synergies across climate-smart agricultural interventions.<sup>71</sup> The components of the climate-smart village approach include climate information, services and insurance, climate-smart practices and technologies, local and national private and public institutions, climate and development finance, and national and subnational plans and policies.<sup>72</sup> Farmers maintain daily diaries of farm activities and work with site coordinators to monitor and evaluate progress on chosen interventions. This information is digitized and analyzed at the end of a growing season to derive lessons and outputs, which are then disseminated locally, nationally, and internationally.

These different approaches to MEL serve as models to inform future MEL systems, and provide examples of how MEL can be used to improve and inform adaptation programs.

### 3.4 Climate information

The integration of local knowledge and climate science is essential for local-level and community-based adaptation processes.<sup>73</sup> Community-level, context-specific climate information must be generated, shared, and used to help households, communities, governments, and other stakeholders strengthen their understanding of climate risks and guide their adaptation decision-making across various scales.<sup>74</sup> Climate information is a critical enabling factor to the adaptation process, and systems are required to facilitate the appropriate use of climate information to inform bottom-up adaptation initiatives and support local-level action and CBA.

In policy and practice, governments are making efforts to develop community-driven, bottom-up information systems for adaptation, targeting vulnerable communities and countries.<sup>75</sup> In Kenya, community-level participatory mechanisms for knowledge generation and sharing have increased local communities' access to and awareness of weather advisories since 2011.<sup>76</sup> As a result, communities have been better prepared to respond to droughts by planting short-season crops and fodder in order to maintain livestock health. They have also been able to use these weather advisories to respond to floods by moving irrigation pumps from areas that are likely to flood, while taking advantage of receding flood waters for additional crop fodder production, as well as vaccinating animals against disease using flood waters.<sup>77</sup> This was made possible by training communities to engage with meteorological service providers in sharing and interpreting both seasonal and locally generated forecasts in line with prevailing weather conditions, future climate possibilities, and inherent uncertainties.<sup>78</sup> Equipped with forecasting information, communities took initiatives to overcome the challenges associated with changing climate patterns, including shorter rainfall seasons, shifts in the time when rains start, extreme events such as flooding, and extended drought periods, among others.<sup>79</sup>

Countries such as Morocco, Rwanda, Kenya, and Mali are developing local-level climate information to improve national and regional climate information systems in order to increase coherence between national and subnational adaptation decision-making processes.<sup>80</sup> These integrated information systems provide detailed information on what is happening locally and identify what is working for people at the frontlines of CBA initiatives.

Rwanda, for example, has used localized adaptation information based on lessons and experiences from tea and coffee farmers to integrate climate risk management within the country's agriculture plan.<sup>81</sup> In Senegal, climate information is translated into local languages and shared with community members using telephone messaging systems and community radios. This process has been very important in helping farmers make use of adaptation technologies.<sup>82</sup> Similarly, in India's Maharashtra state, a weather and agro-advisory system has been developed to demonstrate the importance of collaborative, trusting and accountable relationships between different stakeholders (NGOs, researchers, farmers, the private sector and government) to harness their respective strengths and ensure the information responds to farmer needs.<sup>83</sup>

The government of Myanmar is developing an online system (Expert System for Agro-Meteorology Early Warning) to support decision-making. The system generates and disseminates agro-meteorological bulletins in local languages based on short- and medium-range weather and climate parameters.<sup>84</sup> This approach is initially being piloted in drought-prone areas of Myanmar. The online platform is used to generate 10 days of agro-meteorological forecast bulletins, which are transmitted through email and fax to households, communities and other users. In addition, three days of short-term forecasts are generated and disseminated to these users by SMS messages. A crop weather calendar is also being incorporated within the system to correlate decadal weather parameters with present crop stage.<sup>85</sup> This involves creating links between Indigenous and modern climate information systems to inform local-level adaptation options. This information has enabled communities to make decisions regarding farming, pastoral, and fish management systems.<sup>86</sup> The precise and timely site-specific weather-based information has helped farmers to make equitable and informed decisions about farming practices.<sup>87</sup>

Climate information that is localized or otherwise relevant to the needs of local-level actors can support adaptation decision-making and action. It is critical however to beware of how access and use of climate information is often affected by gender and other characteristics of one's identity (e.g. age, educational status) that may preclude its inclusiveness or reach. One must therefore ensure that such barriers are analyzed and addressed, for example through the use of intermediaries that seek to overcome such power differentials.<sup>88</sup>

## 3.5 Enablers of and barriers to local action and community-based adaptation

To scale up, local action and community-based adaptation needs to be supported and enabled by the right policies, institutions, finances, and capacity.<sup>89</sup> Many local adaptation initiatives rely on technical, financial, and capacity-building support provided by the national government or international organizations, mainly on a project basis. At the same time, the macro-level policy and economic environment can act as either a barrier to or an enabler of efforts to address climate risk and help scale up local adaptation measures.<sup>90</sup> Entrenched structural and systemic factors like historical power relations, or political agendas that promote technocratic approaches and scientific knowledge over local or traditional, all need to be recognized for the role they play in exacerbating vulnerabilities and influencing adaptation by the most marginalized or not.<sup>91</sup>

Evidence shows that four main interrelated factors act as either enablers of or barriers to successful local action and community-based adaptation.

### 3.5.1 AVAILABILITY OF AND ACCESS TO LONG-TERM FINANCING

For local and community-based adaptation to be successful, funding should be devolved, including in terms of decision-making. In addition, it should be flexible enough to respond to the variations in climate impacts and risks across space and time.<sup>92</sup> Funding needs to be socially just, and gender-responsive, support capacity strengthening, and should allow meaningful participation across different target stakeholder groups to avoid elite capture.<sup>93</sup> For these transformative outcomes to materialize, funders and financiers need to be prepared to invest over long time periods, in a flexible manner and accepting the inherent uncertainty involved, as well as difficulty in measuring these more qualitative long-term measures of success.<sup>94</sup> Financing must also be transparent and mutually accountable. As well, communities and local governments must be able to prioritize financial resources toward the desired adaptation outcomes of local and CBA initiatives.<sup>95</sup>

### 3.5.2 PRIORITIZATION OF CAPACITY-BUILDING SUPPORT, INCLUDING FOR THE TECHNICAL CAPABILITIES OF HOUSEHOLDS, COMMUNITIES AND LOCAL GOVERNMENTS

Successful adaptation efforts have involved trainings on climate risk response, community empowerment, and enhancing individually and collectively owned decision-making processes. Trainings and advisories provided by NGOs, multilateral agencies, educational institutions, and local governments have been found to stimulate practical learning through sharing experiences, analysis techniques, and practices. As well, these same groups have been working with households and communities to assess the value of new adaptation practices.<sup>96</sup> This creates an enabling environment for the communities to develop capabilities in validating, adopting, and implementing new technologies and innovations with regard to the use of local resources in response to climate change. Enabling communities and local actors, through a multi-stakeholder process, to inform and be involved in capacity-building efforts, as opposed to ad-hoc or wholly outsourced and externally driven efforts, is important to ensure durable impact, respect, and integration of local communities' needs, priorities, and knowledge.<sup>97</sup> Where external efforts have prevailed, capacity building of local organizations, communities, and governments have been ineffective.<sup>98</sup>

### 3.5.3 GOVERNANCE AND INSTITUTIONALIZATION OF ADAPTATION EFFORTS

The establishment of local institutions and good governance fosters the sustainability of adaptation outcomes.<sup>99</sup> Successful institutionalization requires that the adaptation action planners and implementers be flexible in their approaches to strengthening capacity of communities and local governments.<sup>100</sup> Good local action and community-based adaptation governance allows poor, marginalized, and vulnerable people to truly participate in decision-making processes, especially through the choice and use of appropriate tools that seek to integrate their voices.<sup>101</sup> This requires challenging institutional power imbalances to ensure that local people can directly engage in, lead, and own adaptation processes, including owning and controlling decisions and resources. Active engagement and participation can eventually entrench the bottom-up planning, implementation, and monitoring and evaluation of adapta-

tion processes and outcomes.<sup>102</sup> This requires coordination across sectors and scales. Evidence shows that compartmentalized adaptation, whether bottom-up or top-down, can be a barrier to realizing sustainable, effective, and efficient adaptation at local and community levels.<sup>103</sup> In Mali, for instance, where the Cooperative Law was developed at national level without due consideration of multi-scalar realities, social cohesion and mutual support structures at the local level have been degraded.<sup>104</sup>

### **3.5.4 FLEXIBLE ADAPTATION PROCESSES THAT OPEN OPPORTUNITIES FOR A WIDE RANGE OF ACTORS TO PARTICIPATE, ESPECIALLY THE PRIVATE SECTOR**

The direct engagement of the private sector in adaptation processes is in its infancy, but emerging experiences show that private-sector players are an important factor in supporting and enhancing adaptation processes, including through financing and establishing technological innovations and solutions at the local level.<sup>105</sup> Institutional arrangements can hinder or facilitate engagement with the private sector in the adaptation process for CBA.<sup>106</sup> Private-sector participation in the adaptation process at the local level needs to be facilitated and promoted, especially in developing countries. A particular focus should be placed on creating an enabling institutional and policy environment to stimulate and avail incentives for both the domestic and the international private sector.<sup>107</sup>

## **4. Case Studies**

This section presents five case studies selected to cover a range of different geographical regions, important hazards, and climate change vulnerabilities. The case studies provide information on locally and community-driven adaptation experiences in Fiji, Bangladesh, Ethiopia, Pakistan, and New Zealand. The information is obtained from secondary sources, institutions, and individuals that were involved in implementing the adaptation interventions. Each case study highlights information on adaptation responses to a challenge posed by a given hazard, along with results and conclusions from the adaptation intervention.

## **4.1 Case study: Relocation of Vunidogoloa in Kenani Village, Fiji<sup>108</sup>**

### **4.1.1 THE CHALLENGE**

The former village of Vunidogoloa on the island of Vanua Levu was exposed to frequent and intense flooding, accelerated coastal erosion, and soil salinization. For these reasons, in 2006 the villagers asked the Fijian government for relocation assistance.<sup>109</sup>

### **4.1.2 THE ADAPTATION ACTION**

A village relocation project officially commenced in 2012. It involved selection of a new site for the village, preparation of the land and construction of 30 new houses, each with a supply of water and renewable energy. In January 2014, over the course of three days, Vunidogoloa's 132 inhabitants moved two kilometers inland. They named the new site Kenani, the Fijian word for "Canaan," the "promised land" in the Bible. The project installed waterways, drains and footpaths to reduce exposure to landslides, while an evacuation center was constructed to assist villagers during disasters.

The relocation involved more than simply moving people. Through the joint efforts of villagers, local and national governments, and the International Labour Organization, the project promoted income-generating activities under the Cash for Work Plus Programme to strengthen the livelihoods of the villagers in Kenani. Fish ponds helped to offset the villagers' reduced access to the ocean; new farming practices with different crop varieties, including pineapples and bananas, supported agricultural resilience; and copra dryers offered new economic opportunities and livelihood options. People were also helped to deal with psychological effects of relocation through voluntary social support provided by local and regional religious organizations.

### **4.1.3 CONCLUSION**

While villagers had been considering relocation for decades, the decision to leave was a difficult one, which they viewed as a last resort. The cultural and spiritual significance attached to customary land is core to the Indigenous Fijian identity, making the process of abandoning such land psychologically stressful. Several critical enabling factors supported this local-level adaptation process, including institutional arrangements to support relocation, information- and knowledge-sharing, training on income-generating activities, and financial resources.

With over 50 percent of the population living within 1.5 km of the shore, the Pacific Islands are acutely exposed to the impacts of sea level rise resulting from climate change. While relocation remains a last-resort adaptation measure, the experience of Vunidogoloa will be repeated in many other villages across the Pacific.

The project results suggest that relocation projects should take into consideration cultural, spiritual, and emotional attachments to native land, and take the necessary steps to alleviate the psychological trauma of the people who are relocating. Appropriate institutional arrangements, information-sharing, training on income-generating activities in the new location, and appropriate financial support are also important enabling factors that will facilitate the relocation process. This first climate-induced relocation in Fiji offers insights to inform similar future efforts toward locally specific climate change adaptation.

## 4.2 Case study: The Triple-F Model for enhancing the resilience of coastal communities in Bangladesh<sup>110</sup>

### 4.2.1 THE CHALLENGE

Due to its geographical location, low elevation, flat deltaic topography, high population density, and poverty incidence, the coastal region of Bangladesh remains highly vulnerable to climate hazards such as cyclones, storm surges, tidal flooding, coastal erosion, and sea level rise.

The Community-Based Adaptation to Climate Change through Coastal Afforestation Project in Bangladesh, which ran from 2003 to 2013 and was funded by the Global Environment Facility (GEF) fund through the United Nations Development Programme (UNDP), demonstrated how enhancing community members' capacity to use appropriate technology and innovative practices could assist them in diversifying their livelihoods, generating income and building community resilience against impacts of climate change. The central guiding principle behind the project was that adaptation efforts should also generate income for local communities.

### 4.2.2 THE ADAPTATION ACTION

The project introduced an elevated ditch-dike model called the Forest, Fish, and Fruit Model, or the Triple-F Model (see Figure 2). The model provided a way to make barren coastal lands support mangrove forest (re)establishment as well

as fruit and fish production in order to diversify community members' livelihoods and enable them to generate income.

Landless coastal community members were provided access to barren coastal land. They participated in the construction of dikes and ditches, and then cultivated fruits, vegetables, and timber trees on the dikes, and established fish farming ponds in the ditches. Because the ditches and dykes were located close to households, women in the community could also actively participate in the project's activities. Not only did the trees planted on the barren coastal lands provide effective protection and preserve the local coastal ecosystem, but they also acted as wind and wave barriers to minimize coastal erosion and damages during windstorms.

### 4.2.3 CONCLUSION

By 2011, a total of 14,350 households were able to employ the Triple F model to manage and protect their capital in a changing climate. The project documents and relevant literature suggest that an array of adaptation interventions is necessary for community-based adaptation projects to effectively enhance adaptive capacity and community resilience. In this case, the resilience of the target coastal communities was enhanced using structural intervention (such as the creation of a mangrove green belt), income generation measures (e.g., from fruit and fish farming), and awareness-raising. Specifically, that means raising adaptation practitioners' awareness on how to empower communities by integrating traditional methods in order to achieve effective, locally contextualized adaptation and by strengthening institutional capacity through training programs.

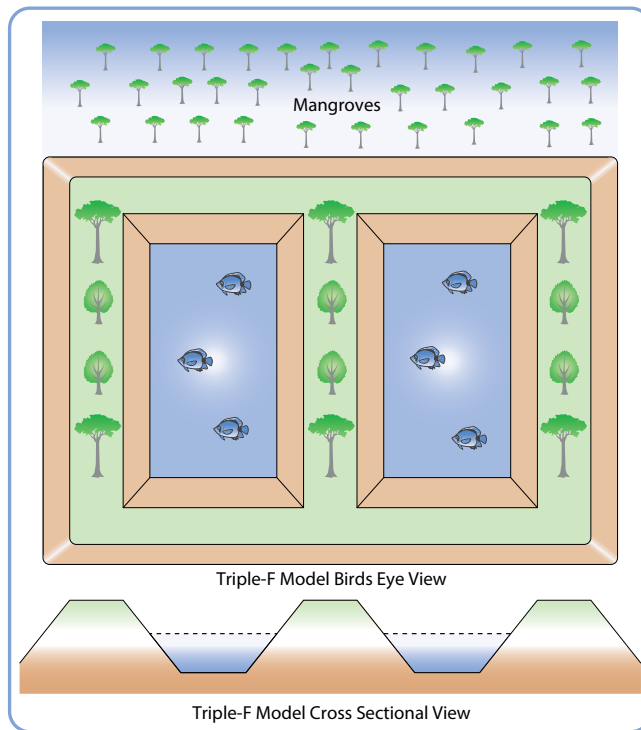
## 4.3 Case study: Drought in Kalu Woreda, Ethiopia<sup>111</sup>

### 4.3.1 THE CHALLENGE

Kalu woreda (district), in the South Wollo Zone of Ethiopia, is classified as a drought-prone district. The community primarily consists of subsistence farmers with average land holdings of less than 0.5 hectares under rainfed agriculture. As such, they are highly vulnerable to climate change impacts.

The Ethiopian government intended to address the recurrent drought and chronic food insecurity by linking food aid to land and ecosystem restoration in order to restore the productive capacity of rural communities.

**FIGURE 2** Triple-F Model cross-sectional view



Source: UNDP, Bangladesh.

### 4.3.2 THE ADAPTATION ACTION

Between 2009 and 2012, the government, along with the development partners, designed a program called the Productive Safety Net Program (PSNP) in order to adapt to the recurring drought incidences in Kalu woreda, Amhara Regional State. The goal of the project was to support the district in adapting to the long-term adverse effects of climate change, build adaptive capacity among rural poor people, and help reduce the threat climate change posed to people's livelihoods.

The project established an early warning system to increase local communities' access to weather information. It supplied drought-resistant, high-yielding, and short-season crop varieties to boost crop productivity. To address gender considerations, the project focused on agricultural interventions that targeted woman-headed households to promote asset creation as an adaptation mechanism. The project encouraged and promoted the use of alternative

energy and protection of watersheds through planting *Jatropha*, a plant whose bark, fruit and seeds are well suited for use in medicine and biodiesel production. Farmers and pastoralists outside the project sites also replicated the various activities to cope with drought.

### 4.3.3 CONCLUSION

The project underscored the importance of good governance in delivering successful CBA interventions. The project's success can in part be credited to effective government policy and strategy that promoted CBA at both the federal and local levels, and to local community members' positive attitude and commitment to transformation. The participatory, inclusive, gender-sensitive and adaptive management nature of the project was also an important factor in its success. By establishing community-based associations and supporting local-level adaptation activities, the local government helped enhance community members' adaptive capacity.

Barriers to this initiative included delays in purchasing due to a poor federal procurement system and the lack of technically skilled personnel to undertake project activities in the district's agricultural offices. The timely implementation of some activities was delayed due to some government staff's low commitment to managing the project and due to a time-consuming budget transfer system.

## 4.4 Case study: Establishment of the Community-based Glacier Monitoring and Early Warning System in Hunza Valley, Pakistan<sup>112</sup>

### 4.4.1 THE CHALLENGE

Glacial hazards have caused widespread damage to the adjoining villages of Hunza Valley, Pakistan. In particular, houses and shops in the villages face high risks because of potential glacier lake outburst floods (GLOFs). Moreover, since the Karakoram Highway passes through the region, a GLOF could result in huge economic losses and could adversely impact the lives and livelihoods of people living in these areas. To understand and reduce the risks resulting from GLOFs, the local and national governments of Pakistan, through the financial resources from the Adaptation Fund and UNDP, undertook a project entitled the Community-based Glacier Monitoring and Early Warning System Project from 2011 to 2015.

### 4.4.2 THE ADAPTATION ACTION

Building on the existing indigenous knowledge of the four villages in the Valley, the project trained the communities in monitoring the glaciers located in proximity to the villages, and piloted a community-based early warning system.

Glacier monitoring was carried out by villagers who were able to visit the glaciers on a monthly basis. For this, a group of volunteers was formed in each village and terms of reference were developed. The community watch group was trained in data collection and photographic documentation.

Thanks to the project's activities, communities were trained in risk assessment and GLOF preparedness; hotspot areas were identified within each community, and evacuation and preparedness protocols were established in the event of a GLOF; risk was reduced through structural mitigation measures; and community preparedness was improved, helping them to manage residual risk through early warning systems.

### 4.4.3 CONCLUSION

The project highlights several lessons for managing GLOF risks. The installation of an early warning system is cost-effective and could be replicated in other areas with potential GLOF risks. Also, establishing community hazard watch groups and equipping them with basic rescue tools and cameras enhanced the local community's capacity and awareness, and improved the community-based early warning system. Lastly, the trainings provided to the communities on annual GLOF management and response, and the delivery of emergency equipment, further enhanced the community's capacity and response mechanism, and increased their confidence in their ability to respond to future GLOF events.

While the difficult geographical terrain did produce logistical challenges in implementing the project, the community-based model tested by the project was still found to be highly relevant for potential replication in other countries in the region with similar GLOF risks.

## 4.5 Case study: Clifton to Tangoio Coastal Hazards Strategy 2120, Hawke's Bay, New Zealand<sup>113</sup>

### 4.5.1 THE CHALLENGE

New Zealand has a high exposure to coastal hazards, with around 65 percent of the population living within 5 km of the coast. The Hawke's Bay region has a population of 164,000 (as of June 2017) and is renowned for its beaches, warm climate, art deco architecture, and wineries. However, storms, coastal erosion, and inundation along the Hawke's Bay coastline (see Figure 4) cause damage to property and threaten people's safety and well-being (see Figure 5). Over the next 100 years, the potential economic losses from coastal erosion and inundation within the strategy area could run into the hundreds of millions of dollars. In addition, the social, cultural and ecological effects of this damage will be significant: a valuation (estimated monetary value) of the social outcomes that would occur if there were no human intervention to address coastal hazards (using Social Return on Investment methodology) found these costs to be in the order of USD 7 million over the next five to 10 years.



**FIGURE 3****Location map of ICIMOD project area**

Source: Aga Khan Agency for Habitat, Pakistan.

#### 4.5.2 THE ADAPTATION ACTION

Initiated in 2014, the Clifton to Tangoio Coastal Hazards Strategy 2120 was developed to respond to these challenges. The project was led by the Hawke's Bay Regional Council, Hastings District Council and Napier City Council, and in partnership with the Tangata Whenua local Indigenous people. Project governance was provided by a joint committee of elected officials, supported by technical staff from each council.

Community members, the Tangata Whenua, businesses, asset managers, and recreational representatives took part in a year-long process of workshops and decision-making that followed the Dynamic Adaptive Planning Pathways approach to reach a set of agreed-upon adaptation solutions. Recommended pathways include some form of coastal defense structures for the short to medium term, with managed retreat recommended as a long-term option in some places. The adaptive pathways approach is now being followed by other councils around New Zealand.

#### 4.5.3 CONCLUSION

This case study shows that transparent and participatory approaches, which allow for collaboration among community members and other stakeholders, are essential for long-term adaptation planning. The Hawke's Bay community is working collaboratively alongside local councils and technical advisors to make long-term decisions on complex and uncertain coastal hazard risk issues. The process allows for open conversations and the free and frank exchange of information in order to successfully integrate local experience, cultural knowledge, and technical expertise.

Some of the challenging issues dealt with included the difficulty of defining and costing managed retreat, understanding and responding to the uncertainty associated with long planning horizons, and translating complex technical information into relatable and actionable pathways.

**FIGURE 4**

The coastline north of Napier, Hawke's Bay



Source: Robin Cranford Photography.

**FIGURE 5**

Houses damaged by high swells, Haumoana, Hawke's Bay



Source: Tim Whittaker Photography.

## 5. Vision for the Future of Local Action and Community-Based Adaptation

The content of this section is based on consultations with linkages to existing evidence from literature, especially on adaptation barriers and enablers. The section proposes a vision that is built from three questions: Where are we now with respect to local action and community-based adaptation? Where do we want to go? How do we get there?

### 5.1 Where we are

Our review of evidence and consultations indicates that adaptation interventions are mainly project-based and often externally driven; they seldom guarantee local leadership in decision-making processes.<sup>114</sup> The projects are often short-term and sector-focused, and they rarely allow the time to build communities' skills; as a result, they fail to build long-term capabilities.<sup>115</sup> Local governments and grassroots community organizations lack the ability to meet the stringent procedure and technical capacity requirements for accessing adaptation financing.<sup>116</sup> In addition, there is limited or no coordination and communication among players in the local and community-based adaptation

landscape, which in turn limits the effectiveness of local actions and CBA.

Except for few far and wide examples, current planning processes are largely based on top-down models, which hinder participation and the effective use of indigenous or local knowledge. This limits the possibility of implementing local actions and CBA in a way that is effective, gender-inclusive and equitable. There is minimal reporting on or knowledge-sharing about adaptation interventions among socio-economically disadvantaged groups including the most vulnerable, especially uneducated women and elderly people.<sup>117</sup> Failure to bring together experiential knowledge in a holistic and inclusive manner hinders the process of realizing the full potential of community empowerment and leadership for planning and coping with the impacts of climate change.<sup>118</sup>

Despite a growing appreciation for the importance of strengthening the role of local-level actors in adaptation leadership and decision-making, international commitments have yet to effectively channel substantial adaptation financing to the local and community levels. A recent estimate indicated that between 2003 and 2016, less than 10 percent of international climate funds were channeled to local climate response actions.<sup>119</sup> This low percent-

age was attributed to several factors, including lack of financial intermediaries, risk-averse behavior on the part of funders, failure to attract co-financing from national governments, complicated procedures to access financing, and investment strategies that prioritize bankable projects over services to local communities. During the thirteenth Community Based Adaptation conference (CBA13) in 2019, participants indicated that the failure to direct significant climate funds to the local level likely encourages the top-down, centralized interventions that may favor the interests of more powerful stakeholders without bringing real benefits to the most vulnerable communities.

## 5.2 Where we want to go and how do we get there?

This sub-section is informed by the current state of knowledge and the views obtained from consultations during CBA13.

The aim of local action and CBA interventions should be to build self-reliant communities that are resilient and entrepreneurial. Such communities should be able to use their knowledge of climate risk and leverage their partnership with a wide range of stakeholders to influence decision-making, including decision-making about the allocation of resources. Local action and CBA interventions should also be locally led, whereby community members and local-level actors own decision-making. This will require communities to have increased capacity to generate and manage climate information, and to control and own resources. It will also require transformative policies and procedures to promote the integration of local concerns on climate risks into planning and resource allocation processes so that community priorities are at the center of resilient development programming at the subnational and national levels.<sup>120</sup> More efforts will be required for adaptation initiatives to consider different aspects of individuals' well-being<sup>121</sup>, going beyond the material, as well as their aspirations and how these are changing over time.

Achieving the desired future of scaled-up, community-led local action and CBA will require attention to four factors: institutions and governance, resources and financing, capacity-building, knowledge systems and innovations.

### 5.2.1 INSTITUTIONS AND GOVERNANCE

The integration of locally led and CBA processes into local development planning processes can improve development outcomes by ensuring that solutions prioritized by local governments and communities are locally relevant, technically feasible, and socially acceptable. This requires strengthening governance at all levels and strengthening local institutions that are accountable to the communities. Community-based organizations and local governments will require strengthened capacity to improve their management, governance, and transparency. Government agencies, universities, and intermediate and regional entities focused on capacity-building are institutions that could provide training and support. Such training, however, should not be seen as uni-directional, but should build on local, experiential and traditional knowledge, enabling an exchange and two-way learning process for all those involved, thus paving the way for more collaborative solutions and approaches.<sup>122</sup>

Adaptation efforts that have not considered existing practices and experiential knowledge in planning are unable to bring about leadership or meaningful engagement of communities, and so have been futile.<sup>123</sup> A better future for local action and community-based adaptation calls for the effective participation of community members by enabling a two-way flow of information, supporting them (legally, financially, technically, institutionally) in developing solutions, and in being able to engage with and influence public decision-making. It goes without saying that for this to happen, decision and policymakers will also need capacity building on how to better engage with local actors and realities. Multi-stakeholder processes that are cross-sectoral, bridge formal and customary divides, and appreciate existing capacities and aspirations are needed.<sup>124</sup> These efforts should focus especially on the most marginalized, with a specific effort to understand who these are<sup>125</sup> (e.g. women, children, people with disabilities, and other disadvantaged groups), including in project and program implementation. This requires the integration of local knowledge with other knowledge systems.<sup>126</sup> Interventions must be conscious of equity and social justice concerns, avoid elite capture and ensure that project goals and outcomes do not further marginalize and exclude vulnerable individuals and groups. Supportive structures and processes must be created to enable community members to provide input, ideas and feedback, and which are accountable, respon-

sive and responsible. In this regard, local leadership and local processes that support good governance are critical in empowering communities to deal with climate impacts and risks while facilitating long-term and transformative socio-ecological change.

### 5.2.2 RESOURCES AND FINANCING

To successfully scale up local action and CBA initiatives into national and global planning, sufficient investment must be committed over a longer time frame, beyond the current pilot project-based financing, and must be allocated in ways that allow for well-informed and flexible decision-making at the lowest possible level. This requires financial intermediaries who can commit early start-up finance or support community-based organizations in responding to local-level adaptation needs and priorities. Development partners will need to support adaptation initiatives to advance devolved funding mechanisms in ways that create a clear roadmap and concrete goals for getting funding to local and community-based actions.<sup>127</sup> The following strategies are suggested to improve the flow of funds to the local level:

- Identify credible and innovative intermediate institutions with a track record of working with communities and community-level organizations to facilitate the decentralization of funds in collaboration with local governments.
- Establish clear rules of engagement by which funders and partners must support local institutions by enhancing their capacity to access and manage financing independently.
- Push global funds to be more flexible on co-financing, and more willing to take risks to support innovative financial instruments and use frameworks that bolster local-level results.
- Enhance collaboration among community members, development partners, local and national governments, and NGOs to design mechanisms for managing climate finance in ways that are focused on community needs and priorities.
- Use technology to enhance the transparency of funding flows and to empower communities by including provisions for incorporating their voices into resource allocation and into intervention design and implementation.

### 5.2.3 CAPACITY BUILDING

To improve outcomes and scale up local and CBA actions, we must strengthen communities' capacity to plan, implement, monitor, evaluate, and learn from the adaptation process. And it is not only about technical capacities, but also institutional (e.g. creation of supportive policy environment), social (e.g. creation of networks), informational (e.g. ability to understand climate information), financial (e.g. access to credits) and natural capacity (e.g. access to productive assets).<sup>128</sup> It is also essential to disseminate and communicate information about local experiences to encourage peer learning and inspire further action. With regard to promoting local action and enabling communities to be resilient, we must enhance the knowledge and skills of the people involved in program design and implementation. Knowledge- and skill-building should enhance community members' opportunities to learn more about local-level work and CBA. In addition, local knowledge and experiences should form the starting point and be integrated into the design and implementation of CBA interventions.

Capacity-building for youth and children is fundamental for long-term and sustainable resilience. This means integrating climate change issues into formal education curricula, specialized training programs, workshops tailored to the local environment and conditions, and more strongly engaging key stakeholders. In these ways, we can build awareness, knowledge, and skills for forward-looking climate change responses. Better-informed children and youth will be able to provide long-term leadership when it comes to promoting innovations and engaging communities to address climate change.

Due to their global role in producing new knowledge and acting as innovation and learning hubs, universities will be critical in building the sustainable and long-term capacity needed at the local and community levels. Universities should develop strong trusting partnerships with community-based organizations (CBOs) and organizations working with local governments to create and manage knowledge. This will be key to influencing policy direction, planning, and practice through effective knowledge-brokering. Cross-scale learning for capacity-building will benefit from networks such as the Least Developed Countries Universities Consortium on Climate Change (LUCCC), whose purpose is to build a collaborative network for sharing knowledge in ways that strengthen the institutionalization of capacity-building efforts.

## 5.2.4 INFORMATION, KNOWLEDGE SYSTEMS AND INNOVATIONS

Due to the multitude of uncertainties associated with climate change, it is imperative for all stakeholders to be involved in the co-creation and co-sharing of information needed for responsive planning and decision-making. To fully enable the people most at risk, systems must recognize human adaptation needs, human behavior, well-being<sup>129</sup> and aspirations<sup>130</sup>, and involve local participation from both women and men. People-centered and people-driven risk management information should be incorporated into national, sub-national and local planning to help build climate resilience.<sup>131</sup>

Knowledge contributes to adaptive capacity, and so must be mobilized and translated to enhance resilience. This goes beyond the mere possession of information. Here, we are talking about using knowledge derived from either formal education or indigenous ways of knowing to develop an evidence base about the likely future impacts of climate change and to create the necessary strategies for adaptation. As such, establishing knowledge systems that serve as repositories of institutional history and learning can facilitate decision-making and enable individuals or groups to address the place-specific effects of climate change. Effective knowledge systems can help actors to adapt within the constraints imposed by limited resources and power.

In addition to information and knowledge systems, adaptation and resilience are also dependent on innovations. Innovations are central to efforts that encourage both economic growth and social development in rural and urban areas. Through the use of innovations, communities at risk can ably manage climate risks and thrive.<sup>132</sup> Innovations in climate resilience may include changing practices (e.g., technology development, such as climate-smart agriculture), economic innovations (e.g., a steady and predictable flow of financing focused on long-term project success; credit access and savings schemes), and social innovations (e.g., participatory planning, and access to and integration of climate information). Technological innovations must take social justice and equity into consideration to ensure that marginalized communities benefit from them. Government policies and regulations (e.g., subsidies and tax exemptions) can also play an important role in creating (or blocking) an enabling environment for innovations tailored to local and CBA actions in response to climate change.

## Conclusion

Climate risk is increasing and affecting millions of people's lives and livelihoods, especially vulnerable populations living in poverty. Evidence shows that local communities in both rural and urban areas are taking possible actions to adapt to risks by employing various structural and non-structural solutions. Some of the solutions are based on local understanding and knowledge of hazards and vulnerabilities, rooted within wider local development priorities. As such, they are cost-effective and socially accepted. However, in most cases, these initiatives have yet to be scaled up or out. With limited time available to address growing climate risks, long-term commitment and real ambition is needed to scale up local-level and community-based adaptation.

Local action and community-based adaptation is process-oriented and requires time, especially to develop or strengthen trusting relationships among a range of stakeholders at different levels and across multiple sectors that are needed for them to succeed. Thus, support is needed in all phases of the adaptation process: visioning, planning, implementation, and monitoring, evaluation and learning. While significant progress has been made in many countries in advancing adaptation planning by adopting participatory approaches, a crucial gap remains in aligning such planning with longer-term visioning and with government (especially local government) planning processes. Such alignment is critical both for ensuring that resources are available to implement the plans and for facilitating linkages between local and the higher tiers of solutions. This is particularly so for solutions required to address the systemic and structural issues that entrench vulnerabilities and prevent resilience from being built. Countries pursuing decentralization processes can provide great opportunities to institutionalize such bottom-up, cross-sectoral adaptation planning, which will allow poor and marginalized populations to truly participate in decision-making processes.

This paper discusses the gap between planning and the implementation of planned actions to achieve resilient places and communities all over the world. This is partly due to the lack of technical and financial resources available at the local and community level, and partly due to the lack of a longer-term programming approach required for successful adaptation that addresses governance and institutional disconnects, and limited capacities. However, the

implementation gaps can be overcome and scaled up by aligning local adaptation measures closely with local pro-poor development measures across different sectors, such as agriculture, rural development, social protection, natural resources management, forestry, urban development, water resources management, and financial inclusion, among others. Opportunities to grow private-sector investments should be tapped in order to support adaptation at the local level. This will require flexible institutional and policy arrangements to open up opportunities for private-sector actors to participate. Longer-term engagement will also make it possible to implement robust systems for monitoring and evaluation, which are critical for iterative learning processes.

Certain key factors can enable the scaling-up of local actions and community-based adaptation measures. These include:

- investing in longer-term strategies for strengthening a range of capacities (e.g. technical, institutional, social) at the local level;

- designing financing mechanisms that allow resources to reach the local level in a flexible manner;
- embedding adaptation considerations within decentralization planning and within broader government and institutional reforms;
- improving the availability and accessibility of climate information to local stakeholders while taking local knowledge into consideration;
- proactively exploring the market opportunities that make CBA sustainable; and
- putting in place systematic monitoring and evaluation systems to understand the effectiveness of adaptation initiatives and facilitate learning.

Unlocking these enablers will require leadership from national governments, capacity building and empowerment of local governments, longer-term support from multilateral and bilateral agencies, engagement from the private sector, and continued partnership with civil society organizations and academia.

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## ABOUT THE GLOBAL COMMISSION ON ADAPTATION

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