

## Summary of the in-session Workshop on Technology Needs Assessments

### Summary

- The TEC organised an in-session workshop on technology needs assessments in conjunction with its 7<sup>th</sup> meeting.
- The objectives of the workshop were to: share experiences and lessons learned from the TNA process, identify specific needs and practical actions that could assist countries in implementing the results of TNAs, and discuss possible linkages between the TNA process and other planning tools under the Convention.
- This note provides a summary of the in-session workshop on technology needs assessments organized in conjunction with the 7<sup>th</sup> meeting of the TEC. The TEC may wish to take this note into account when considering further work to be undertaken in the area of technology needs assessments, in accordance with its functions.

## **I. Background**

- 1.** TNAs and their syntheses are a key information source for the work of the TEC on the prioritization of activities under the Technology Mechanism, and could be a rich source of information for governments, business and other stakeholders.
- 2.** One of the functions of the TEC is to provide an overview of technological needs and analysis of policy and technical issues related to the development and transfer of technologies. COP 17 adopted modalities for the TEC in carrying out this function.
- 3.** The rolling workplan of the TEC for 2012-2013 includes an activity on the review of technology needs from various sources, with a view to strengthening the understanding of technology needs, to complement the processes for national communications, nationally appropriate mitigation actions (NAMAs) and national adaptation plans (NAPs), and to support the TEC in preparing its recommendations on guidance on policies and programmes.
- 4.** In accordance with its rolling workplan for 2012-2013, the TEC completed a number of activities related to the review of technology needs:
  - (a) The second synthesis report on technology needs identified by Parties not included in Annex I to the Convention was considered (FCCC/SBSTA/2009/INF.1);
  - (b) A background paper on the current status of the implementation of the results of TNAs including success stories was prepared (TEC/2013/5/7);
  - (c) A background paper on interlinkages between TNAs and national and international climate policy making processes was prepared (TEC/2013/5/8);
  - (d) A TNA taskforce was set up to prepare a TEC brief on TNAs;
  - (e) A background paper on compilation and synthesis of information contained in the second round of TNAs, with particular focus on barriers to and enabling environments for technology development and transfer was prepared (TEC/2013/6/10).
- 5.** In its report to COP 18, the TEC delivered its key messages regarding technology needs.
- 6.** UNEP, on behalf of the GEF, has implemented a new round of TNAs with objectives that go beyond identifying technology needs narrowly. The TNAs will lead to the development of a national Technology Action Plan (TAP) that prioritizes technologies, recommends an enabling framework for the diffusion of these technologies and facilitates identification of good technology transfer projects and their links to relevant financing sources.
- 7.** UNEP DTIE in collaboration with the UNEP Risoe Centre provided targeted financial, technical and methodological support to assist 36 countries in conducting TNA projects. An initial round of 15 countries from Africa, Asia, Latin America and the Caribbean and Europe were being supported in the first round since early 2010. Additional 21 countries were selected in the last quarter of 2010.
- 8.** The GEF Council has approved in April 2013 a project by UNEP supporting additional TNAs focusing on 24 low- and medium-income countries. This project takes into consideration the lessons learned from the Global TNA project.
- 9.** At TEC 6, the TEC requested the Secretariat to organize a workshop on TNAs to share the outcomes of the work undertaken by the TEC on technology needs.

## **II. Objectives and expected outcomes**

**10.** The overall objective of the workshop was to share experiences and lessons learned from the TNA process between various stakeholders with a view to supporting action on mitigation and adaptation. More specifically, the workshop aimed to:

- (a) Share experiences and lessons learned from the TNA process,
- (b) Identify specific needs and practical actions that could assist countries in implementing the results of TNAs,
- (c) Discuss possible linkages between the TNA process and other planning tools under the Convention.

**11.** The expected outcomes of the workshop were:

- (a) Enhanced understanding of experiences and lessons learned from the TNA process;
- (b) Identification of specific needs and practical actions that could assist countries in implementing the results of TNAs
- (c) Identification of possible linkages between the TNA process and other planning tools under the Convention.

**12.** The outcomes of the workshop fed into TEC 7 and provided a basis for its deliberations on preparing key messages on issues related to technology needs to COP-19.

## **III. Summary of the workshop**

### **A. Welcome and opening**

**13.** The in-session workshop on technology needs assessments (TEC/2013/7/9) was chaired and opened by the Chair Mr. Antonio Pflüger and Vice-Chair Mr. Gabriel Blanco. The Chair introduced the presenters and speakers and highlighted the overall objective of this workshop

### **B. Session I: Experiences and lessons learned from the TNA process**

**14.** Mr. Pflüger introduced both speakers who made presentations on issues surrounding the process on conducting TNAs and the results of the last round on TNAs.

**15.** Mr. Duwyn, Programme Officer at the Division of Technology, Industry and Economics of UNEP presented the process of conducting TNAs. He stressed that the technology action plan to implement identified technology needs is a new deliverable in the process. He elaborated on the country driven process and stated that there is a need to develop project ideas in a more comprehensive way. He highlighted the importance of inter-linking TNAs with other planning processes under the Convention, including NAMA and NAP. He recognized an opportunity with the CTCN working on the project ideas identified in the TNAs and facilitating their implementation. He suggested engaging national designated entities in the TNA process. He identified three key factors for quality and success: political will, stakeholder engagement and local capacity.

**16.** A representative from the secretariat presented preliminary findings of the third synthesis report on technology needs identified by Parties not included in Annex I to the Convention. He elaborated on the regional distribution and the stakeholder process and focused on the sector and technology prioritization in mitigation and adaptation areas, barriers, enablers and cross cutting elements including linkages between TNAs and other

processes under and outside the Convention, regional analysis, and compared the findings contained in the second and third TNA synthesis reports.

**17.** After the presentations, a question-and-answer session took place. Invited by the Chair, TEC members, Advisory Board of the CTCN and observers addressed several questions to the presenters on tracking of TNAs, implementing the results of TNAs, monitoring and evaluation, and on how the TEC could include these elements in its next work programme.

**18.** In response to questions from the audience, several additional issues were addressed by the resource persons. One participant noted that the TEC is not a funding mechanism and that the TEC needs more clarity on the financial needs. Another participant noted that the TNAs were not yet conducted by all non-Annex I countries, though a new TNA project will be implemented by UNEP on behalf of the GEF planned in 2014 to support TNAs in 25 countries. Several participants welcomed the idea to include an evaluation step within the TNA process.

**19.** With regard to the follow-up on TNAs and the implementation of TAPs and project ideas, participants highlighted the important role of the CTCN in this process to facilitate implementation of TNA results, as most of them being in line with the national development plans. One participant noted that a more programmatic approach in implementing TNA results could include, and benefit from, linkages with other processes such as NAMA and NAP processes.

## **C. Session II: Implementation of the results of TNAs**

**20.** The second session of the workshop consisted of a panel discussion. The session was introduced by Mr. Timothy Sill, who presented the TEC brief on implementing the results of TNAs. The five panellists were:

- (a) Mr. Phil LaRocco, founder of Embark: energy-education-entrepreneurship,
- (b) Ms. Diana Harutyunyan, Climate Change Programme Coordinator, Ministry of Nature Protection, Armenia,
- (c) Mr. Francisco Duran, Climate Change Unit, Ministry of Environment, El Salvador,
- (d) Prof. Dr. Roland Roesch, Team Leader, Technology Innovation and Markets group, IITC, IRENA,
- (e) Mr. Franck Jesus, Senior Climate Change Specialist, GEF (participated via WebEx).

**21.** The panel discussion was guided by the following three guiding questions:

*1. What important factors do international organizations and the private sector take into account when making decisions about financing or investing in technology development and transfer activities in developing countries?*

**22.** Mr. LaRocco, based on his experiences, gave examples of how to connect multiple financial resources to low-emission projects from various countries. He referred to TINA (technology implementation necessary actions) in being more than action plans.

**23.** Ms. Harutyunyan stated that it is important to create certainty for the private sector. She highlighted the importance of linking the mitigation efforts to the development priorities of the country. She said it is also important for adaptation to consider the food security issue, taking into account agriculture as the most vulnerable sector with a significant share in the national GDPs. She stressed that government benefits should be provided in order to help private sector to provide investments.

**24.** Mr. Duran said that due to extreme events, such as tropical cyclones, the technological needs in El Salvador changed in a very short period which is also shown in the two TNA reports of El Salvador conducted in 2005 and 2011. Although he found several connecting elements in the two TNAs, including communication, grid irrigation, forests, housing, infrastructure, energy efficient lighting and air-conditioners, according to him, these changing needs should be taken into account when preparing project ideas for financing.

**25.** Mr. Roesch confirmed the findings of the synthesis report with the experience of IRENA in the energy sector. He identified barriers such as a non-transparent regulatory framework. He argued that one of the main barriers is the development of viable project proposals with a qualified financial plan. He introduced the project navigator initiative of IRENA which includes concrete project steps to develop a project proposal, including a handbook of all six renewable energy technologies addressed by IRENA. He added that the navigator elaborates also on the involvement of stakeholders, including from the financial community, and considers regional specifications. He explained that member countries were able to improve the quality of their proposals by following a check list as part of the project navigator. He explained that the project navigator is now in its first year of existence, focussing on various target groups and various technologies, such as wind power or solar energy. He added that three pilot projects will be concluded by the end of 2013, followed by a feedback and the aim to get the projects financed.

**26.** Mr. Jesus stressed the need of private sector considering the TNA. He also said that such consideration requires implementation of appropriate policy and regulatory measures, adequate financing, and risk management.

*2. What steps are critical for ensuring that technology development and transfer activities that result from a TNA can be implemented?*

**27.** Mr. LaRocco stressed that besides enabling environments a good team and well prepared business plans are essential for implementation of a project.

**28.** Ms. Harutyunyan added that special funds to cover the risks are needed and that these special funds should be linked to the portfolios of existing financial sources. She emphasized the need to use the technology network of the host country and donor countries, such as think tanks, in order to develop and fine-tune the technology ideas.

**29.** Mr. Jesus proposed to focus on implementation of transformational technologies with a potential for mitigation. He found transformational technologies being emerging, and contributing to a shift to low-carbon growth and sustainable development. He found transformational technologies offering a significant mitigation potential. He named the following examples for such technologies: smart grid technologies, black carbon and short lived climate forces, the use of information and communication technologies, energy management, energy controlled systems, carbon capture and storage. He found collaborative initiatives very helpful in technology fine-tuning to the users' needs.

*3. How could the TNA process be enhanced to achieve greater implementation of technology development and transfer activities?*

**30.** Mr. LaRocco urged linking specific project proposals to the existing related processes to scale-up their implementation potential.

**31.** Ms. Harutyunyan said that the national designated entities could be the entry point to build knowledge capacity in the country, including implementation. On achieving the greater implementation she gave an example of energy efficiency, feed-in tariffs, attracting private sector investments with governmental guarantees and other support measures, such as special purpose subsidies.

**32.** Mr. Duran emphasised the role of adaptation technologies to reduce the vulnerability of the country to climate change. He highlighted that implementation oriented actions

should be in line with the national development plans providing energy, environmental and social benefits. He recommended including key national stakeholders being involved in the implementation process.

**33.** Looking at the TNA implementation process and how it could be improved, Mr. Jesus suggested three issues:

- (a) Concrete financial means for the TAPs and projects, which would require to involve the financing community as early as possible in the process;
- (b) Implementation of TNA/TAP would require a clear path of the national development priorities, with stronger ties with the financial, economic and other relevant ministries; and
- (c) Coordination of TNA, including other TNA reports undertaken by China, India, and South Africa, with national communications and CTCN activities.

**34.** After the panel discussion, a question-and-answer session with members from the TEC, AB to the CTCN and observers took place.

**35.** Several TEC members pointed out that some of the project ideas developed in the TNA process did not correspond to the quality standards required by financial institutions. According to them this showed the need for capacity building to enable developing countries to come up with adequate project ideas.

**36.** Some TEC members welcomed the project navigator presented by IRENA and asked more detailed questions about its use, validation, feedback and lessons learnt. Some participants asked for concrete examples on how the project navigator could help to convince governments that there are benefits to invest in renewable energy technologies.

**37.** Mr. LaRocco highlighted that no process that fits exclusively in the private or public sector requirements and it is rare to find well prepared, balanced projects put forward by the national projects teams. He mentioned the option of bundling of different public bonds to stabilize investments and to distribute investment risk. He gave an example on micro-finance institutions, which managed to distribute the risk in various layers and thereby structuring finance.

**38.** Ms. Harutyunyan elaborated on the ownership in the TNA process, saying that six up to eight projects of the TNA in Armenia were implemented, or in the implementation stage. She stressed that when speaking about bankable projects this was mostly about mitigation projects and not about adaptation projects, and that investment for adaptation is in generally lacking. She said that projects should be evaluated also taking into account other criteria than bankability. She further said that the quality of TAP depends also on the regulatory framework of the country and that it is important to look at the financial institutions and how they are considering TNAs.

**39.** Some participants noted their experiences in integrating TNAs in national development plans. They said that the time frame for national planning does often allow only a short term planning, within the five years or even shorter periods.

**40.** Other participant stated that the national TNA coordination needs to be built on a strong institutional structure and a country ownership including during and after the TNA process. He saw strong role of the TEC and the CTCN in following up on the TNA implementation related issues.

**41.** Participants in general showed interest in linking the TNAs to new financing mechanism and recommended to feed in the experience of the TNAs into the GCF, pointing out that the GCF is currently shaping its funding priorities. The Vice-chair clarified that the TEC is currently establishing linkages with other bodies under the Convention, including the GCF.

42. Mr. Jesus from GEF gave an example from China with the involvement of the World Bank, on how the GEF has supported technology transfer projects, by involving development banks to finance specific technology transfer activities. He added that the GEF, in cooperation with development banks, currently runs four regional projects aiming at development of a financial instrument for technology transfer. He also said that the GEF would like to link these regional projects with the TNA process and to the CTCN in order to facilitate broader implementation.

#### **D. Session III: Linkages between the TNA process and other planning tools under the Convention**

43. The third session of the workshop consisted of panel discussion. The session was introduced by the Vice-chair, who presented the TEC brief on linkages between the TNA process and other planning tools under the Convention. The five panellists were:

- (a) Mr. El Hadji Mbaye Diagne, Director, Afrique - Energie - Environnement, Sénégal
- (b) Mr. Juan Ignacio Paracca, ProBiomasa project coordinator. Energy Strategy Advisory Council, Argentina
- (c) Dr. Sebastian Wienges, Adviser, CC Climate, GIZ
- (d) Dr. Jan Verhagen, Senior Scientist, Wageningen University
- (e) Mr. Sudhir Sharma, Senior Advisor, UNEP-RISO

44. The panel discussion was guided by the following three guiding questions:

*1. How could the TNA process contribute to the NAMA and NAP processes?*

45. Mr. Sharma presented possible linkages between the TNA process and NAMAs, focussing on similarities and differences. He stressed the possibility of using the outcomes of TNAs and turning them into NAMAs for implementation. On implementation of the TNA results he said that it is important to follow a medium and long term national strategy and initiate a relevant capacity building for the involved stakeholders. He reported that he learnt from the TAPs that the involvement of financial institutions at an early phase is important for the implementation of the TNA results.

46. Mr. Diagne, facilitator of the TNA in Senegal, said that the output of the TNA can serve as a basis for NAMAs and low emission development strategies, and that his work on TNAs focussed a lot on existing NAMAs and NAPAs.

47. Mr. Paracca elaborated on the TNA studies undertaken in Argentina. He stressed the need to adapt the regulatory framework to allow the introduction of the new technology. He identified several barriers including regulatory and institutional barriers, and the lack of sufficient knowledge on climate issues among political decision makers. He mentioned the multi-criteria-analysis as a useful methodology to identify technologies. He said that TNAs are useful to identify barriers and that there is a need to align TNAs with the national strategy on climate change in the country.

48. Mr. Wienges found the discussion similar to those undertaken within the NAMA community, with the exception that the NAMA process hardly touches on the technology part. He recognized that the NAMA stakeholders are not sufficiently informed about the TNA process and its results.

*What are the potential opportunities and challenges in integrating the TNA, NAMA and NAP processes?*

49. Mr. Diagne noted that there is need to set up a framework on integrating the TNA with the low emission strategies and NAPs.

**50.** Mr. Wienges emphasized some challenges in the NAMA process such as to identify the best available, the most cost efficient and the most adjusted technology in terms of political, social and also cultural priorities. He said that there is a lack of information in developing countries on existing technology providers. He referred to existing databases and search-engines such as climate tech wiki or regal database that could help to identify the most appropriate technology providers for a particular project.

**51.** Mr. Verhagen found NAP being a non-linear process with two objectives: 1) reducing the vulnerability; 2) integrating and mainstreaming into policies. He highlighted that in order to conduct a national driven NAMA there is a necessity to get mandate from the highest possible authority in the country. He explained that monitoring and review steps are important elements of the process. He recommended handling the steps of each planning processes in the relevant TEC brief in a flexible way, as these are evolving processes.

*How could the TNA process be further aligned with the NAMA and NAP processes?*

**52.** Mr. Diagne stressed that TNA, NAMA and NAP processes include several similarities, for example capacity building. When searching for integration elements he suggested focusing on particular steps of the TNA process, such as the stakeholder involvement. In this relation he noted that the selection of consultants and stakeholders should be done carefully as in his view this step strongly determines the quality of outcomes of the TNA process.

**53.** Mr. Diagne further stressed that the TNA project faced a budget limitation which did not allow stakeholders accessing and considering all the identified sectors in the country, but limited it to a few only. He recognized that the MRV step is not covered in the TNA process and could be followed up by the national designated entities.

**54.** Mr. Wienges proposed that the Technology Mechanism under the UNFCCC could provide information about the access to those technologies which were identified by developing countries as their needs. He mentioned that the purpose of the NAMA registry is match-making between supply side and demand side and that the registry should therefore also include the identified technologies. He said that MRV within the NAMA process should be linked with the TNA process.

**55.** Mr. Verhagen stressed that in the national driven processes it is important to look at particular target groups, as for example agriculture sector contains many different target groups and technologies. He further stated that not all technologies give immediate results and there is a need to apply risk management. He acknowledged that NAP is a relatively new process in which technologies have a role to play, and where the level of involvement of the private sector determines access to technologies. He concluded by proposing to address communication technologies on a higher political level, considered them critical to the processes.

**56.** Mr. Sharma stressed that ownership of the information in the TNAs is the key element for the countries to define their own development. He concluded that NAMAs provide an opportunity to look at the national development in a holistic way. He found it challenging to bring together the bottom-up and top down national development approaches.

**57.** Mr. Sharma further stressed that the national processes are learning processes and hence cannot be finalised by a single intervention. He found that the TNA process has a specific role to play and hence could be integrated as part of a NAMA as a tool to look at how a particular set of technologies could be moved forward, especially in the context of a possible behavioural changes at multisectoral level. He recommended to the TEC and CTCN to use the TNA to learn about the challenges on a country level.

**58.** After the panel discussion, a short question-and-answer session with members from the TEC, AB to the CTCN and observers took place.



**59.** Several participants noted that the identification of the most appropriate technology requires sufficient national capacities to be able to evaluate technology options. They found capacity building an incentive for the private sector, which requires an appropriate environment in order to implement technologies.

**60.** Participant pointed out that there was a need to strengthen the ownership of the countries and that every country is different, meaning that the processes would start at different stages.

**61.** Participants also pointed out that there is no clear definition of NAMA, and there are no requirements on what NAMA should include, and therefore there are no guarantees on how NAMA capacitates countries in moving forward. According to some speakers NAMAs are supposed to transform the national economy or society. NAPs on the other side were considered different, depending more on the particular local environment of a country.

**62.** Participants discussed Argentina example, which aligned its TNA with other national development processes. Argentina has aligned the TNA strategies at a national level with its NAMA proposals, which included financial support, capacity building and technology transfer as the key elements. During the discussion it was highlighted that project ideas often need further technical work to be done, to make them financially attractive.

**63.** One participant said that selected stakeholders are sometimes not sufficiently informed about climate change issues and would need to receive such information before the work is initiated.

**64.** Some participants said that the increasing decentralisation of economic and political power, resulting in a growing responsibility of municipalities would need to be addressed in the TNAs, NAMAs and NAPs. They suggested involving national designated entities in the process of linking TNAs with NAMAs and NAP processes. This would, according to them, include establishment of the national designated entities' websites to disseminate such information.

**65.** Mr. Surachai Sathitkunarath, National Science and Technology Innovation policy officer reported on his activities as a TNA coordinator. He said that when conducting the TNA report the level of expertise varied and some sectors, including water management could be dealt with in-country expertise. However to address the energy related issues, he said, a need for external capacities was recognized. He concluded considering the TEC and CTCN qualified bodies to implement the TNA results in short to medium term.

## **E. Session IV: Wrap up by the TEC Vice-chair**

**66.** The TEC Vice-chair summarized the workshop pointing out that TNA is not a final objective and that TNA should be part of a bigger and larger national plan. He mentioned the discussion on the ownership, and recognized a common agreement amongst participants in the following issues:

- (a) Using TNA methodologies such as the multiple criteria decision analysis,
- (b) Integrating TNAs with the NAMA and NAPs processes,
- (c) A need to include MRV step in the TNA process,
- (d) Linkages of the Technology Mechanism with the UNFCCC financial mechanism and the financial community including GCF to consider the results of the TNAs with a view of financing their implementation.

**67.** The TEC Vice-chair concluded the workshop by saying that TEC will finalize the TEC brief on this issue considering the relevant issues addressed during this workshop.

## IV. Issues for possible further consideration

### 68. Experiences and lessons learned from the TNA process:

- (a) There is need to elaborate project ideas in a more comprehensive way,
- (b) Importance of interlinking TNAs with other planning processes under the Convention, including NAMA and NAP processes,
- (c) There is an opportunity for CTCN to work on the project ideas identified in the TNAs, to facilitate implementation of the TNA results,
- (d) National designated entities should be engaged in the TNA process,
- (e) An evaluation step could be included in the TNA process.

### 69. Implementation of the results of TNA.

*What important factors do international organizations and the private sector take into account when making decisions about financing or investing in technology development and transfer activities in developing countries?*

- (a) Connect multiple financial resources to low-emission projects,
- (b) Create certainty for the private sector,
- (c) Private sector financiers require implementation of appropriate policy and regulatory measures, adequate financing, and risk management,
- (d) TNA is evolving process, which should be taken into account when planning financing.

*What steps are critical for ensuring that technology development and transfer activities that result from a TNA can be implemented?*

- (a) Good team and well prepared business plan,
- (b) Risk covering special fund,
- (c) Using technology network on domestic and international level to fine-tune the project ideas,
- (d) Implementation of transformational technologies,
- (e) Collaborative initiatives,
- (f) The involvement of financial institutions at an early phase.

*How could the TNA process be enhanced to achieve greater implementation of technology development and transfer activities?*

- (a) Linking specific project proposals to the existing related processes to scale-up their implementation potential,
- (b) NDEs could be the entry point to build knowledge capacity in the countries,
- (c) Involving financial community as early as possible into the process,
- (d) Strong inter-ministerial and cross sectoral ties to foster the implementation,
- (e) Linking TNA with CTCN activities in relation to TNAs,
- (f) There is a need for capacity building to enable developing countries to come up with adequate project ideas,
- (g) Bundling of different public bonds to distribute investment risk in various layers,

- (h) The time frame for national planning does often allow only a short term planning,
- (i) The national TNA coordination needs to be built on a strong institutional structure and a country ownership including during and after the TNA process,
- (j) Linking the TNAs to new financing mechanism and GCF.

**70. Linkages between the TNA process and other planning tools under the Convention.**

*How could the TNA process contribute to the NAMA and NAP processes?*

- (a) Using the outcomes of TNAs and turning them into NAMAs for implementation,
- (b) The NAMA stakeholders are not sufficiently informed about the TNA process and its results.

*What are the potential opportunities and challenges in integrating the TNA, NAMA and NAP processes?*

- (a) There is a need to set up a framework on integrating the TNA with the low emission strategies and NAPs,
- (b) Monitoring and review steps are important elements of the NAMA and NAP processes.

*How could the TNA process be further aligned with the NAMA and NAP processes?*

- (a) TNA, NAMA and NAP processes include several similarities, including involvement of stakeholders and capacity building,
- (b) MRV step is not covered in the TNA process and could be followed up by the national designated entities,
- (c) The NAMA registry should also include the identified technologies,
- (d) Involving national designated entities in the process of linking TNAs with NAMAs and NAP processes.