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# Opportunities and options for enhancing adaptation planning in relation to vulnerable ecosystems, communities and groups

## Technical paper by the secretariat

*Summary*

This technical paper explores opportunities and options for, as well as barriers to, enhancing adaptation planning in relation to vulnerable ecosystems, communities and groups. It draws primarily on the discussions among Parties and non-Party stakeholders held at the technical expert meeting on adaptation that took place on 9 and 10 May 2018 in Bonn in conjunction with the first part of the forty-eighth sessions of the subsidiary bodies as well as the discussions held at the various regional technical expert meetings. The paper presents case studies and other information on links among vulnerable ecosystems, groups and communities and the challenges associated with integrating them into adaptation planning and action with a view to identifying concrete opportunities for strengthening resilience, reducing vulnerability and increasing understanding and implementation of adaptation in the context of enhancing pre-2020 action.

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# Abbreviations and acronyms

| | |
|---|---|
| AC | Adaptation Committee |
| BSR | Business for Social Responsibility |
| CbA | community-based adaptation |
| COP | Conference of the Parties |
| CTCN | Climate Technology Centre and Network |
| DRR | disaster risk reduction |
| EbA | ecosystem-based adaptation |
| GCF | Green Climate Fund |
| NAP | national adaptation plan |
| NGO | non-governmental organization |
| TEM | technical expert meeting |
| TEM-A | technical expert meeting on adaptation |
| TEP | technical examination process |
| TEP-A | technical examination process on adaptation |

# I. Introduction

1. This technical paper explores opportunities and options for, as well as barriers to, adaptation planning, with special consideration of vulnerable groups, communities and ecosystems. It draws primarily on the discussions held at the 2018 TEM-A, which took place on 9 and 10 May 2018 in Bonn in conjunction with the first part of the forty-eighth sessions of the subsidiary bodies, and the discussions held at regional technical expert meetings throughout 2018.[1]

## A. Mandate for the technical examination process on adaptation

2. COP 21 requested the secretariat to prepare annually a technical paper on opportunities to enhance adaptation action and options for supporting its implementation and to base it on the TEM-A organized as part of the 2016–2020 TEP-A.[2]

3. The TEP-A was launched to identify concrete opportunities for strengthening resilience, reducing vulnerability and increasing understanding and implementation of adaptation in the context of enhancing pre-2020 action. It seeks to:

(a) Facilitate the sharing of good practices, experience and lessons learned;

(b) Identify actions that could significantly enhance the implementation of adaptation, including actions that could enhance economic diversification and have mitigation co-benefits;

(c) Promote cooperative action on adaptation;

(d) Identify opportunities to strengthen enabling environments and enhance the provision of support for adaptation in the context of specific policies, practices and actions.[3]

4. The TEP-A is jointly organized by the Subsidiary Body for Scientific and Technological Advice and the Subsidiary Body for Implementation and conducted by the AC.[4] It enables relevant discussions among Parties and non-Party stakeholders, including at the TEMs, with a view to facilitating the implementation of adaptation action in a coherent manner.

5. COP 23 conducted an assessment of the TEP-A, which resulted in several requests, including for the AC to include in its annual report to the COP recommendations on ways forward and necessary actions to be taken based on the outcomes of the TEMs. COP 23 invited expert organizations to volunteer, through the secretariat, to lead the organization of relevant TEMs and to conclude them with a session for proposing ways forward and necessary actions for inclusion in the relevant technical papers and subsequent summaries for policymakers. It also invited expert organizations, constituted bodies under the Convention and non-Party stakeholders to enhance their engagement in the TEP-A, to organize regional TEMs and to provide reports thereon to the secretariat as input to the TEP-A.[5]

## B. Overview of the 2018 technical examination process on adaptation

6. The 2018 TEP-A focused on adaptation planning in relation to vulnerable communities, groups and ecosystems. At the first three sessions of the 2018 TEM-A adaptation planning was discussed, whereas the fourth and fifth sessions addressed how to enable that planning and how to support the implementation of adaptation through finance, technology and capacity-building. The focus throughout was on showcasing good practices,

[1] http://tep-a.org/regional-technical-expert-meetings-on-adaptation/.
[2] Decision 1/CP.21, paragraph 129(b).
[3] Decision 1/CP.21, paragraphs 125 and 127.
[4] Decision 1/CP.21, paragraph 126.
[5] See decision 13/CP.23.

approaches and experience in relation to local adaptation planning that has benefited vulnerable communities, groups and ecosystems, conveying how these practices, approaches and experiences contribute to national policies, and identifying barriers to the successful implementation of local adaptation practices.

7. The organizations leading the individual sessions of the TEM-A were the United Nations Environment Programme, the International Federation of Red Cross and Red Crescent Societies, BSR, the CTCN and the GCF.[6]

8. A number of key findings emerged from the regional TEM-As held in 2018 in Japan, the Republic of Korea, Singapore, the United Arab Emirates and Uruguay, including the need for adaptation to be planned and implemented on different scales (long, medium and short term) and across different levels and sectors. The importance of integrating new knowledge into adaptation planning was also noted, acknowledging that adaptation processes should be cyclical and iterative, integrate the best available knowledge, include monitoring of implementation and results, and improve based on ongoing learning.

## C. Objective, scope and structure of the paper

9. The objective of this paper is to identify opportunities and options for, as well as barriers to, enhancing adaptation planning and mechanisms to support the implementation of both policy and non-policy options, with special consideration of vulnerable groups, communities and ecosystems. Inspiration should be drawn from good practices and lessons learned to improve adaptation planning and implementation with a view to identifying concrete opportunities for strengthening resilience, reducing vulnerability and increasing understanding and implementation of adaptation in the context of enhancing pre-2020 action.

10. The paper provides an overview of the specific strategies, policies and actions presented at the 2018 TEM-A but does not imply consensus among Parties and non-Party stakeholders on the content discussed.

11. Chapter I provides an introduction, including key messages. Chapter II contains information on adaptation planning in relation to vulnerable ecosystems, communities and groups, as well as on technology, finance and capacity-building – three necessary means for pursuing adaptation and for the transition from planning to implementation. Chapters III and IV address relevant challenges and opportunities, respectively. Lastly, chapter V concludes the paper by providing recommendations.

## D. Key messages

12. **Adaptation planning should be a participatory process**. Facilitating participatory processes is not easy but such processes are necessary. Engaging with the public and private sector, civil society and NGOs, research institutes and universities through partnerships allows policymakers to gain crucial local knowledge in order to understand all perspectives and their synergies, thus facilitating the joint identification of more suitable adaptation plans. Furthermore, participatory processes are more likely to illicit beneficial behavioural and practical change at the individual level; they contribute to establishing the necessary buy-in to ensure the continuation of activities after a project has terminated; and, moreover, they increase the chance of stakeholders taking ownership of and implementing adaptation measures.

13. It is important to recognize the **synergy that exists between local, subnational and national policies vis-à-vis adaptation**. Adaptation is an iterative process in which local decisions have the potential to shape future national planning, while national systems often guide local decisions and projects. It is important for local work to inform national processes. Harmonized local and national policies are more likely to yield cohesive and effective adaptation plans.

[6] In accordance with decision 13/CP.23, paragraphs 7 and 8(a–c).

14. **Intersectoral approaches** are regarded as fundamental to ensuring that adaptation plans and programmes are sustainable and supported by the respective sectors.

15. **Ecosystem-based planning approaches** can be cheaper and more effective than hard infrastructure measures for adaptation and can deliver additional benefits for people and conservation. EbA can complement 'grey' or 'infrastructural' approaches.

16. Integrating **gender perspectives** into planning frameworks involves the consideration of comprehensive elements such as where people live, what resources they have access to, and their ethnicity, decision-making power and rights.

17. **Adaptation planning processes are not an end in themselves** but a means to catalyse action and investment at the local and national level. Effective planning not only provides the opportunity to identify the most vulnerable groups, communities and ecosystems, as well as associated needs and concrete policy options, but also enables capacity-building, helps to establish buy-in and contributes to the effective implementation of adaptation measures.

18. Adaptation planning is strongly **linked to sustainable development and DRR**, as enhancing resilience to climatic risks also enhances the sustainability of socioeconomic systems.

19. **Capacity-building is needed for long-term planning**, which requires investment across the spectrum from the individual, through the institutional, to the national scale.

# II. Adaptation planning in relation to vulnerable ecosystems, communities and groups

20. Article 7 of the Paris Agreement, which established the global goal on adaptation, recognizes the importance of the inclusion of vulnerable groups, communities and ecosystems in adaptation planning, and the use of, as appropriate, traditional knowledge, knowledge of indigenous peoples and local knowledge systems with a view to integrating adaptation into relevant socioeconomic and environmental policies and actions, where appropriate.

21. Climate change affects ecosystems, their functions and the many benefits and services that they provide to people, including the ability of ecosystems to regulate water flows and cycle nutrients. As these services erode, the impacts are being felt by people, communities and economies throughout the world. Climate change puts further pressure on ecosystems and on the people already negatively affected by pollution, deforestation and land degradation.

22. Including biodiversity and ecosystem services in an overall adaptation strategy is known as an ecosystem-based approach to adaptation. The underlying principle is that healthy ecosystems play a vital role in maintaining and increasing resilience to climate change and in reducing climate-related risk and vulnerability.

23. Addressing vulnerable communities and groups is crucial to effective adaptation planning. In many regions, women, indigenous peoples and other marginalized groups, among others, lack the agency and resources to fully participate in adaptation planning, even though they are critical to the implementation of adaptation measures.

## A. Adaptation planning for vulnerable ecosystems

24. Ensuring healthy ecosystems is already an integral part of many adaptation strategies. At the 2018 TEM-A the advantages of ecosystem management were recognized, as was the way it can contribute to adaptation to climate change. Various matters were addressed in the discussions, including the link between EbA and DRR (see box 1), the aesthetic aspect of ecosystem services, the socioeconomic benefits of EbA and the integration of ecosystem- and community-based approaches to adaptation (see box 2).

25. Both mitigation and adaptation opportunities exist in relation to ecosystem services. Healthy ecosystems offer mitigation co-benefits, such as the sequestration and storage of carbon in healthy forests, wetlands and coastal ecosystems; and projects aimed at mitigating emissions while increasing the resilience of communities and ecosystems can also lead to other desired outcomes.

26. Healthy ecosystems are more resilient to climate-related events and play a role in DRR as well as in increasing people's resilience to such events. Wetlands, mangroves and coastal areas were identified because they act as natural protective buffers and reduce the impact of climate-related events such as floods and hurricanes.

Box 1
**Impact of the 2004 tsunami on the coral reefs in Sri Lanka**

The damage caused by the 2004 tsunami to the coral reefs in Sri Lanka varied across the country and within reef sites. Some reefs on the east and north-east coasts were severely damaged, whereas those on the north-west coast remained undamaged.[a] Also, within small coral reef zones, in Peraliya, for example, the damage extended 1.5 km inland, while in nearby Hikkaduwa, where offshore coral reefs are protected in a marine park, the damage extended just 50 m inland.[b]

[a] Global Coral Reef Monitoring Network. 2006. *Status of Coral Reefs in Tsunami Affected Countries: 2005.* C Wilkinson, D Souter and J Goldberg (eds.). Townsville, Australia: Australian Institute of Marine Science. Available at https://researchonline.jcu.edu.au/24191/1/scr_tac2005_low.pdf.

[b] See https://www.ramsar.org/sites/default/files/documents/library/wwd2017_handout1_e.pdf.

27. Additionally, the less material benefits of ecosystem services, beyond food, water and clean air, were discussed, including aesthetics and cultural value. The importance of the non-material benefits that ecosystems offer people, such as inspiration, aesthetic value, social relations and a sense of place, was recognized. It was highlighted that, if EbA were to be implemented, the multiple uses of ecosystem services should be considered.

28. EbA contributes to the restoration of ecosystems and biodiversity and delivers socioeconomic benefits. Successful EbA requires the engagement of local people whose livelihoods depend on the ecosystems, and focuses on maintaining and enhancing ecosystem services. This approach may be especially relevant to the least developed countries and small island developing States, which tend to rely heavily on ecological resources.

29. EbA tends to be cost-effective because it utilizes the existing ecosystem services and is generally less costly than built infrastructure. EbA can also complement 'grey' or 'infrastructural' approaches.[7] However, despite the success of ecosystem-based solutions at the site level, scaling up has proven difficult.

Box 2
**Framework for the integration of ecosystem- and community-based approaches to adaptation**

CARE International, the World Wide Fund for Nature and the International Union for Conservation of Nature have jointly developed a framework for the integration of ecosystem- and community-based approaches to adaptation that empowers local communities to manage ecosystems under resilient governance arrangements to provide the ecosystem services on which they depend.[a] The International Centre for Integrated Mountain Development is implementing an EbA project in four basins of the Hindu Kush Himalayas to improve understanding of climate change impacts and associated changes in ecosystems, which will enable research institutions, governments and civil society organizations to develop interventions to enhance ecosystem resilience.[b]

[a] *Source*: http://cmsdata.iucn.org/downloads/a_eba_integratedapproach_15_04_12_0.pdf.

[b] See document FCCC/SBSTA/2014/4, paragraph 27.

[7] At the Asia-Pacific regional TEM-A, co-organized by the Asian Development Bank (ADB) in Manila from 17 to 19 October 2018, for the sixth Asia-Pacific Climate Change Adaptation Forum, it was noted that EbA needs to be used in conjunction with other solutions, in grey-green approaches.

## B. Adaptation planning for vulnerable communities

30. CbA is a bottom-up planning approach. It is a community-led process, based on communities' priorities, needs, knowledge and capacities, to empower people to plan for and cope with the impacts of climate change.[8] CbA emphasizes the importance of engaging local communities, especially vulnerable groups and people, in the adaptation process. It is in part a response to criticism that previous adaptation policies were carried out in a top-down manner, without taking into account the priorities, needs, existing knowledge and capacity of the people who are in the community and benefiting from the adaptation action. CbA responds to the needs of vulnerable people through a decentralized, inclusive, participatory approach that enables local and community perspectives to be integrated into adaptation planning.

31. Climate change severely affects the living conditions of poor people who do not have the option of moving away from geographically vulnerable areas. Moreover, the livelihoods of many poor people heavily depend on natural resources, such that climate impacts on ecosystems, including loss of biodiversity, also impair their sources of income. The uncertainty associated with climate change further complicates the situation for vulnerable people who are already facing significant social and economic challenges and often have little influence on political decision-making. By taking an integrated approach to addressing the needs of local communities, and especially of vulnerable people, CbA strives to deliver benefits directly to those who might otherwise be left out of adaptation decision-making processes. Several examples were provided during the discussions at the 2018 TEM-A.

32. Lack of community knowledge of climate change and people's perception of risk were highlighted as areas that need to be addressed in climate change adaptation planning in the broader context of development. Partnerships with universities were identified as critical, because universities are the engine for knowledge production and can contribute significantly by providing data and human resources at the local level. The need for a participatory approach that integrates local knowledge into adaptation planning was underlined (see box 3). Furthermore, the need for an integrated approach that includes CbA and EbA and is also aligned with the United Nations Sustainable Development Goals and DRR was emphasized.

33. As an example of CbA, the city of The Hague in the Netherlands has worked with community organizations to establish an effective heatwave response plan through social solutions in neighbourhoods with heatwave hotspots, including creating common spaces and issuing announcements targeting vulnerable groups prior to and during heatwaves.

Box 3
**Botswana's adaptation strategy and participatory planning**

In Botswana, a participatory vulnerability and risk assessment that was conducted as part of the Adaptation at Scale in Semi-Arid Regions research project in 2015 led to the rethinking of adaptation priorities in the subdistrict of Bobirwa.[a] Moreover, the multi-stakeholder exercise attracted the attention of the national Government, which, in collaboration with the University of Botswana and Oxfam, organized country-wide training for district and economic planners from all of Botswana's districts in 2015.

This case demonstrates the value of having inclusive decision-making spaces when it comes to adaptation planning, both for marginalized groups – affording them a certain level of influence and power – and for decision makers, who benefit from a more enriched understanding of local and subnational issues and their link to national processes and priorities.

Regarding the 2015 subnational vulnerability and risk assessment, the senior planner commented that the findings would inform the district development plan and help to ensure that climate-related risks be addressed in the strategy.[b] Additionally, the acting

[8] International Institute for Environment and Development. 2009. *Participatory Learning and Action 60: Community-based adaptation to climate change*. H Reid, M Alam, R Berger, T Cannon, S Huq and A Milligan (eds.). London: International Institute for Environment and Development. Available at http://pubs.iied.org/pdfs/14573IIED.pdf.

Minister for Presidential Affairs, Governance and Public Administration said that the methodology made development planning participatory, representative and inclusive.

[a] See http://www.assar.uct.ac.za/news/vulnerability-and-risk-assessment-botswanas-bobirwa-sub-district.

[b] See http://www.assar.uct.ac.za/sites/default/files/image_tool/images/138/Spotlights/ASSAR%20Botswana%20Vulnerability%20and%20Risk%20Assessment%20Final.pdf.

## C. Adaptation planning for vulnerable groups

34. The full participation of vulnerable groups, with particular reference to indigenous peoples and women, in adaption planning, policymaking and implementation was identified as a key need at the 2018 TEM-A.

35. Local communities and indigenous peoples are disproportionately affected by climate change impacts because they rely on fragile ecosystems for their livelihoods. For example, forest ecosystems are a source of food and water for millions of people, and at the same time play a crucial role not only in adaptation but also in mitigation by regulating the climate and absorbing vast amounts of carbon dioxide.

36. Indigenous land rights and education are vital for preserving those carbon stocks by means of reducing deforestation, managing forests sustainably and restoring tree cover as part of productive rural economies. Ecosystem-based approaches have been practised to protect and enrich ecosystem services and increase carbon storage by restoring forests, wetlands and peatlands (see box 4).

Box 4
**Wildfire management in partnership with local Aboriginal people**

In order to reduce the frequency of devastating wildfires, the West Arnhem Land Fire Abatement project in Northern Australia has partnered with local Aboriginal people in implementing a prescribed fire management plan, working with indigenous fire managers who manage prescribed, early dry season burning in order to avoid disastrous wildfires in the late dry season. In addition to benefits such as reducing ecosystem degradation and protecting cultural sites of Aboriginal rock art, the project also has mitigation benefits, such as that early dry season fires are less emission intensive than late dry season fires. This case demonstrates that well-coordinated community- and ecosystem-centred approaches have both mitigation and adaptation co-benefits as well as multiple social and economic co-benefits, including job creation and cultural protection.

*Sources*: (1) Community-based fire management in Australia case study on the adaptation knowledge portal, see http://savanna.cdu.edu.au/information/arnhem_fire_project.html; (2) A Colls A, Ash N and Ikkala N. 2009. *Ecosystem-based Adaptation: A natural response to climate change*. Gland, Switzerland: International Union for Conservation of Nature. p.10. Available at https://cmsdata.iucn.org/downloads/iucn_eba_brochure.pdf.

37. The majority of the world's poor are women, who commonly face higher risks and greater burdens resulting from the impacts of climate change in situations of poverty. In the agriculture sector alone, women comprise about 43 per cent of the labour force in developing countries and globally, and are often paid less than men.[9]

38. Women's unequal participation in decision-making processes and labour markets compounds inequalities and often prevents women from fully contributing to climate-related planning and implementation. Gender inequality occurs in numerous ways – gender-based violence, restricted participation of women in politics, unpaid labour, limited access to resources and opportunities – and decreases women's capacity to adapt to the impacts of

[9] State of Food and Agriculture team and Doss C. 2011. *The role of women in agriculture*. Agricultural Development Economics Working Paper No. 11-02. Rome: Food and Agriculture Organization of the United Nations. Available at http://www.fao.org/docrep/013/am307e/am307e00.pdf.

climate change. Studies have shown that women are 14 times more likely to die or be injured due to a disaster than men.[10]

39. Yet women can (and do) play a critical role in the response to climate change thanks to their local knowledge and leadership in relation to, for example, sustainable resource management and practices at the household and community level. Women's participation at the political level has resulted in greater responsiveness to citizen's needs, often increasing cooperation across party and ethnic lines and delivering more sustainable peace. Women's leadership at the local level has improved the outcomes of climate-related projects and policies. In contrast, implementing policies or projects without women's meaningful participation can increase existing inequalities and decrease effectiveness (see box 5). Participants of the 2018 Asia-Pacific regional TEM-A deemed the integration of gender perspective into all aspects of adaptation action necessary for the reduction of the inequalities.

Box 5
**Business Action for Women**

Business Action for Women, a new initiative by BSR, aims to empower women to take the lead in the area of climate resilience by identifying opportunities and tools for them to communicate climate change impacts on business to company officials.
BSR is developing measures of women's empowerment across the value chain, using gender-disaggregated data, and combining gender data with climate change risk analysis of businesses in order to improve understanding of how climate change is affecting companies' labour force.

*Sources*: https://attend-emea.broadcast.skype.com/en-US/2a6c12ad-406a-4f33-b686-f78ff5822208/c7222afb-3451-410f-ac2a-2c0b783df1fb/player?cid=w6n5cntarzp4mvkuenn34u3xe3zd5nnnj3diuadj7izub6sgqljq&rid=EMEA and https://www.bsr.org/en/collaboration/groups/business-action-for-women.

## D. Enabling adaptation planning and support through finance, technology and capacity-building

40. Successful implementation of adaptation measures often requires large investment and technical support. Lack of financial resources and capacity to support adaptation initiatives and projects is a common challenge for many developing countries, and especially for the least developed countries, posing a barrier to planning, integrating, implementing and learning from adaptation efforts.

### 1. Finance

41. Some financial mechanisms have been put in place to provide support to developing country Parties with the aim of enhancing their adaptation to the adverse effects of climate change. The GCF, for example, is supporting countries in adaptation planning in a variety of ways, such as enhancing the linkage between national and local planning processes; increasing capacity for undertaking adaptation planning, including with regard to the use of climate data and information at the local level; and enhancing the climate rationale of potential investments as a result of the support provided for the formulation of NAPs and other adaptation planning.

42. In terms of progress thus far, the GCF, through its Readiness and Preparatory Support Programme, has facilitated support for NAPs. The Readiness Programme offers countries up to USD 3 million for formulating their NAPs or undertaking other country-driven adaptation planning processes. So far, 50 proposals have been submitted, 6 are in the final stages of approval and 14 have been fully approved. The remaining 30 proposals are working their way through to meeting the 10 review criteria for proposals,[11] developed based on guidance

[10] Neumayer E and Plümper T. 2007. The Gendered Nature of Natural Disasters: The Impact of Catastrophic Events on the Gender Gap in Life Expectancy, 1981–2002. *Annals of the Association of American Geographers*. 97(3): pp.551–566. Available at http://eprints.lse.ac.uk/3040/1/Gendered_nature_of_natural_disasters_%28LSERO%29.pdf.

[11] Data provided by the GCF representative at the TEM-A on 10 May 2018.

from the Least Developed Countries Expert Group and feedback from national designated authorities.

43. Countries should have a clear adaptation investment vision and strategy for each priority adaptation measure identified and can use GCF Readiness Programme grants to catalyse larger investments from both public and private funds. Moreover, the GCF recommends using an adaptation rationale as an effective way to show investors the thought process behind complex adaptation project ideas. In an adaptation rationale framework, the effects of a natural disaster, the vulnerabilities it creates, and the best available solutions are identified. It is crucial to use simple, jargon-free language when explaining the rationale. The examples of Antigua and Barbuda's finance strategy and Liberia's multisectoral approach with regard to the GCF Readiness Programme are provided in boxes 6 and 7.

Box 6
**Antigua and Barbuda's finance strategy**

On the basis of a cost–benefit analysis, Antigua and Barbuda allocates one third of funds to data collection (compiling an inventory of resources, downscaling its climate model), one third to sectoral, local community and private sector adaptation planning, and one third to technical assistance grants. Data collection and sharing are crucial to identifying where risks lie and to incentivizing the advancement of adaptation agendas. Before finalizing its NAP, Antigua and Barbuda wants to understand the cost of adaptation at a granular level. It is important for the adaptation financing strategy to align with the Government's medium-term debt reduction plan. Antigua and Barbuda recognizes the incremental costs associated with adaptation, such as for upgrading infrastructure and preparing key sectors (e.g. energy and transport) for change, but the cost–benefit analysis showed that such adaptation changes will yield numerous co-benefits and decrease the exposure of assets. Additionally, Antigua and Barbuda has projects for mainstreaming climate change in the financial sector through insurance, financial preparedness plans, and more, which is a great step towards deconstructing financial barriers and strengthening public–private partnerships.

*Source*: See http://tep-a.org/sessions/session-5-enabling-adaptation-planning-finance/.

Box 7
**Liberia's transition from adaptation planning to implementation**

Liberia started the NAP implementation process in early 2018, after its official launch in 2016. It is one of the first countries to transition from adaptation planning to implementation. Liberia has embraced a multi-sectoral approach including government ministries, private sector stakeholders, NGOs and academia. Crucially, Liberia has crafted a communication strategy in order to effectively inform the public about NAPs and their importance. It has also carried out a vulnerability assessment in order to prioritize adaptation projects. The transition from planning to implementation was partially catalysed by the GCF Readiness and Preparatory Support Programme, which it used to leverage larger investments from the public and private sector.

*Source*: See http://tep-a.org/sessions/session-5-enabling-adaptation-planning-finance/.

## 2. Technology

44. Climate change is projected to affect the flow of goods and services through urban areas, especially in coastal zones. The increase in extreme weather events and changes in the spread of diseases will increase exposure to risk in cities, with the most vulnerable communities and groups being most exposed. Ecosystem-based approaches using adaptation technology will be an important means of ensuring adequate access to basic goods and services in changing climatic conditions.

45. The UNFCCC defines the use of adaptation technology as "the application of technology in order to reduce the vulnerability, or enhance the resilience, of a natural or

human system to the impacts of climate change".[12] Applying technologies for adaptation appropriately is a complex process that requires the integration of multiple actions (such as accounting for diversity and maximizing co-benefits; promoting the employment, development and transfer of hard and soft technologies, including knowledge; and developing platforms for sharing knowledge and experience),[13] stakeholders and scales and the consideration of the particular political, economic, social and ecological context.

46. Regarding the integration of technology innovation into adaptation planning, discussions were held at the 2018 TEM-A on building resilience and reducing vulnerability to extreme weather events, covering case studies from the Netherlands (see box 8), Indonesia (see box 9), Colombia and Mauritius. Examples from developing countries and small island developing States highlighted the use of CTCN technical assistance in strengthening infrastructure and avoiding disruption during natural disasters.

Box 8
**Resilience strategy of Rotterdam, the Netherlands**

The city of Rotterdam has integrated technology innovation into its resilience strategy to render the city green, smart and resilient as part of the 100 Resilient Cities network. The common theme of the different initiatives is technology innovation. The cyber resilience initiative for the city and port will render key infrastructure, such as the water management system, less vulnerable to cyber threats, in addition to rendering the system more resilient to system failure during natural disasters.

*Source*: See http://tep-a.org/sessions/session-4-enabling-adaptation-planning-technology/.

Box 9
**Flood-risk management approach of Jakarta, Indonesia**

Flood-prone Jakarta is currently working with the CTCN to better assess flood risk, design climate-resilient pathways to reducing the magnitude and scale of flood impacts, and leverage ecosystems to reduce vulnerability to natural disasters in high-population areas. With CTCN technical assistance, a hydrodynamic model will aid Jakarta in evaluating different engineering interventions to reduce flood risk. However, it is important to accompany technology with social engagement and understanding. In this regard, the CTCN is carrying out sociocultural surveys to understand the locals' worries and perceptions related to flooding. Beyond that, technology workshops are being conducted to help locals understand how the model functions. These measures are being carried out to avoid economic disruption, maintain a reliable supply of food and water during natural disasters, and strengthen the capacity of national and urban planners in Jakarta to assess flood risk and hazards.

*Source*: See http://tep-a.org/sessions/session-4-enabling-adaptation-planning-technology.

### 3. Capacity-building

47. Capacity-building, particularly in developing countries, is critical for the implementation of adaptation strategies and associated action. This includes the institutional capacity to build policy frameworks, the human capacity to understand scientific knowledge, and the technology for planning and implementing adaptation measures (see box 10).

48. By decisions 2/CP.7 and 3/CP.7 initial capacity-building frameworks were adopted in 2001, within which countries continue to implement or enhance their capacity-building activities at the individual and institutional level. Their efforts are subject to annual monitoring and periodic review to assess progress in the implementation of the capacity-building frameworks.[14]

[12] FCCC/SBSTA/2005/8.
[13] TEC Brief #4. *Technologies for Adaptation in the Agriculture sector*. Available at http://unfccc.int/ttclear/tec/documents.html.
[14] See https://unfccc.int/topics/capacity-building/the-big-picture/capacity-building-overview#eq-3.

49. Although there was no individual session on capacity-building at the 2018 TEM-A, capacity-building was a recurring theme of all sessions to ensure that enabling environments do not reflect only technology and finance. All sessions included a discussion on strengthening capacity and engaging local and community representatives in decision-making processes related to climate change adaptation. The need to enhance the adaptive capacity of women by creating opportunities for businesses with agricultural supply chains, and to put women at the centre of holistic climate-resilient strategies was underscored.

Box 10
**Building local institutional capacity for planning in Grenada**

In the low-lying northern Telescope area of Grenada, coastal communities are highly vulnerable to the adverse effects of climate change, such as increased storm surges, sea level rise and heavy coastal erosion. The Deutsche Gesellschaft für Internationale Zusammenarbeit supported the establishment of the Northern Telescope Mangrove Management Board to build local institutional capacity, ensure project ownership by the community and facilitate the project's future replication at the national level by collaborating with government officials and taking into consideration the contributions of institutional stakeholders, NGOs and community stakeholders in the project's management. The Northern Telescope Mangrove Management Board aims to increase the health of surrounding mangrove forest in order to reduce vulnerability to climate change.

*Source*: See https://www.giz.de/en/downloads/ICCAS-2018-en-RECCOMM.pdf.

# III. Barriers and challenges to adaptation planning

## A. Stakeholder involvement

50. **Cross-sectoral and interministerial collaboration can be challenging for a number of reasons**. It is not always apparent how the activities of different ministries interrelate and coordination across institutions can be difficult. Various stakeholders, implementing partners, financiers and planners may have different ideas of how project implementation should proceed or what the project goals are.

51. **There is a lack of inclusion of women, and gender is rarely addressed in adaptation planning**. In spite of women's key role in food production, ensuring food and water security, and managing food shortages during and after climate-related disasters, there remains a low level of women's participation and influence in planning adaptation and shaping policy.

52. **Indigenous peoples and local communities are not participating fully in adaptation planning and implementation**. A recurrent problem is that many processes strive to undertake planning for vulnerable groups rather than with them. Engaging local communities through a participatory process from the beginning of the discussion on adaptation and throughout planning and implementation is important.

## B. Access to support

53. Financial resources and technical support are central to planning, implementing, maintaining and evaluating activities to advance adaptation. Developing country Parties require international finance, technology transfer and capacity-building support for pursuing their adaptation agendas.

54. Financing EbA was identified as challenging at the 2018 Asia-Pacific regional TEM-A. Despite examples of projects that support the implementation of EbA, the participants highlighted the challenges of justifying and prioritizing investment and emphasized the need for strong collaboration across sectors on replicating and upscaling projects.

### C. Ecosystem-based adaptation

55. Challenges in implementing EbA relate to:

(a) The differing application of EbA in urban contexts from rural areas. Many climate change risks are concentrated in urban areas and hamper economic development. The role of EbA as it relates to urban infrastructure systems and essential services, such as water and energy supply, sanitation, drainage, transportation and telecommunication, is poorly understood;[15]

(b) The lack of technical guidance and business incentives for implementation of EbA, particularly in urban contexts;

(c) The issue of transboundary coordination as it relates to managing ecosystems that cross national boundaries (e.g. the management of water resources along a river that traverses multiple countries, where a project to secure water or generate renewable energy in one country has negative impacts, including ecosystem impacts, in another);

(d) The need to enhance the confidence and trust of local communities in government, especially in the light of their limited capacity to participate in policy-setting, which acts as a barrier to the effective implementation of EbA.

## IV. Opportunities to enhance adaptation

### A. Enhance stakeholder involvement

56. Many Parties have successfully coordinated the complex set of actors involved in adaptation and sustainable development. For example, to reduce vulnerability, with a focus on vulnerable communities, Uruguay has ambitious plans for reviving public infrastructure, the finance sector, and urban and land-use planning. To accomplish its ambitious plans, Uruguay is working with funders, the private sector and other countries using a multi-stakeholder approach.

57. To ensure the full participation of women in the process of adaptation decision-making, planning and implementation, there is a need to engage men in activities that help to address the factors underlying gender inequality and discrimination.

58. To be more inclusive of vulnerable groups and communities, including indigenous peoples, it is helpful to modify the narrative and, instead of portraying vulnerable groups as victims, to consider them as agents of change and opportunity for adaptation.

59. Discussions at the 2018 Asia-Pacific regional TEM-A identified that bottom-up approaches involving all stakeholders are essential to developing resilient infrastructure and that community engagement and the involvement of businesses can trigger the change process.

60. At the 2018 regional TEM-A for Latin America and the Caribbean, it was noted that the region would benefit from further regional TEM-As. Participants emphasized the need for enhanced regional collaboration and a dedicated space for sharing knowledge and identifying opportunities. TEM-As are innovative in terms of their design and the strong collaboration between Parties and non-Party stakeholders and can continue to provide a platform for different actors to share knowledge and mobilize adaptation action.

[15] Revi A, Satterthwaite DE, Aragón-Durand F, Corfee-Morlot J, Kiunsi RBR, Pelling M, Roberts DC and Solecki W. 2014. Urban areas. *In*: CB Field, VR Barros, DJ Dokken and KJ Mach (eds.). *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge, United Kingdom, and New York, the United States of America: Cambridge University Press. Available at https://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap8_FINAL.pdf.

## B. Improve access to support

61. Some financial institutions and supporting agencies made suggestions on facilitating access to support for adaptation:

(a) **More comprehensive funding proposals yield more comprehensive risk management**. To acquire funding, proposed adaptation measures must be actionable and robust. To craft such measures, risk analysis and management need to be conducted to identify and prioritize actions. Cost–benefit analysis and clear selection criteria can expedite approval;

(b) **Multi-stakeholder proposals have a higher chance of approval**. The funding process can lay the foundation for more inclusive participatory planning. As competition for funding increases, proposals with a higher level of multi-stakeholder buy-in are more likely to come out on top;

(c) The Adaptation Fund and the European Investment Bank highlighted the importance of leveraging the **NAP process as a mechanism for crafting proposals** and an opportunity to catalyse investment.

## C. Apply ecosystem-based adaptation

62. When implementing EbA it is important to build on existing natural infrastructure. Potential co-benefits include a positive impact on the tourism industry and enhanced biodiversity. Potential pathways to scaling up EbA include:

(a) Raising community awareness and training local communities;

(b) Using simple language for engaging and creating buy-in among vulnerable local communities, the private sector, and national and international actors;

(c) Establishing a registry for EbA and using simple technologies and indicators.

# V. Conclusions and recommendations

## A. Conclusions

63. A key message emerging from the 2018 TEM-A is the need to move away from the notion that vulnerable communities, groups and ecosystems are victims of climate change; rather they are agents of change and purveyors of climate adaptation solutions.

64. The importance of participatory adaptation was stressed, acknowledging the challenging but necessary nature of the approach. Horizontal collaboration is required to link adaptation planning across relevant sectors; while vertical collaboration is needed to engage local stakeholders in national planning processes.

65. To enhance implementation of EbA it was recommended:

(a) To use success stories of similar projects to promote EbA;

(b) To raise community awareness and undertake training of local communities;

(c) To include EbA in nationally determined contributions and note interlinkages with mitigation and DRR.

66. While discussion on finance at previous TEM-A focused on providing and accessing funding, the discussion at the 2018 TEM-A progressed to address finance strategies and funding allocations in adaptation planning and implementation. Funds should be used creatively to attract new investors. Multinational banks and funds could help countries to find mechanisms to catalyse more investment; and funds, including the GCF, could be used to finance the transition from adaptation planning to implementation. Developing country Parties highlighted that funds should have common formats, expedited accreditation processes and guidelines in all official United Nations languages.

67. The importance of mainstreaming traditional indigenous knowledge systems – knowledge that has been accumulated over many generations – into adaptation planning and DRR was highlighted. Rather than portraying indigenous peoples as victims of climate change, it is more effective to emphasize their contribution to participatory adaptation.

68. Awareness-raising and a gender-sensitive approach to adaptation planning require the involvement of both men and women. Other social markers such as race and class also often place women at a disadvantage in contributing to adaptation planning.

## B. Recommendations

69. Discussions at the 2018 TEM-A highlighted many good practices, success stories and possible actions at the local, subnational and national level that could be used to advance adaptation planning in relation to vulnerable communities, groups and ecosystems in line with the objectives of the TEP-A:

(a) Employing participatory methods for adaptation planning enables input from vulnerable groups and communities and empowers them to become agents of change;

(b) Vulnerable groups should be viewed not as victims of climate change but as agents of change to enhance climate resilience, and they must be involved in the adaptation planning process from the beginning;

(c) Using existing information on participatory adaptation planning, including ecosystem-based and community-based approaches, available through the adaptation knowledge portal and other resources, allows stakeholders to benefit from the experience of others;

(d) Including indigenous knowledge and community experience in adaptation planning processes is likely to lead to more robust outcomes and broader ownership of initiatives;

(e) Indigenous peoples and women can make important contributions to adaptation planning processes;

(f) There is a need for both horizontal and vertical integration in adaptation planning processes, the former linking adaptation planning with other planning processes across all sectors, and the latter linking local stakeholders to national adaptation planning processes;

(g) Consideration of finance, technology and capacity-building should form an integral part of all adaptation planning for vulnerable communities, groups and ecosystems;

(h) According to the adaptation needs of developing countries and the most vulnerable communities and groups, which often find it more difficult to access resources for planning and implementing adaptation action, there is a serious and growing gap in adaptation finance flows;

(i) Adaptation financing projects at the regional level and between multiple countries provide an opportunity to improve the adaptation planning process as well as to strengthen cooperation, including the management of shared resources;

(j) Including technology innovation in adaptation planning processes, including NAPs, could be critical to increasing resilience and reducing vulnerability;

(k) Implementing effective adaptation measures requires the institutional capacity to build policy frameworks and the human capacity to understand and develop scientific knowledge;

(l) The NAP process can serve as a mechanism for stimulating new funding proposals and catalysing investment to enhance adaptation planning for vulnerable communities, groups and ecosystems.

70. In addition, the discussions identified the need for work under the UNFCCC to advance adaptation planning in relation to vulnerable communities, groups and ecosystems. Specific recommendations for action for consideration by the AC include:

(a) Encouraging Parties and interested organizations to share case studies of initiatives that focus on adaptation planning in relation to vulnerable communities, groups and ecosystems via the adaptation knowledge portal;

(b) Requesting the Nairobi work programme on impacts, vulnerability and adaptation to climate change to compile existing information and case studies on the use of EbA in urban settings;

(c) Inviting Parties and subnational actors to mainstream gender considerations at all stages of the adaptation planning process, including in NAPs and the implementation of adaptation actions;

(d) Inviting Parties to consider indigenous knowledge in their adaptation planning processes and projects;

(e) Inviting Parties and non-Party stakeholders to enhance their efforts to establish participatory adaptation planning processes, including vulnerable groups and communities as part of the decision-making;

(f) Inviting Parties to consider ecosystem- and community-based approaches when planning adaptation action, including in their NAPs;

(g) Inviting Parties, climate funds and multilateral banks to mobilize financial flows consistent with the adaptation planning processes of developing countries, in particular their NAPs, taking into consideration, as appropriate, the most vulnerable groups and communities;

(h) Inviting climate funds and multilateral banks to consider regional projects and their potential to strengthen cooperative relations, including on the management of shared natural resources and transboundary cooperation;

(i) Requesting the constituted bodies on technology and capacity-building under the Convention to continue providing assistance to developing country Parties for building policy frameworks and the institutional capacity to develop and implement adaptation planning processes.

71. Finally, discussions at the 2018 regional TEM-As led to a number of recommendations for action to advance adaptation planning in relation to vulnerable communities, groups and ecosystems:

(a) Inviting relevant organizations to share successful case studies on the nexus approach[16] on the adaptation knowledge portal, and inviting Parties and non-Party stakeholders to use the available information for replicating and upscaling projects;

(b) Encouraging multidisciplinary and long-term regionally collaborative research, with adequate funding, to improve climate services;

(c) Encouraging continued regional collaboration on climate science and furthering South–South cooperation opportunities;

(d) Encouraging financing for regional climate services and for adaptation projects and programmes.

[16] At the Asia-Pacific regional TEM-A, co-organized by the CTCN with funding from the European Commission, the Ministry of Science and ICT of the Republic of Korea and the Green Technology Center Korea, additional information and learning opportunities on the nexus approach were requested.