



**Technology Executive Committee**

18 March 2020

**Twentieth meeting**

**Virtual meeting, 1–3 April 2020**

**Draft policy brief on enhancing implementation of the results of  
technology needs assessments**

**Background note**

**Introduction**

**A. Background**

1. As per activity 2 of the implementation thematic area of its workplan for 2016 – 2018, the TEC is to analyse experiences, lessons learned and good practices in conducting technology needs assessments (TNAs) and implementing their results, including a Paper on good practices in conducting TNA, a policy brief, and recommendations to COP/CMA.
2. At TEC 19, the task force on TNAs, with the support from the secretariat, present a draft paper on experiences, lessons learned and good practices in conducting TNAs and implementing their results, for the TEC's consideration.
3. The TEC agreed to finalize the paper on experiences, lessons learned and good practices in conducting TNAs and implementing their results by the end of October 2019. The TEC also agreed to produce a policy brief in 2020 and key messages for COP 26.
4. At TEC 20, the TEC task force on implementation, with the support from the secretariat, will be invited to present the policy brief on enhancing implementation of TNA results.

**B. Scope of the note**

5. This background note provides in the annex the policy brief on enhancing implementation of the results of TNAs, including gaps and challenges, and good practices of TNA implementation, ways to enhance implementation of TNAs and recommendations on the implementation actions.

**C. Possible action by the Technology Executive Committee**

6. The TEC will be invited to consider the policy brief and provide guidance on this matter with a view to finalize the brief after TEC 20 and prepare relevant recommendations to the COP and CMA for submission and consideration at the 21<sup>st</sup> meeting of the TEC.

## Annex I

### **Policy brief on enhancing implementation of the results of technology needs assessments**

#### **1. Why This TEC Policy Brief**

1. Understanding climate technology needs is the starting point for effective action on climate change. By understanding climate technology needs one can determine how to reduce greenhouse gas emissions and adapt to the adverse impact of climate change. To determine climate technology priorities, countries undertake TNAs. These takes a starting point in national sustainable development plans, with a view to build national capacities and facilitate analysis and prioritization of climate technologies to support the implementation of the UNFCCC Paris Agreement and to achieve the Sustainable Development Goals.

2. This policy brief will:

- (a) Describe gaps, challenges and good practices of the TNA implementation process;
- (b) Provide examples of how countries have successfully progressed prioritized technologies from a TNA report towards their implementation;
- (c) Look at the key factors for successful implementation of the prioritized technologies, both during the conducting stage of the TNA and beyond that, and;
- (d) Discuss ways and means for improving the TNA process to help developing countries create or enhance the conditions, including capacity building, for the successful implementation after the TNA has been finalized.

3. This TEC brief targets international, regional, domestic actors, including policy makers in developing countries, international organizations, financial institutions and private sector actors, by providing recommendations for further action.

## 2. Highlights:

- Implementing the results of the TNAs remains a paramount priority for the further success of the TNA process. From numerous examples of implementation of TNA results, lessons learned, and good practices, the success of the TNA process can be derived.
- The engagement of key stakeholders, including decision-makers during the TNA and post-TNA stages, is instrumental in securing that TNA-prioritized technologies are included in new and ongoing governmental programmes, strategies and plans, so that sector-level goals can be achieved with the help of concrete actions from TNAs and technology action plans (TAPs). This also helps substantiate requests for funding from domestic and international funding instruments.
- Co-development of TNAs and TAPs with Nationally Determined Contributions (NDCs), National Action Plans (NAPs), Global Environment Facility (GEF), Green Climate Fund (GCF) and Adaptation Fund pipelines and using the TNA results as inputs to these instruments, helps to mainstream TNA outcomes in overarching national strategies and programmes for climate and sustainable development.
- Development of pilot projects will help to demonstrate available technology options and allow for gaining experiences with their utilization and ability to deliver financial and other benefits. Financial assistance for implementing such pilot projects is available through various channels, including multilateral and bilateral funding programmes. Technical support and advice can be provided by various organizations such as the Climate Technology Centre and Network (CTCN), including for the preparation of concept notes for funding of proposals, and delivery of appropriate trainings to enhance local capacities.
- The integration of TNA results in overarching policy framework in a country, such as for development and climate purposes is one of key success factors of the TNA process. Through that, prioritized technologies support policy processes are stakeholder-driven, while the technology options are more likely to be financially supported. From a perspective of technology neutral policies, the link with TNAs is also attractive as the process for conducting a TNA is an unbiased process allowing to shortlist technology options in line with a country's social, economic and environmental priorities and recommend measures for optimizing market conditions for these.
- Countries can build upon their TNA results in seeking funding from various sources, including the GCF. However, it has been indicated that the step from a TAP towards a successful funding proposal, for resource and capacity limitation issues, is often challenging. A good practice example described in this paper is that of a private bank, operational in a TNA country, that considered TNA-prioritized technologies as input for a GCF funding proposal.
- The quality of TAPs was considered by countries of vital importance for the likelihood of implementation of TNA results. An analysis of TAPs prepared during the TNA Phase II shows that the quality of information in TAPs has significantly improved, since the TNA Phase I, as many countries followed the updated TEC TAP guidance, prepared by the TEC in 2016.
- Role of equipped and trained champions is key for projects success, to continue work beyond TNA project borders.

## 3. Gaps and challenges

4. Despite the high implementation potential of TNAs and TAPs, several challenges and unaddressed needs remain, among which lack of domestic capacities to facilitate implementation, limited access to funding sources in many developing countries, and lack of involvement of funding institutions in the early stages of the preparation of project proposals, are persisting.

5. Although most countries have already established experienced groups of stakeholders around the TNA teams, in some regions implementation-oriented approaches are not sufficiently considered, including national level policies, strategies, programmes and creation of relevant financial incentives.

6. Further challenges in conducting TNAs and implementing their results include:

- (a) Frequency of TNAs, being an evolving process, is rather low hence may not match well with evolution of NDCs,
- (b) Late engagement of funders with TNA teams,
- (c) TAP modification towards available funding sources,
- (d) Matching of selected consultant with governmental priorities,
- (e) Mismatch between TNA identified priority needs and priorities of donors,
- (f) Monitoring and evaluation is outside the TNA process.

7. The quality of TAPs was considered by countries of vital importance for the likelihood of implementation of TNA results. An analysis of TAPs prepared during the TNA Phase II showed that the quality of information in TAPs has significantly improved, since the TNA Phase I, as many countries followed thoroughly the updated TAP guidance, prepared by the TEC in 2016.

8. Some TNA stakeholders expressed their wish to deviate from the recommended tables in the TAP guidance. For example, when it is clear upfront, which funding source will be pursued (e.g. GCF) for an action, the TAP can be developed in line with funder's demands, e.g., specifics of call for proposals of the GCF. In this context it is recommended to underline in the TAP guidance that the steps and tables form a suggested structure for compiling a TAP, rather than a prescriptive methodology.

9. TNAs can be followed up by new TNA Phases, but the continuation of TNAs is not institutionalized in the Global TNA Project, while NDC renewal has been defined as a requirement under the Paris Agreement. However, coordinators agree that a tracking system to monitor the implementation of TNA results is useful, but they warn that many countries currently do not have the capacity to implement such a system.

#### 4. Good practices of TNA implementation

10. This section highlights several examples of TNA countries that have, for multiple reasons been successful in progressing TAPs towards the implementation stage. The examples have been taken from the overview of TNA success stories as published by the UNFCCC Secretariat and UDP.

##### Overview of selected success stories on TNA implementation:

Country	TNA priority	Action to advance implementation
Lebanon (Phase I)	Harvesting rainwater to make up for lower precipitation.	3 pilots by UNDP and Ministry of Environment to harvest rainwater from greenhouse tops.
Jordan (Phase II)	Grassland management.	Pilot project funded by GEF; then concept note for GCF, supported by CTCN / UDP and TNA outcomes.
Mali (Phase I)	Feld contouring to prevent rainwater runoff.	Field contouring applied in rural Koutiala with help from CTCN.
Mauritius (Phase I)	Energy efficient boilers using waste heat recovery.	Based on TAPs, boiler economizers in the GEF-UNDP-EEMO project, as part of a broader project on energy efficiency in industry.
Morocco (Phase I)	Solar electricity technologies.	Based on TNA, NAMA on solar PV in household sector - facilitating implementation and readiness for mitigation project; during 2015-2025 30,000 solar pumps installed.

Country	TNA priority	Action to advance implementation
Senegal (Phase I)	Biomass for electricity.	Governmental feed-in tariff system for RE technologies; Projects initiated by private company and national office of sanitation; Uptake biomass in energy transition programme in ND.
Moldova (Phase I)	Health, medical emergency care and rehabilitation.	Medical emergency care and rehabilitation as identified in TNA-TAP introduced by Ministries of Health, Education, Interior as well as local authorities.
Bhutan (Phase I)	Intelligent transport systems.	Use TAP for application to CTCN; training and field visits and additional training on developing a NAMA.
Thailand (Phase I)	Precision farming. Decision support system freeware.	TNA incorporated in Thailand Climate Change National Plan 2015-2050; Pilot project to develop decision support scheme freeware for farmers.
Mongolia (Phase I)	Energy efficiency and renewable energy technologies.	XacBank used TNA outcome to develop loan programme; first private sector entity from developing country to receive funding from GCF (USD 20 million) to extend XacBank's existing business loan programme of USD 60 million; expected impact: 149,290 tCO <sub>2</sub> emission reduction per year.
Honduras (Phase II)	Sustainable livestock production.	Sustainable livestock NAMA was action in TNA-TAP. NAMA and TNA in tandem.

11. Several case studies were delivered by countries, where the roles of one or more stakeholders as 'technology champions' were exceptionally strong, and hence instrumental for implementation, after the TNA project was completed.

#### Lebanon

In Lebanon, three pilot projects have been developed by the national government for harvesting rainwater from greenhouse tops. With that, an additional water source can be generated for irrigation purposes and water use by farmers, as prioritized in the country's TNA. Through collaboration between the Lebanese Ministry of Environment and UNDP, guidelines have been developed for farmers to replicate the technology in the country.

Success factors: How stakeholders who were consulted during the TNA process informally continued their contacts to form informal stakeholder groups to communicate with policy makers on policies for prioritised technologies.

#### Mauritius

In Mauritius, the TAP for waste heat recovery for energy efficient boilers was used for preparing a proposal to the GEF, addressing energy efficiency in industries. Mauritius also acquired funding from the International Atomic Energy Agency (IAEA) to implement (parts of) a TAP on micro irrigation in agriculture, in pilots with smallholder farmers, thereby using innovative techniques to curb pests in agriculture. This success can largely be explained by sound collaboration between staff of Mauritius'

Food and Agricultural Research and Extension Institute (FAREI) and IAEA, which resulted in a clear view at both ends on opportunities for funding and pilots. Moreover, for integrated pest management activities, as identified in a TAP, funding has been acquired from the Global Climate Change Alliance.

Success factors: Establishing the successful collaboration between the staff of Mauritius' FAREI and IAEA. Personal contacts and trust.

Senegal

In Senegal, uptake of biomass-based technologies for electricity production, as prioritized in the TNA has been accelerated through public-private collaboration. The government provided a feed-in tariff scheme for renewable energy technology use while a private company was responsible for technology implementation. This has resulted in concrete biomass-based electricity production which supports the inclusion of biomass use in Senegal's energy transition programme for its NDC.

Success factors: The way that responsibilities were shared between public and private sectors stakeholders, as suggested by the TAP guidance.

## 5. Ways to enhance implementation of TNAs

12. From the examples of implementation of TNA results as shown in section 4, the following key factors for success can be derived:

(a) The engagement of stakeholders and ministries during the TNA and post-TNA phase in order to include TNA-prioritised technologies in new or ongoing governmental programmes, so that sector-level goals can be achieved with help of concrete actions from TNAs and TAPs. This also helps to substantiate requests for funding from international funding programmes;

(b) Co-development of TNAs and TAPs with NAMAs, NDCs, GEF, GCF and AF pipelines helps to mainstream TNA outcomes in overarching national strategies and programmes for climate and sustainable development. This also avoids "reinventing the wheel". The TNA institutional structure can be aligned with an existing climate committee, such as a group set up for drafting the NDC;

(c) Development of pilot projects to demonstrate technology options, with financial support from multilateral funding programmes and development partners, and technical support and advice from CTCN (training, development of pilots, writing of concept notes for funding proposals, etc.);

(d) It is a considered good practice by countries to engage possible funders for the TAP activities in an early stage of the TNA-TAP process, which can inform country stakeholders about what funders will fund and avoid mismatches between countries' and funders' priorities. For that, particularly in-country donors and national focal points of international climate finance mechanisms are recommended to be engaged for the TNA to become a collaborative process leading to higher chances of funding and implementation;

(e) Clarity on ownership among the key stakeholders increases the chances of implementation of TNA results. While the TNA process itself is often coordinated and 'owned' by a ministry of environment, it is good practice to discuss from an early stage who will take responsibility for implementation of the TAP. This could be a specific line ministry, but there are also good practice cases where governmental working groups take the responsibility for implementation actions beyond the finalization of the TNA process;

(f) Consideration of TNA prioritised technology options in proposals submitted to the GCF;

(g) Role of equipped and trained champions is key for projects success, to continue work beyond TNA project timelines.

## 6. Recommendations on actions for enhancing the implementation of TNA results

### (a) Domestic (capacity building, enabling environment)

13. Developing countries may consider further promotion of their TNA results domestically with a view to enhance their implementation. The TNA results may be offered to mitigation and adaptation related processes and activities in countries, including NDCs, NAPs, and others. Experts from relevant bodies, such as Ministries of Finance, regional development and Energy/Economy, NDEs, NDAs and others could be introduced to domestic TNA results as an opportunity to build on them and hence leverage their implementation potential.

14. Governments have a major role to play in creating the enabling environments for technology transfer through strengthening of legal and regulatory frameworks for international technology transfer and foreign financial flows, including introducing market-based instruments for market development.

15. An effective enabling environment for technology development and transfer is often characterized by greater coordination and communication among government departments and agencies, with the goal of streamlining and easing the way for investment in technologies and presenting international technology development and transfer efforts with an integrated approach at national and subnational levels.

16. Proper selection of project development teams, and identification of relevant decision makers is one of key pre-conditions for successful TNA preparation and implementation of its results.

17. The latest TAP guidance includes a step for tracking the implementation of TNA results in the post-TNA phase, but the challenge remains to incentivize country stakeholders to actively allow other to keep track of their implementation results.

18. Tracking of implementation of TNA results is not only included as a final step of the TAP development, but also as an issue to be discussed upon the start of the TNA process. By then, country stakeholders can discuss existing monitoring systems for the TNA to become a part of (e.g. NDC monitoring requirements under the Paris Agreement) or identify the need for capacity building with regard to tracking. An additional reason for tracking implementation results is that it can streamline the process of iterative TNAs, in which a country decides to review or repeat the TNA process.

### (b) Regional (learning from neighbours, replication)

19. Regional promotion of lessons learned, success stories and challenges of implementation of climate technologies, could be beneficial for countries within the same regions where countries with similar enabling environments and capacity levels are located. This will allow for replication of good practice when piloting and deploying technology related activities. Such approach will assist in enhanced implementation of climate technologies.

### (c) International

20. International cooperation for implementation of technology needs will enhance implementation of TNA results. Technology demands expressed by countries may be supported by international funding and investment stakeholders with extensive experiences in financing mitigation and adaptation climate actions.

### (d) Financial

21. Availability of and access to financial resources were many times stated in the TNA reports as one of the main barriers to technology transfer in developing countries, including least developed countries and small islands developing states. Further promotion of implementation plans and activities may stimulate interest of financial institutions and stakeholders to provide suitable financial resources for climate technology investments.

22. For further stimulating the transition to improved enabling framework conditions for technology development and transfer, a combination of market stimulation and human capacity development is identified as key by developing countries in their TNAs. Henceforth, support to programmes for strengthening of institutional and scientific capacities of developing countries, in

particular for least developed countries, is critical for creation of the long-term enabling frameworks required for technology transfer.

**(e) Private sector**

23. In developing countries, the markets for climate technologies are rapidly expanding creating new and improved opportunities for international exports, but also for domestic production and joint ventures across borders. Familiarization of private sector with the TNA implementation plans and engaging them in the project preparation teams may enhance their interest in implementation activities of countries. Efforts of the private sector may be stimulated by national support mechanisms and instruments focusing on both mitigation and adaptation actions.

**(f) Others**

24. Raise awareness about TAPs by bringing them to the attention of potential donors.

25. Apart from the active involvement of donors and financial experts in a TNA process, this can be done by organizing a ‘donor conference’ as a final step of the TNA process. This is now planned for TNA Phase III and IV. In this context, it is also recommended by interviewees to show actual results and success stories based on TNAs, as this builds trust and confidence among potential public and private sector funders. Keeping track of implementation results of TNA-prioritized technologies would support that, as discussed above.

26. Sharing TNA experiences.

27. Under the Global TNA Project dozens of countries have completed a TNA or are currently working on it. This leads to enormous opportunities for cross-learning about TNA experiences, both on the process itself and on the post-TNA implementation phase. In the current setup of the TNA phases, TNA coordinators and consultants meet each other at the regional workshops. Supplementary to this could be a programme in which TNA coordinators or working groups learn from a TNA country from a previous phase, for example through site visits. In the workshops and trainings of TNA Phase III several TNA experts from previous phases have already been involved. This enabled an enhanced cooperation and learning from experiences.

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