

Report of the workshop on technologies for adaptation

Langer Eugen, Bonn, Germany

4 March 2014

Summary

- The workshop on technologies for adaptation was organized by the Technology Executive Committee (TEC), in collaboration with the Adaptation Committee (AC), and was held on 4 March 2014 in Langer Eugen, Bonn, Germany.
- This report provides a summary of the workshop and a summary of the presentations made and the discussions carried out during the workshop, including possible items for further considerations for the areas of work for the TEC, possible recommendations by the TEC to policy makers, and possible topics for TEC Briefs.



I. Introduction

A. Welcome and opening

1. In accordance with decision 1/CP.16, the Technology Executive Committee (TEC) has the function to provide an overview of technological needs and analysis of policy and technical issues related to the development and transfer of technologies for mitigation and adaptation.¹ In addition, the TEC is also mandated to seek cooperation with relevant international technology initiatives, stakeholders and organizations, and promote coherence and cooperation across technology activities, including activities under and outside of the Convention.
2. Pursuant to this function, the TEC identified priority areas and specific topics for collaboration with other relevant institutional arrangements under the Convention, including with the Adaptation Committee (AC). As part of fulfilling the mandate from the Conference of the Parties, the TEC established in 2013 an internal task force on adaptation. The TEC also agreed to hold a workshop on technologies for adaptation in conjunction with its 8th meeting, with the support of the AC, and with the objective of determining one or more topics for TEC Brief(s) on technologies for adaptation.
3. The workshop on technologies for adaptation was held on 4 March 2014 in Langer Eugen, Bonn, Germany.
4. The overall objectives of the workshop were to:
 - a) Share experiences and lessons learned from the development and implementation of technologies for adaptation, in particular identifying barriers to and enabling environments for the successful implementation/application of adaptation technologies;
 - b) Identify potential areas of actions by the TEC and policy recommendations for the TEC to highlight in developing TEC Brief(s) that can help promote and accelerate the development and transfer of technologies for adaptation.

B. Scope of the note

5. This note provides a summary of the workshop on technologies for adaptation referred to in paragraph 2 above as well as a summary of the presentations and general discussions carried out during the workshop, including possible items for further consideration by the TEC.

II. Proceedings

6. The workshop programme was divided into three sessions: roles of technology in adaptation – setting context and expectations; experiences and lessons learned from development and transfer of technologies for adaptation; and a breakout session on potential areas of actions and recommendations by the TEC and identification of topics for TEC Briefs.
7. The workshop was attended by members of the TEC, members of the AC, a member of the Least Developed Countries Expert Group (LEG), Party observers, United Nations secretariat units and bodies, intergovernmental and non-governmental organizations, resource persons, and members of the secretariat.

¹ Decision 1/CP.16, paragraph 121.

III. Summary of the sessions

A. Welcome and opening

8. The workshop was opened by Mr. Gabriel Blanco, Vice Chair of the TEC, who recalled in the context of the related functions of the TEC, reiterated the need to establish areas for collaboration with the AC and highlighted the objectives of the workshop.
9. Following this opening, Ms. Christiana Figueres, Executive Secretary of the UNFCCC, made opening remarks, welcoming the important initiative of bringing both bodies together, and reminding participants of the ultimate aim which is to make a difference to communities on the ground. Ms. Figueres challenged the participants to consider how to obtain the finance for technologies for adaptation which is critical for technology transfer and implementation and urged participants to explore options including a direct interchange with the financial mechanisms.
10. Ms. Margaret Mukahanana-Sangarwe, Chair of the AC highlighted that this is the first joint meeting of the TEC and the AC and reiterated the need to make a difference to people adapting to climate change.
11. The floor was opened for questions and interventions. Mr. Amjad Abdulla, Maldives, pointed out that it is the people who should decide on the definition of technologies for adaptation, and that the key issue is what needs to be financed. Mr. Tomasz Chruszczow, Poland added that adaptation context will be different for each of us, but everyone is exposed to the threats of climate change, and such definition will have to be open. Ms. Figueres agreed with both participants that a narrow definition would help no one, and stressed that in decades to come there is a need to mainstream adaptation into every human endeavour – including water management, infrastructure and energy, until it becomes an assumed approach.

B. Session I: roles of technology in adaptation – setting context and expectations

12. The first presentation was given by Mr. Kunihiko Shimada, TEC member on behalf of the TEC taskforce on adaptation, with an introduction to the workshop and an outline of the expected outcomes. Mr. Shimada gave an overview on the activities of the TEC on technologies for adaptation, including the establishment of the taskforce on adaptation. Mr. Shimada noted that the results of the workshop would feed into the work of the TEC, and encouraged all participants to contribute to the discussions.
13. The second presentation was given by Ms. Mukahanana-Sangarwe, Chair of the AC, on the current and future work of the AC relevant to technologies for adaptation. The focus in 2013 was on enhancing coherence under the Convention, including providing inputs to the Climate Technology Centre and Network on the prioritization criteria for responding to country requests. She pointed out that the AC would draw on the Technology Needs Assessment (TNAs) reports in the work on National Adaptation Plans (NAPs). The NAP taskforce under AC also includes one member from the TEC. Ms. Mukahanana-Sangarwe also highlighted the use of indigenous and traditional knowledge and practices for adaptation.
14. Mr. Vladimir Hecl of the UNFCCC secretariat next presented the findings from the third synthesis report on technology needs identified by Parties not included in Annex I to the Convention,² focusing on technologies for adaptation. The report synthesized reports prepared by 31 Parties, and provided a valuable source of information. Mr. Hecl highlighted that agriculture, water, and infrastructure and settlements, including coastal zones, were the most commonly prioritized sectors for adaptation by Parties, while the most frequently cited adaptation barriers were economic, financial, and policy, legal and regulatory barriers. Technology action plans contained actions for accelerating the development and transfer of a prioritized technology within the country, including outlining a responsible authority, timeline and a budget. Most Parties developed concrete ideas, or proposals for projects or programmes. The complementarity of the TNA process with national adaptation programmes of action (NAPAs) and NAPs was often taken into account by countries in their reports, and the TEC has

² <<http://unfccc.int/resource/docs/2013/sbsta/eng/inf07.pdf>>.

now developed a brief on integration of TNAs with NAPAs and NAPs. A possible way forward would be to look at the methodologies of TNAs and NAPs processes, find complementarities such as MRV in NAP process providing feedback to TNAs process, and avoid duplication, for example, sector and technology identification in TNAs process could be used to identify adaptation options in NAP process, and technology action plans in TNA process could provide an input into long term implementation strategy of NAP process.

15. In the next presentation, Mr. Saleemul Huq, International Institute for Environment and Development, and Ms. Helena Wright, Imperial College London, presented the background paper on technologies for adaptation, commissioned by the TEC for the workshop.³ Mr. Huq stated that a large body of knowledge on adaptation is now available from various countries and regions, and stressed the crucial role of South-South transfer of technologies, including knowledge and know-how. Mr. Huq stressed that adaptation technologies are different from mitigation technologies, and that technologies for adaptation include not only “hardware”, such as capital goods or seed varieties, but also “software”, such as processes, knowledge and skills in use of the technology, and “orgware”, relating to ownership and institutional arrangements. Ms. Wright highlighted lessons learned from success and failure stories in agriculture, water and coastal zones. Ms. Wright noted that barriers to transfer and implementation of technologies for adaptation can be context-specific, which demonstrates the need to tailor policies to local needs, but other barriers are global or cross-cutting, demonstrating the need for international collaboration.
16. In the discussion that followed, participants highlighted the importance of indigenous knowledge systems, the possible bias of the TNA process towards hard technologies, the importance of replicating the success factors that enable successes, and the issue of avoiding maladaptation to avoid misusing limited resources. Participants highlighted that there are also more activities going on outside of the UNFCCC, for example, the Hyogo framework and the United Nations Millennium Development Goal (MDG) process. Other participants emphasized the importance of engaging with stakeholders and non-State actors in a meaningful way, and also noted the importance of technology assessment. Mr. Huq welcomed the comments from participants on the background paper, and stated that both policy interventions and financing are required to scale up good pilot experiences, for example, in Nepal, where it has been decided, by a government policy decision on the local adaptation plan for action, that 80 per cent of all finance will go towards supporting work with communities at the local level.
17. Finally, participants highlighted the importance of monitoring and learning from adaptation, the need to clarify terminology such as endogenous, indigenous, and traditional technologies and the differences between them, and the need to seek inputs from countries on how TNA guidelines could be improved. Other participants noted that adaptation is local, highlighting the need to look at the context of what the most vulnerable communities require, as well as the need to reflect on the difficulties and challenges of private sector engagement. Finally, the role of trade in climate change adaptation and possibilities for integrating adaptation into the national innovation policies of countries were noted.

C. Session II: experiences and lessons learned from development and transfer of technologies for adaptation

18. The second session on experiences and lessons learned from development and transfer of technologies for adaptation was divided into two parts: Part I, where the focus was on case studies, success/failure stories, and barriers to and enabling factors for the successful implementation of technologies for adaptation, and Part II, where addressing gaps and challenges and sustainably scaling up the development and transfer of technologies for adaptation were discussed.

Part I: case studies, success/failure stories, barriers and enabling factors to the successful implementation of technologies for adaptation

³ <http://unfccc.int/ttclear/pages/ttclear/templates/ttclear/sunsetcms/storage/contents/stored-file-20140227143131444/Background%20paper_27Feb2014_final.pdf>.

19. The Part I discussion was chaired by Mr. Emile Frison, Bioversity International, with the aim to share and discuss key factors for the technology to be successfully developed and/or implemented in developing countries, specific barriers to and enabling factors for developing and/or implementing technologies for adaptation, and common elements that can be drawn from these real examples/case studies.
20. Mr. Yukoh Satake, Yukiguni Maitake Co., Ltd, presented information on the implementation of adaptation technologies in agriculture in Asia, showcasing an example of a social entrepreneurship project in Bangladesh based on the cultivation of mung beans in saline areas. Mr. Satake highlighted that this win-win social business model has created rural jobs in Bangladesh and supplied low-priced beans to Japan, supporting farmers by providing them with microcredit.
21. Mr. Nick Moon, KickStart International, presented a case study on the development and transfer of water pumping technologies for agriculture in Africa. Mr. Moon explained that the introduction of the manually operated pressure irrigation pumps in Kenya and the United Republic of Tanzania has helped smallholder farmers by reducing reliance on rain-fed agriculture and improving food security and livelihood. Although many technologies exist, people are not aware of them, are not aware of the value or cannot get hold of them at a conventional place and price. The wide distribution of the pumps locally and to other African countries beyond Kenya and Tanzania has taken place through multiple channels, including groups, non-governmental organizations and multilaterals. Mr. Moon stressed that there is a need to understand the market and to understand the customers dynamics, as people are sceptical and risk-averse. Mr. Moon noted that the main driver of behaviour for the customers is the need to take care of families, rather than tackling climate change. As with green energy, a subsidy is injected until the market is developed, but once a critical mass is met, there is less need for marketing. It has been found that the early adopters may not be the most vulnerable, but that they may be the opinion leaders and others will take up the technology in time. Mr. Moon highlighted the four critical economic success factors of impact, cost-effectiveness, sustainability and scale.
22. The third presentation of Part I was made by Mr. Haseeb Irfanullah, Practical Action, on the lessons learned from “floating gardens”, a traditional agricultural practice in the southern wetlands of Bangladesh that has been transferred to other locations. In the original locations, the practice was an efficient and self-sustaining business model, but in the new locations, it was sustained by external support. Mr. Irfanullah noted that the Government of Bangladesh has started a programme for the promotion of floating gardens, but there was hardly any prior research carried out and no research on whether the practice would survive under a changing climate. Mr. Irfanullah highlighted the concept of technology justice, which is the right of people to decide, choose and use technologies that assist them in leading the kind of life they value without compromising the ability of others and future generations to do the same.
23. In the subsequent presentation, Mr. Mark Kowal, Climate-Insight, presented experiences of adaptation technologies based on indigenous knowledge of water resources from South America. Mr. Kowal showcased the Adaptation to Climate Change Project in Ecuador, which aims to reduce vulnerability to climate change through effective water governance.
24. In the discussions that followed, participants highlighted marketing as being important to raise awareness about technologies, even though a technology may already have a significant return on investment. Other participants suggested that the discussion may have omitted the issue of inappropriateness of technologies, and that there may be a need to bridge the gap between indigenous and modern technologies so that they become more acceptable. The issue of research and development (R&D) was discussed, and it was noted that the majority of R&D investment is in the developed world, meaning that technologies often do not answer the specific needs of the developing countries.
25. Participants also highlighted governance issues, including the need to give guidance to decentralized governments. Other participants stressed that the users of the technologies should be able to tap into different types of knowledge, including modern scientific knowledge.
26. Finally, participants discussed the role of microfinance, noting that microfinance is not a panacea, because interest rates are often high owing to transaction costs, and people are reluctant to take on

debt because they have other pressures; “layaway schemes” were thus posed as an alternative solution.

Part II: addressing gaps and challenges - how to sustainably upscale the development and transfer of technologies for adaptation

27. The Part II discussion was chaired by Mr. Batu Krishna Uprety, Chair of the LEG, and focused on the gaps and challenges in sustainably upscaling the development and transfer of technologies for adaptation.
28. Mr. Roland Sundstrom, Global Environment Facility (GEF), began by presenting the GEF perspective on scaling up the transfer of adaptation technologies. Mr. Sundstrom highlighted new learning opportunities arising from the growing number of adaptation interventions. Existing vehicles for development and diffusion of technologies include improvement of extension services and farmer field schools, which can scale up climate resilient practices. Mr. Sundstrom noted that the challenges found by the GEF were well reflected in the background paper prepared for this workshop, as the predictability of climate finance presents a challenge to scaling up from pilot projects and also to maintaining infrastructure. His presentation highlighted that there is a need to maintain a continuous flow of funds to maintain the structural measures that are put in place, as well as a need to validate the technologies applied so far to ensure sustainability under long time frames. Project evaluations have shown that gender dimensions are crucial and that there are also governance and political challenges.
29. In the next presentation, Mr. Michinori Kutami, Fujitsu Limited, highlighted the way in which information and communication technologies can contribute to adaptation, for example, by the use of monitoring, analysis and simulation of climate change, the use of early warning systems, and the use of sensing technologies in agriculture. Mr. Kutami explained that information and communication technologies can enable a transcendence of time and distance.
30. Mr. Frison, Bioversity International, then presented experiences with management of plant genetic diversity by farmers. He noted that there is a need for participatory research, which can utilize a crowdsourcing approach to obtain feedback on seeds in a cost-effective way from thousands of farmers. For example, participatory research in northern India enabled farmers to participate in the selection of the seeds, and generated tremendous enthusiasm. Mr. Frison emphasized that genetic diversity, including that of wild crop relatives, is important for adaptation, and noted that this diversity is being threatened by climate change.
31. The next presenter, Mr. Bert De Bièvre, Andean Paramo Project, CONDESAN, explained that the Andes is an extremely diverse area, which creates opportunities, but there is a need to be cautious in extrapolating information from one area to another. Ecosystems are moving uphill, to higher altitudes but much else is uncertain. As glaciers are the main water source, some water companies are purchasing the degraded “paramo” owing to the need to conserve or recover the water regulation capacity. Monitoring takes place with three purposes: to monitor impact, to adaptively manage the optimization of the technologies and to generate insights into possibilities for scaling up. In conclusion, there are no “one size fits all” technologies, and there is a further need for South-South exchange between mountainous regions.
32. In the discussion that followed, there were reflections on Africa, where it was felt that water is not well distributed and there is extreme spatial availability of water. Participants emphasized the need for appropriate technologies and complementarities between different approaches, avoiding too much emphasis on hard technologies. Other participants stressed the need for transboundary water resource management, climate risk screening for public works and learning mechanisms, for example, in the GEF. Participants discussed the prioritization criteria for GEF funding on projects that also have multiple benefits for carbon and biodiversity. Finally, the Chair of Part II summarized the session, emphasizing the role of information and communication technologies, and the importance of learning and South-South cooperation.

D. Session III: potential areas of actions and recommendation by Technology Executive Committee and identification of topics for Technology Executive Committee Briefs

33. To allow active participation and sufficient time for focused discussions, the participants of the workshop were divided into four breakout groups. Each breakout group, led by a facilitator, discussed the following questions:
 - i. What could be areas of work for the TEC, including in collaboration with the AC, to assist in the effective development and transfer of technologies for adaptation??
 - ii. What could be the recommendations by the TEC to policy makers to enhance the development and transfer of technologies for adaptation, as well as recommendations that can be submitted jointly by the TEC and the AC?
 - iii. What could be three possible topics for TEC Briefs or other papers that can be prepared jointly by the TEC and the AC?
34. Following the breakout group session, in a plenary setting moderated by Mr. Moses Omedi Jura, Kenya, the group facilitators reported back to the participants of the workshop on the responses of each of the breakout groups to the aforementioned questions.
35. With regard to the first question, the breakout groups suggested the following possible areas of work for the TEC, including in collaboration with the AC, to assist in the effective development and transfer of technologies for adaptation:

Policy and technical issues

- a) Creating a working group or using an existing task force to investigate the standards or regulations that can change behaviour or develop standards to make technologies understandable and fundable;
- b) Developing policy formulation support and methodologies for institutional or regulatory frameworks;
- c) Identifying gaps in technologies for adaptation that could be addressed;
- d) Providing technical advice regarding application of technologies for adaptation;
- e) Developing criteria for identifying, assessing and ranking technologies for adaptation;
- f) Creating inventories and maps of existing technologies and practices, including mapping those with different local needs, such as with particular ecosystems;
- g) Creating inventories and maps out of case studies of success and failure and extracting the key ideas and lessons learned;
- h) Identifying champion technologies and promoting incentives for sharing them;

Enabling environment and barriers

- a) Exploring further what an enabling environment means, including enabling legal, policy and regulatory frameworks;
- b) Continuing work on enablers and barriers; and on synergies including between the NAPs and TNAs;

Research

- a) Promoting the need to engage the research community in the validation of technologies for adaptation, including monitoring and evaluation of effectiveness;
- b) Working with the research community on cutting edge technologies for adaptation;

Knowledge management and information sharing

- a) Encouraging the use of patent database for making technical information available and facilitating the selection of technologies for adaptation;
- b) Encouraging multi-stakeholder knowledge management and learning;
- c) Continuing work on information and knowledge management;

Streamlining and collaboration

- a) Integrating and streamlining the work of the TEC and AC;
 - b) Promoting implementation of action plans and improving integration of adaptation in the planning process;
 - c) Engaging in the NAP process, including identifying information needs and providing planners with the information they need; promoting TNA as an initial stage for NAPs; and work by the AC on identifying barriers and enablers in NAPs;
 - d) Further enabling and promoting South-South cooperation and transfer;
 - e) Promoting delivery of solutions including activation of the CTCN;
36. With regard to the second question, the breakout groups suggested the following possible recommendations by the TEC to policymakers to enhance the development and transfer of technologies for adaptation, as well as recommendations that can be submitted jointly by the TEC and the AC, many of which were similar to those for the first question:

Policy/regulatory and implementation

- a) Recognising complementarities between hard and soft technology, including developing some common standards to obtain financial support from government or investors/financiers;
- b) Recognising the connection between adaptation and improving other aspects of people's lives and the development or transfer of adaptation technologies, including adapting to local conditions, taking into account community needs and local culture;
- c) Recognising the need to move from processes to implementation and investment;
- d) Developing framework approach as a basis for policy recommendations;
- e) Providing financial incentives for developing and implementing technologies for adaptation;
- f) Promoting an enabling environment, including standards or regulations that can change behaviour or generate trust on the ground;
- g) Overcoming policy or regulatory barriers to adaptation, including those identified in the TNAs;
- h) Promoting implementation of action plans of TNAs and improving integration of climate change in the national planning process;
- i) Emphasising the need for more resources on R&D, while demonstrating how R&D will be useful on the ground;

Cooperation and capacity building

- a) Engaging local government and communities in developing and implementing adaptation actions, including extending the TNAs to the local level and improving incentives for local adaptation;
 - b) Enabling and promoting South-South cooperation and transfer;
 - c) Building capacity on the ground, and transferring and building know-how, which may sometimes require changes in attitudes and behaviours, including information sharing and promotion of good practices;
37. With regard to the third question, the breakout groups suggested various possible topics for TEC briefs or other papers that can be prepared jointly by the TEC and the AC:

- a) Sectoral briefs, e.g. on agriculture, water or infrastructure and settlements (including coastal zones), with a specific angle e.g. best solutions or best practices;
- b) Selecting technologies (including criteria for ranking technologies), and assessing and validating the potential;
- c) Risk management approaches (how to implement and use) for adaptation actions and prioritisation of risks, including policy recommendations;
- d) Sharing good practices and success stories on technologies for adaptation;
- e) Eco-system based adaptation (EbA) including assessment of EbA;
- f) Complementarity of hard, soft- and orgware for successful development and transfer of technologies for adaptation;
- g) Technologies for adaptation in the public health sector;
- h) Climate information services, including options available for enhancing these services;
- i) Brief on scaling up successful projects and programmes;
- j) Identification of barriers and challenges, including policy and regulatory barriers;
- k) Information, communication and promoting of good examples; including cooperation with the private sector;
- l) Guidelines or brief on taking projects from a pilot stage through to promotion and replication; including financing;

E. Session IV: conclusion and wrap-up

38. Finally, in the conclusion and wrap-up session of the workshop, Mr. Blanco, Vice-Chair of the TEC, gave a summary, recalling the objectives, the presentations made and the outcomes of the breakout groups. Mr. Blanco highlighted some of the issues discussed at the workshop, including factors for successful implementation and replication of technologies, integrated approaches, the need for South-South transfer of know-how, and opportunities for scaling up technologies, technology assessment and capacity-building.
39. Mr. Blanco thanked all participants for the productive and fruitful discussions and extended his deep appreciation to all experts and practitioners for sharing their insights and experience during the workshop. Mr. Blanco concluded and closed the workshop by reiterating that the outcomes of the workshop would be very useful for the TEC to further consider in future work, including in collaboration with the AC.