



The TNA Project is supported and funded by the GEF

Editorial

I believe in the strategic importance of the Technology Needs Assessments (TNAs). The TNAs enable countries to identify and prioritize technology needs, articulate the necessary policy and institutional conditions to address the needs in a systematic and objective fashion, and engage stakeholders in the course of the assessment.



Monique Barbut

I also believe that the strategic importance of TNAs has not been fully well-executed. Assessments alone, no matter how detailed or well-executed, are not sufficient to induce technology transfer and result in real change. Yet without systematic, country-driven, and well-executed assessments, real priorities may not be addressed in a timely manner.

The TNA project is implemented by UNEP and the UNEP Rise Centre on behalf of the GEF. The project provides targeted technical and methodological support to 36 countries in conducting TNAs. An initial round of 15 countries from Africa, Asia, CIS, Latin America and the Caribbean started activities early 2010. An additional 21 countries were engaged in the last quarter of 2010 and are in the process of starting national activities.

The recognition of this "dilemma" has led to the inclusion of the UNEP TNA project as a key component of the Poznan Strategic Programme on Technology Transfer, which was established at the Fourteenth Conference of the Parties (COP 14) to the United Nations Framework Convention on Climate Change (UNFCCC). By placing the TNA project and the technology transfer pilot projects under the same programmatic umbrella, the GEF aims to send a clear signal to countries that the TNA and technology implementation are an integral part of strategic technology transfer.

Let me share my thoughts on the important role of the UNEP TNA project. First, by working with a large number of countries as cohorts, the project is expected to produce higher-quality, up-to-date TNAs with targeted capacity support. Second, the project goes beyond the traditional TNAs to articulate Technology Action Plans (TAPs), which enable the countries to move towards more effective technology implementation. Ultimately, the outputs of this project may help inform the GEF and other institutions on potential technology transfer projects to be prioritized.

The Cancun Agreements included the Technology Mechanism, affirming the critical role of technology transfer in the global response to the challenges of climate change. There are high expectations for technology transfer, yet available resources are limited. More than ever, TNAs may serve as a fundamental tool, among others, to help countries prioritize mitigation and adaptation needs and inform technology-related resource mobilization.

I look forward to learning about the progress and results of the TNA project, and working further with the countries to support identified priorities as part of GEF's planned activities. I am counting on your cooperation to realize the full strategic potential of TNAs.

Monique Barbut
CEO and Chairperson
Global Environment Facility

TNA Update in brief

Welcome to the second TNA Newsletter. The objective of this newsletter is to share information on the progress and impacts of the TNA project in the countries involved. Draft technology prioritization reports (TNA reports) have been prepared in Senegal, Mali, Côte d'Ivoire, Morocco, Cambodia, Indonesia, Costa Rica and Peru. Work on technology action plans (TAPs) is in progress in several first-round countries and six TAPs are expected to be completed by the end of the year. Technology prioritization work has started in the second round countries following the first capacity building workshops held between June and August in three regions. A supplementary workshop was held on 27-28 September in Mauritius for the nine countries that missed the first workshop. National inception workshops have already been held in three second-round countries and the rest are scheduled for October 2011.

Three more technology guidebooks have been prepared and are also available to [download](#). These include: Technologies for Climate Change Adaptation-Water Sector in May, 2011, Technologies for Climate Change Adaptation-Agriculture Sector in August, 2011, and Technologies for Climate Change Mitigation-Transport Sector in March, 2011. For more information, please visit the [TNA website](#). Technology fact sheets produced from the guidebooks are available on the [Climate TechnWiki](#).

A TNA event is scheduled to be held on 30th November in Durban during COP 17 where countries, one each from Africa, Asia and Latin America will present their Technology Action Plans (TAPs) and explain the importance of the TNAs in their countries.

Country Perspectives

For this edition of the newsletter we have invited three participant countries from the first round to tell us what the TNA project means to them, how it relates to and complements other projects, policies and initiatives aimed at tackling climate change.

Peru

The great biodiversity of flora and fauna, climate, ecosystems, cultures and the vast and varied geography that characterizes Peru, and the conditions of development, represent a challenge in implementing adaptation and mitigation measures to address climate change.



Claudia Figallo, Directorate of Climate Change, Ministry of Environment, Peru

Because of these conditions the Peruvian people, since ancient times, have had to adapt their livelihood to climatic requirements – nowadays aggravated not only by frequency but also by intensity – and have been forced to strengthen their socio-cultural patterns and mechanisms, including the creation of technologies.

In this sense, Technology Needs Assessments (TNA) represent an input for the design of instruments and technical and financial proposals that are strongly supported by public development policy and national priorities, such as hydrological resources, solid waste and forest management and the use of traditional knowledge and technologies in local circumstances that increases the chances of successful project implementation.

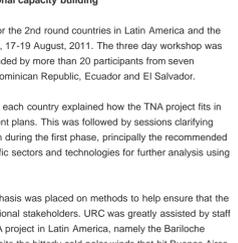
The capacity-building workshops have proved to be significantly important in understanding the UNEP methodology and have provided an opportunity to learn through the exchange of experiences between participating countries. In Peru, the decision to define the scope of the study was made based on national priorities, international commitments, the results of the Second National Communication on Climate Change and other studies, such as the assessment Investment and Financial Flows (I&FF) to address climate change with projections to 2030, led by the UNDP which has also contributed to economic information relevant to the identification of some technology needs at regional and local level.

One of the main achievements of the TNA project to date has been the selection of priority sectors and subsectors. Regarding the issue of adaptation the hydrological resource sector was selected, for which it was decided to consider the use of traditional technologies and combining them with modern technical solutions. With reference to the issue of mitigation the solid waste sector was chosen due to its beneficial environmental and social management.

However, due to the heterogeneous conditions mentioned beforehand, the analysis of priority sectors and subsectors presented difficulties and took longer than scheduled. Other difficulties that delayed the process of TNA were associated with project management initiatives, changes in the coordination team and government. To address these challenges the Ministry of the Environment is working in partnership with universities, the private sector, public institutions, local authorities and others experts in the field through various activities and projects, in order to access locally available knowledge and expertise.

Senegal

For Senegal, the TNA project is a good way to have a view of the current situation of clean technologies in the selected and prioritized sectors in terms of knowledge, deployment and diffusion in the country. It also allows us to place the prioritised technologies in relation to national and sector-specific policies and, finally, to identify and overcome the barriers facing their deployment and diffusion.



Madye Diagne (project consultant) and Mame Ndiour (TNA Coordinator)

Proposals made for the removal of barriers will ensure a greater resilience of our systems to the adverse effects of climate change and ensure that Senegal follows a low-carbon development path.

The TNA project will also strengthen the capacity of actors involved in the project and will, if replicated in other sectors, ensure consistency between policies and operational measures for a better use of the country's resources.

Senegal hopes to produce a detailed Technology Action Plan in line with the national priorities through a wide participatory process which will be a very useful tool for the implementation of programmes and projects in many sectors. The TNA project can also facilitate the further preparation of NAMAs and the updating of NAPAs. Many projects currently implemented in Senegal have synergies with the TNA, whose activities are related to the enhancement and/or creation of an enabling environment including institutional structures, strategic planning and programming, and policy development and/or adjustment for both adaptation and mitigation. They also contribute to the transfer of sound technologies.

In Senegal, we have prioritised the following adaptation-side technologies for deeper analysis in the agricultural sector:

- Improved seed banks
- Natural regeneration
- Agroforestry
- Constitution and conservation of fodder reserves

After analysis, the technological options selected for the water sector are:

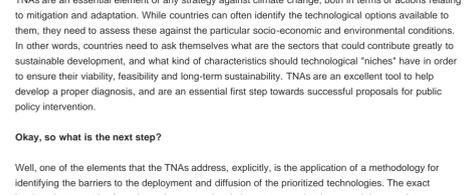
- Drip irrigation
- Reutilization of treated wastewater
- Rainwater capture and storage
- GEOSFM model for simulating flow on watersheds

For climate change mitigation, the energy sector has been prioritised and the main technologies identified are the following on both the supply and demand-side:

- Direct combustion of biomass
- Wind Power on shore
- Solar Photovoltaic
- Solar water heater
- Cooling Food equipment (fridge, freezer, etc.)
- Device for improving power factor (cosine phi)
- Cogeneration
- Efficient air conditioners
- Portable solar lamps

The main challenges encountered during the selection of sectors and the technology prioritization related to the collection of information about the presence of knowledge and technology diffusion that already exists in Senegal. This work required the level, within the working group established for that purpose, of high-level national experts who are familiar with technologies and policies implemented in their respective fields. Identifying appropriate data related to the costs of the identified technologies was also a challenge, as was the non-availability of all documentation required for the job in French language. To address these challenges, significant time was devoted to background research and feedback sessions at the regional working workshops was conducted, in addition to numerous meetings among the sector-specific working groups.

Indonesia



The Indonesian TNA Team

Indonesia submitted its first TNA to the UNFCCC in 2002 and submitted an updated TNA entitled "Indonesia's Technology Needs Assessment on Climate Change Mitigation" in 2010. The TNA 2010 was the time that national stakeholders were fully involved in the processes in Indonesia. Currently, Indonesia is stoked in the global TNA programme under UNEP leadership. By joining this global TNA programme, Indonesia hopes to encourage action on technology transfer for climate change adaptation and mitigation through the implementation of a Technology Action Plan (TAP). The government of Indonesia has endorsed a voluntary commitment to reduce the country's GHG emissions by as much as 26 % by 2020, mostly using its own capabilities and resources, with 41% of support coming from the international community. Given that it is funded by the Global Environment Facility, the TNA project forms part of this commitment from the international community.

The TNA project in Indonesia covers three sectors for mitigation (forestry including peat, energy and waste) and three for adaptation (food security, coastal vulnerability, and water resources). Indonesia is dedicated to conducting the global TNA programme through stakeholder processes and now work on the TAP which is now 40% finished. The results of top-three prioritized technologies are as follows:

Sector	Technology Mitigation	Sector	Technology Adaptation
Energy	Photovoltaic	Food Security	Crop (rice) tolerance to drought and flood
	RBCS		Mariculture development
	MRT		Beef cattle farming technology
Forestry	Measurement and monitoring of carbon sequestration and emission	Water Resources	Technologies for rain water harvesting (well and infiltration pond)
	Peat re-mapping		Domestic water recycling
	Water management		Modeling for water resource potential projection
Waste	Mechanical biological treatment	Coastal Vulnerability	Grain technology
	In-vessel composting		Technology for coral reef and seagrass restoration
	Low-solid anaerobic digestion		Fish aggregating device (rumpon) technology

Thus far, two regional capacity building workshops have been conducted during the project duration and conducted by IAT as the regional centre in Asia. Those workshops are very important for Indonesia's TNA team to improve the team capability in prioritizing the technology using Multi Criteria Analysis (MCA) tools and for conducting the barrier analysis, enabling framework and Technology Action Plan (TAP).

Intensive involvement of related medium level and high level sectors and stakeholders in the entire activity processes of the TNA and TAP development will ensure the ownership of the TNA project and document as well as ensure that all the prioritized technologies and TAP are in line with sector priorities, programmes and policies. Involving the medium level and high level stakeholders is challenging in terms of the time it takes to arrange meetings due to busy work schedules. Sometimes, it is necessary to personally discuss with important stakeholders who could not come to the meetings, which creates delays in finalizing the TNA and TAP. Collecting the latest baseline data of the sectors is the other constraint facing the TNA team, which requires special efforts to overcome.

Regional Capacity-Building Workshops

African Regional Capacity Building Workshop reveals a great commitment to team building

The first regional workshop for the 2nd round countries was held from 28 to 30 June, at Naivasha, Kenya. In all, 21 participants from seven countries - Ethiopia, Ghana, Kenya, Lebanon, Mauritius, Sudan and Zambia - attended the workshop. The purpose was to bring the country teams – generally represented by the national coordinator together with two national consultants or experts – up to date with the common approach and methodologies to be used in the first part of the TNA project. The approach comprises:

- Selection of technologies and strategies for climate change mitigation and adaptation
- Conducting stakeholder consultations
- Prioritising technologies and sectors for further analysis

The trainers (staff from the Regional Centre ENDA and from the UNEP Rise Centre (URC)) presented the essential elements of the TNA approach and in particular the tools that could be used for multi-criteria analysis (MCA), mitigation potential and cost assessment of mitigation technologies, vulnerability reduction potential and socio-economic assessment of adaptation technologies. Various guidebooks, databases and other support functions available to assist the teams in conducting the assessments were also presented. Conventional lecturing sessions were supplemented with group exercises carried out by the country teams, which were subsequently presented and discussed in plenary sessions.

An evaluation of the workshop indicated a high level of satisfaction with the presentations, training and discussions, with the group exercises being particularly appreciated.

Taking a breaking during the African workshop, Kenya

Argentina plays host for Latin American regional capacity building

The first Regional Capacity Building Workshop for the 2nd round countries in Latin America and the Caribbean took place in Buenos Aires, Argentina, 17-19 August, 2011. The three day workshop was organised by the Bariloche Foundation and attended by more than 20 participants from seven countries: Argentina, Bolivia, Cuba, Colombia, Dominican Republic, Ecuador and El Salvador.

On the opening day the National Coordinators of each country explained how the TNA project fits in with and complements their country's development plans. This was followed by sessions clarifying more technical aspects of project implementation during the first phase, principally the recommended methodology for identifying and prioritising specific sectors and technologies for further analysis using a multi-criteria assessment tool.

As with the regional workshops, a heavy emphasis was placed on methods to help ensure that the project engages strongly and effectively with national stakeholders. URC was greatly assisted by staff from the two regional centres involved in the TNA project in Latin America, namely the Bariloche Foundation (Argentina) and Libélula (Peru). Despite the bitterly cold polar winds that hit Buenos Aires during the week the workshop was held the mood remained positive, as did the feedback received from delegates.

Participants of the Latin American workshop, Argentina

Bangkok reunion for second-round Asian countries

The TNA capacity building workshop was held at the Asian Institute of Technology (AIT) in Bangkok, Thailand, 8-11 August, 2011. In all, there were 20 participants from seven countries: Azerbaijan, Bhutan, Kazakhstan, Laos, Moldova, Mongolia and Sri Lanka. The objectives of the workshop included training on use of methodology for prioritization of technologies, multi-criteria analysis (MCA) tool, FICAM a tool for financial assessment of technologies, and facilitation of effective stakeholder consultation. Workshop training and leadership was provided by staff of URC and AIT with support from international experts from Trinity-IMI, Kolkata (for training on FICAM model), and Synergy Management Associates (UK) who provided training in facilitating the stakeholder consultation. Feedback from the workshop participants indicated that they found the training very useful.

Stakeholders engagement session at the AIT workshop, Thailand

Building Capacity through Regional Centres

Learning the business of stakeholder consultation: the key to TNA success

A major part of the TNA process requires engagement of national stakeholders who bring different institutional perspectives and so have different priorities and agendas with regard to climate change and technologies. At all of the first regional capacity building workshops for second-round countries a full day was dedicated to introducing the country teams to techniques for facilitating stakeholder consultations and developing these skills. Participants were guided by expert consultants through the issues of stakeholder mapping, communication, overcoming barriers to change and running stakeholder consultation workshops. In particular, country teams learned how to adapt these concepts to the TNA process and stakeholders in their countries and had an opportunity to design a workshop taking into account the concepts that had been learned in the seminar.

Experiences and observations from capacity building workshops

The Asian Institute of Technology (AIT) is the Regional Centre (RC) in Asia that assists with capacity building activities for the TNA participating countries. AIT organised the first capacity building workshop for the first-round of Asian countries, held 15-17 September, 2010 in Bangkok, Thailand. This was attended by 23 country participants involving academics, policy makers and consultants from Bangladesh, Cambodia, Georgia, Indonesia, Vietnam and Thailand. The objective of the workshop was to introduce participants to the tools and methodology to be applied during the TNA sector and technology prioritization, including financial assessments of technologies, multi-criteria analysis and stakeholder consultation to develop the TNA reports.

The second capacity building workshop was held during 18-21 January, 2011 in Bangkok, Thailand with the objective of providing the participants with tools to undertake barrier analysis, mapping the markets, developing enabling frameworks, and preparing Technology Action Plans (TAPs) for the prioritized technologies. Bi-lateral meetings with the participating countries were scheduled to facilitate face-to-face interaction with the country participants as well as to provide an additional forum for detailed discussions with the AIT. The bi-lateral meetings helped to foster better communication and collaboration between the countries and the RC after the workshop.

The comments from participants following the workshop indicated positive feedback - lots of practical exercises and good contents in the presentation, and also suggestions that more time be devoted to general discussions and hands on practical sessions. The TNA coordinators of the participating countries have since frequently communicated the status of their activities, difficulties faced and sought inputs from AIT via email. The [TNA website](#) developed by AIT has relevant documents uploaded for carrying out TNAs, acting as a one-stop shop for all relevant information, documents and links.

Following feedback received from some participants, AIT is working to assist countries in applying the MCDA (Multi-Criteria Decision Assessment) tool for prioritizing the technologies, which can become complicated if it is not well managed. In response, the mitigation team at AIT has prepared a detailed list of steps (and sub steps) for sector and technology prioritization using the guidelines provided in the TNA guidebooks. These steps give a clear indication of the required inputs, the expected outputs and the types of outputs. Finally, AIT plans to develop case studies to illustrate the TNA process, which will further help countries in their TNA and TAP preparation.

Q & A on TNAs

Each quarterly TNA newsletter will feature a Question and Answer (Q&A) with a regional expert or country stakeholder. The Q&A aims to clarify key aspects of the project common to all stakeholders, and also obtain a variety of perspectives from across more than 30 countries.

Daniel Bouille, Vice-president of the Bariloche Foundation

For this second edition, we spoke to Daniel Bouille, vice-president of the Bariloche Foundation, Argentina. Daniel Bouille is an expert on energy and climate change mitigation and has implemented TNAs in several countries across Latin America and the Caribbean, often working in partnership with UNEP and URC, for more than 20 years. As one of the Regional Centres for the global TNA project, the Bariloche Foundation is providing key technical support for Latin American countries, in partnership with Libélula, based in Peru.

Why is it necessary to assess technology needs in Latin America – don't countries already know what they need?

TNAs are an essential element of any strategy against climate change, both in terms of actions relating to mitigation and adaptation. While countries can often identify the technological options available to them, they need to assess these against the particular socio-economic and environmental conditions. In other words, countries need to ask themselves what are the sectors that could contribute greatly to sustainable development, and what kind of characteristics should technological "niches" have in order to ensure their viability, feasibility and long-term sustainability. TNAs are an excellent tool to help develop a proper diagnosis, and are an essential first step towards successful proposals for public policy intervention.

Okay, so what is the next step?

Well, one of the elements that the TNAs address, explicitly, is the application of a methodology for identifying the barriers to the deployment and diffusion of the prioritized technologies. The exact barriers that countries face depends upon national circumstances, but in general they can be understood as either political, economic / financial, legal and regulatory, technical, institutional, information, socio-cultural, to name the most important.

What is meant by an 'enabling framework'?

The expected result of the TNA project is the development of a TAP (Technology Action Plan) which involves defining what are the strategies, measures and actions that must be implemented in order to create an environment conducive to their transfer, penetration, deployment and diffusion of technologies considered desirable, as a priority. As such, an "enabling framework" is to develop a policy framework that creates the conditions for a specific technology to overcome barriers and to become a mainstream reality in the marketplace.

Generally speaking, do Latin America countries have the capacity to conduct the TNA process?

The LAC (Latin America and the Caribbean) countries, in general, are able to carry out the TNA process. However, given that the levels of development and capabilities vary across the region, this project is designed to take into account, and adapt to, national circumstances which includes any capacity constraints faced by countries. Overall, of course, the success of the project in terms of the implementation of the TAP will depend upon the political will of the participating governments.

The Climate Technology Initiative's Financing Advisory Network (CTI-PFAN)

Peter Storey, CTI PFAN Global Coordinator

Since May this year CTI PFAN and UNEP have been co-operating to help developing countries identify and develop commercially oriented mitigation and adaptation projects emerging from their TNA process. This network has been designed specifically to support countries preparing their TNAs under the Poznan Programme but it is available as a resource to support projects emerging from TNAs from any developing country.

CTI PFAN (Climate Technology Initiative Private Financing Advisory Network) is a multilateral public-private partnership that nurtures promising, innovative clean and renewable energy projects by bridging the gap between investors and clean energy entrepreneurs and project developers. CTI PFAN identifies promising clean energy businesses and projects at an early stage and provides free mentoring for development of a business plan, preparation of an investment pitch and sourcing of investment and financing from its global and regional networks, significantly enhancing the possibility of financial closure.

CTI PFAN was initiated by the Climate Technology Initiative (CTI) in 2006, originally as a small scale pilot, and since 2008 has been continually scaling up into a global operation, currently encompassing 3 regional networks, covering Africa, Asia and Latin America. Further regional networks are being launched in late 2011 covering Central Asia & Eastern Europe as well as Central America & the Caribbean. In the meantime CTI PFAN has a proven track record and has successfully raised just over USD 373 million of investment and financing for project implementation; the current development pipeline numbers some 143 projects with a combined investment volume of in excess of USD 2.6 billion.

CTI has a long history of working with UNEP and UNDP on TNAs and is intimately acquainted with the TNA process. Through the cooperation with UNEP, developing countries are provided free support and advice on project identification and development as well as on structuring and sourcing of investment and financing for project implementation. This support is provided by experienced financing professionals active in the clean energy space in developing countries.

Projects are selected based on seven key criteria – namely that they have a committed and competent management team to drive the project development, are technically viable, economically viable, sustainable, environmentally beneficial, socially responsible and contribute to a reduction in green house gas emissions.

Applications for CTI PFAN support are made by way of a free form project proposal which needs to describe the project and demonstrate that the project eligibility criteria can be reasonably fulfilled.

Applications may be made in word, ppt or pdf formats and should include supporting documentation where available. A project proposal template, which provides a suggested structure for the proposal is available on request by contacting Taiki Kuroda at the CTI PFAN Secretariat kuroda@icctt.or.jp. Project proposals may be submitted by e-mail to kuroda@icctt.or.jp and can be made at any time.

For further information please contact:

- Lawrence Agbemahese - UNEP Energy Branch - lawrence.agbemahese@unep.org
- Elmer Holt, CTI PFAN Manager - elmer.holt@hq.unep.org
- Peter Storey, CTI PFAN Global Coordinator - peter.storey@ppl-int.com

Upcoming events

COP 17, Durban, South Africa. A TNA Event is scheduled to be held on 30th November in Durban during the COP 17 where countries, one each from Africa, Asia and Latin America will present their country's TAP, bringing out the importance of the TNA in their countries.

Publications

Technologies for Climate Change Mitigation-Transport Sector launched March, 2011. For more information, please visit: <http://tech-action.org/resources.htm>

Technologies for Climate Change Adaptation-Agriculture Sector, Launched August, 2011. The technology fact sheets from the guidebooks have been provided to the TechnWiki (<http://climatestechniki.org/>)

First articles in the perspectives series "Diffusion of renewable energy technologies: case studies of enabling frameworks in developing countries" available to download: <http://tech-action.org/perspectives.htm>

For further information on the TNA Project, Please contact:

- At UNEP: **Bernard Jamet**, Head, Technology Transfer Unit, Bernard.Jamet@unep.org
- At URC: **Jyoti Prasad Painuly**, Project Manager, jpa@riseo.dtu.dk
- Lawrence Agbemahese**, Programme Officer, Agbemahese@unep.org
- Ivan Nygaard**, Regional Coordinator- Africa, ivny@riseo.dtu.dk
- Subash Dhar**, Regional Coordinator- Asia and CIS, sush@riseo.dtu.dk
- Jorge Rogat**, Regional Coordinator- Latin America and Caribbean, jor@riseo.dtu.dk

For more information on UNEP and URC activities, please visit www.unep.org & www.unep-riose.org

The TNA Newsletter provides information on the activities and progress within the TNA project and beyond. The views expressed in the newsletter do not necessarily represent those of UNEP, UNEP Rise Centre or GEF.

TNA newsletter editorial team:

- Mette Annelie Rasmussen, mette@riseo.dtu.dk
- James Arthur Hasselip, jha@riseo.dtu.dk
- Jyoti Prasad Painuly, jpa@riseo.dtu.dk

