Identification and Engagement of Stakeholders in the TNA Process

A Guide for National TNA Teams

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1. Introduction

1.1 Background, objectives and outcomes of the TNA process

As a country-driven process, the TNA should take national sustainable development priorities into consideration. TNA is also a participatory process and the involvement of all relevant stakeholders is therefore crucial. The value of involving a wide range of relevant stakeholders in the process is that the country will progress and become stronger in terms of tackling climate change, especially because the TNA provides an ideal setting for stakeholders that play crucial roles in a country's innovation and technology ecosystem, to become engaged on climate change issues.

Box 1 - The main steps and objectives of the TNA project are:

- Step 1: To identify and prioritise through a country-driven participatory process, technologies that can contribute to mitigation and adaptation for selected sector/subsectors, while meeting their national sustainable development goals and priorities. The outcome for this step will be the TNA report;

- Step 2: To identify, analyse and address barriers hindering the acquisition, deployment, and diffusion of prioritised technologies including enabling the environment for the same; and

- Step 3: Based on the inputs obtained from the two previous steps, to develop Technology Action Plans (TAP) including suggested measures/actions. This step will include the development of project ideas.

Templates for each of the reports have been developed and are distributed to participating countries well in advance of reporting. For each of the steps, this Guide Note presents specific guidelines and methodologies (see Section 2).

In this context, it is important to understand that stakeholders are different in nature (because they represent different interest groups) and should have different roles along the various steps of the implementation in the TNA project. Identifying and distinguishing them at a very early stage of the TNA process is very important for successful involvement and engagement during the crucial steps of barrier analysis and the development of a technology action plan that is feasible and action-oriented.

Based on the experience from countries conducting TNA Phase I, it is clear the TNA process has helped participating countries in a number of ways that could also be considered as outcomes of the TNA project. For instance, during Phase l, stakeholder involvement allowed for the identification of linkages between the TNA process and other larger national climate policy processes; several Phase I countries have used the inputs from their TAPs directly to develop their Nationally Appropriate Mitigation Actions (NAMAs). Other countries have adopted the TNA methodology to assess other local environmental needs. Some countries have developed further their project ideas and implemented actual projects either with national or international funding. All these examples illustrate the strength of stakeholder consultation process and represent a desirable outcome from the TNA process.

1.2 Introduction to the guide note and why stakeholders are important for the TNA process

This guide note aims to help national TNA coordinators and the TNA team in participating countries to engage all relevant stakeholders throughout the TNA process, thus allowing them to be part of the development and implementation of the TNA project and to generate a sense of ownership. By providing the appropriate

methodology, this detailed guide note walks national TNA coordinators and their team through the process of identification, consultation and engagement of all relevant stakeholders. The benefits of stakeholder involvement in the TNA process are essential for any country seeking to have successful results leading to an effective implementation stage.

The importance of stakeholder participation in the TNA process may not be fully understood by national TNA teams at the beginning of the process. However evidence from TNA Phase l has shown their involvement is crucial to elevate the relevance and scale up the project. For instance in Peru, the Third National Communication will devote its entire chapter on technology to the results of the TNA. Stakeholders involved in the process also facilitated the implementation of project ideas developed in the TNA project. (United Nations Framework Convention on Climate Change, 2013).

Box 2 – Lebanon: a success story of post-project implementation (Aboujaoude, 2015)

For Lebanon's TNA team, governmental stakeholder engagement was central in the process. This is simply because in the end, it is precisely government officials who are ultimately responsible for the implementation of project ideas. At the same time, they highlighted the importance of not just involving "many people", but also thoroughly assessing whom to involve thus ensuring that project objectives are met.

In Lebanon most of the technologies prioritised are already about to be used in scale. For instance, 2 technologies from the water sector were successfully implemented thanks to the integration of the TAP into other projects from different sectors. For one of these technologies, rainwater harvesting, a guidebook was developed by the Ministry of Environment with information, instructions and costs, in order to encourage farmers to adopt and implement this technology on their own.

To ensure the success of any decision-making process, it is necessary to ensure that actions are undertaken in the right way, with the right authorisations and at the right time (Luepke, 2013). This could be synthesised in three requirements for the TNA process: credibility, legitimacy and relevance in order to attain a real impact in the country's technological decision making and implementation processes (Simo, Niemelä, & Tinch, 2013). These attributes can only be achieved through the engagement and participation of stakeholders in every stage of the process.

Different national circumstances in terms of institutional structures in the public and private sectors, existing capacities, state of technological development, GHG profile and vulnerabilities to climate change will require different approaches for stakeholder engagement in each country. Consequently, this guide note should be taken as a reference for stakeholder engagement, but adapted to the unique circumstances of each country.

Section 2 of the guide note is focused on the stakeholders involved in the TNA process, including the main conditions required to fully achieve the objectives and the level of stakeholder involvement that will support the implementation of the project. In section 3 a series of methods, tools and recommendations will be provided to identify the most relevant stakeholders for the process and to keep them engaged. Section 4 will describe the role of stakeholders after the TNA process and how they should guarantee scaling up and actual implementation of the Technology Action Plans. The most relevant lessons learned from Phase l, will be presented in Section 5. Section 6 presents the conclusions of the guide.

2. Stakeholders in the TNA process: Step by step guidance

After reading this section the reader is expected to have a clear understanding of the institutional structure of the TNA project as well as of the various stakeholders that should be linked to the project. To achieve the objectives of the project, the various roles stakeholders could play in each step of the process will be presented.

1.1 Stakeholders and the TNA: A general glance

A stakeholder is an individual or group with an interest in a particular decision and its consequences. It may include those who make a decision, those who could influence it and those who will be affected by it. That decision "…will affect and influence the stakeholder in a certain way as an individual or as a group, in the same way the stakeholder also has an opportunity to influence on the decision-making process: through its own action" (Aaltonen & Kreutz, 2009). It includes those who influence a decision (or can influence it), and those who are affected by it (will be affected by the decision made) (Aaltonen & Kreutz, 2009).

In the case of the TNA, the main decisions during the process correspond to the technologies for mitigation and adaptation to climate change that will be prioritised and the actions the country will undertake to enable the transfer and diffusion of those technologies. The consequences of these decisions will hopefully relate to actual transfer and diffusion of technology. It is therefore crucial to think ahead so that stakeholders having a stronger role post-TNA project are involved (see Section 4).

Stakeholders can belong to various groups or categories, but for the TNA process they can be divided into 14 categories (Box 3).

Although this broad categorisation provides an idea of who to include, each country will vary in terms of the significance of particular groups and therefore the selection of stakeholders will need to be tailored depending on the sectors chosen and technologies prioritised.

Another way to develop a good first idea of who to include, is to think about the main roles that are required to conduct the TNA process in a swift and significant manner. These roles are: (1) provide data (e.g., public agencies, private companies, universities and institutions), (2) deliver technical assistance (e.g., public and private sector experts, cooperation agencies and consultants), (3) conduct the facilitation/ intermediation process (e.g., specialised firms, business promotion agencies, technology promotion agencies, and civil society groups), (4) procure additional funding (e.g., Ministry of Finance, international cooperation, public investors) and (5) socialisation and validation of results (e.g., communication officers, media).

Box 3. Categories of stakeholders or interested parties for the TNA process (Luepke, 2013)

1. Government departments with responsibility for policy formulation and regulation of sectors related to the request.

2. Industries and industry associations, businesses, and distributors that are operating in sectors with high GHG emissions or that are vulnerable to climate change impacts.

3. Electric utilities and regulators.

4. Within the private sector, technology users and/or suppliers who could play a central role in developing/ adapting technologies in the country.

5. Organisations involved in the research and development, manufacturing, import, sales, and promotion of technologies for mitigation or adaptation.

6. The finance community, which could provide the capital required for technology project development and implementation.

7. Communities, small businesses and farmers that are or will be using the technologies and who would experience the effects of climate change.

8. Non-Governmental Organisations involved with the promotion of environmental and social objectives.

9. Institutions that provide technical support to both government and industry (e.g., universities, research institutions, think tanks, and consultants).

10. Labour unions, consumer groups, and media.

11. Country divisions of international companies responsible for investments important to climate policy (e.g., agriculture and forestry).

12. International organisations, cooperation agencies, and donors.

13. International agencies, e.g., UN, bilateral, ODA.

14. Other climate change / UNFCCC focal points: UNFCCC, Adaptation fund, NAMAs etc.

1.2   The TNA institutional structure

The process of stakeholder involvement is far more demanding and less obvious than expected. This is why it is important to start early and with the basics. In the case of the TNA, the basics refer to the involvement of the people who will be directly responsible for the project's design and implementation, immediately following the signature of the Memorandum of Understanding (MoU).

To achieve the objectives, outputs and expected outcomes from the TNA process in a country, a national TNA team must be established. This team will conduct the TNA project, under the leadership of a National TNA Coordinator. Ideally the National TNA Team is composed of representatives from relevant ministries and sectors which have been selected by the country as a priority. However, others like academia and research centres could be equally relevant.
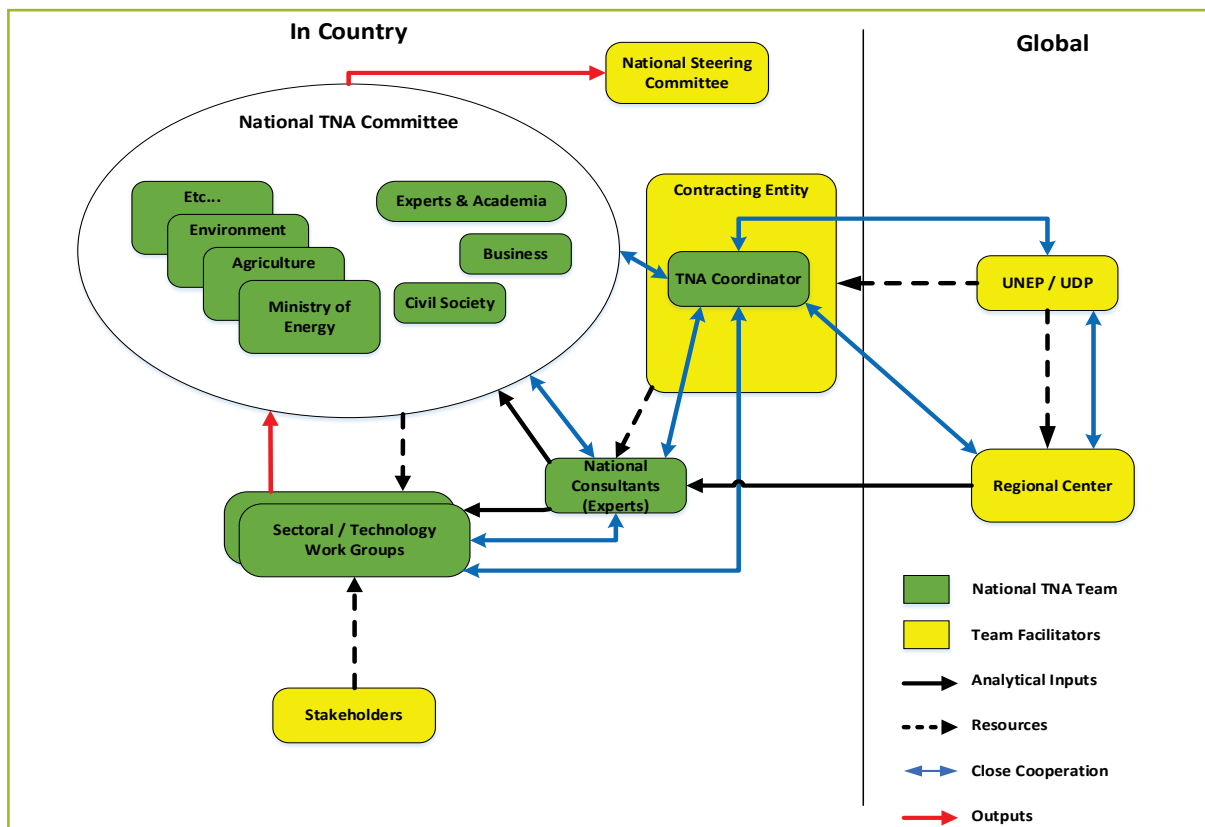
The proposed TNA institutional structure for implementation is shown in Figure 1. The National TNA Team includes a variety of actors and is responsible for conducting the TNA for the country. It comprises the following individuals and groups (Dhar, Painuly, Nygaard, & Rogat, 2014):

- National Steering Committee: The role of this committee is to provide high-level guidance and endorsement to the national TNA team and help secure political acceptance for the TAP. Furthermore, it is expected to supervise the TNA work and provide advice to the National TNA team whenever requested. The correct formation of this committee is crucial for the relevance and legitimacy of the project.

In many countries there are already high-level committees established by law for climate change management, and it may be easier and more effective to create a spin-off or sub-group of such committees for the TNA process.

- National TNA Committee: Core driving group in each country. It comprises representatives responsible for implementing policies from relevant ministries and other actors related with issues such as climate change science, sector policies, national development objectives, etc. The composition of the National TNA committee should be relatively flexible as it may need to induct members from the relevant stakeholder group for specific tasks, it will also vary from country to country depending on the prioritised sectors and technologies.

- The TNA Coordinator: leader and focal point for the TNA project in each country and the manager of the overall TNA process. The TNA coordinator will also be expected to act internationally, sharing lessons and championing the project during international workshops and other relevant meetings (UNFCCC negotiations, CTCN Workshops and other technology events outside of the climate arena).

- National Consultants (Experts): national experts on climate change adaptation and mitigation undertaking the work and supporting the entire TNA process. They will be responsible for the research, analysis and synthesis of the entire process.

- Sectorial / Technical Workgroups: Integrated mainly by stakeholders identified at the beginning of the process. This workgroup should be actively involved in the decision process regarding the most appropriate technologies for each of the prioritised sectors. A combination of their knowledge on development and climate change objectives and on technical, environmental, social and economic aspects of the prioritised sectors and technologies is advisable.

- UNEP/UDP: in its role as implementing agency of the project worldwide.

- Regional Centres: mainly responsible for providing technical support to the national TNA teams and ensuring quality in all the reports. The Centres also have the role of generating greater awareness about technology needs of the countries at regional level, and to enhance capacities within the region.

Figure 1. Institutional structure for the TNA project

Source: (Dhar, Painuly, Nygaard, & Rogat, 2014)

This proposed institutional structure is intended to serve three main conditions for a successful TNA project: (1) Political acceptance, (2) Wide stakeholder consultation and endorsement, and (3) Analytical basis and reporting (Figure 2).

2.2.1 Political

The TNA process is not an end in itself but a process that aims to integrate the climate technology concept (hardware, software and orgware) into the national strategies and plans of the countries. Hence, it is necessary to scale up this process and reach the implementation of the project ideas. For this, it is necessary to include a group of stakeholders able to support these ideas in the political arena. High level involvement will show the relevance of the project for decision makers.

2.2.2 Wide Stakeholder Consultation

The TNA process needs to be a **legitimate** country-driven process. Legitimacy and ownership require ample representation from different stakeholders, in order to adapt the process to the specific context of each country. An inclusive space for stakeholders with local capacity and knowledge that can provide useful insight to the process is necessary.

Stakeholder consultations are an important source of information that help to improve and shape project design, and allow detecting and controlling external sources of risk. Consultation can lead to the development of strong partnerships and form the basis for future collaboration, particularly when stakeholders are given the opportunity to engage in the process by raising concerns and asking questions, giving them the breadth to help shape the project either directly or indirectly (IFC, 2008).

Through a highly consultative and participatory process, stakeholders will link elements or steps of the TNA process with local projects, relevant processes and sustainable development programmes and plans. In this sense, it will be possible to generate synergies and avoid duplication of efforts and resources.

Stakeholders that should not be missed at this level are the ones that provide relevant data, deliver technical assistance, give access to funds and help to facilitate and articulate with other relevant actors during and after the TNA process.

2.2.3 Analytical Basis and Report

Actors interacting at this level are usually consultants, the TNA Coordinator and the National Committee being responsible for carrying out the entire TNA process, ranging from engaging with stakeholders, selecting and assessing technologies, developing the TAP and formulating project ideas for the selected technologies. At this level, stakeholders will provide legitimacy to the process through their technical expertise, their scientific rigor and through the utilisation of the best data available.

Since data availability is often an issue in the developing world, some of the TNA steps will require expert judgement and opinion. The inclusion of renowned experts in the process is highly beneficial for this purpose.

Flexibility, effectiveness and efficiency are fundamental principles to follow during the implementation of the TNA process, including structuring the institutional framework. Main roles of the stakeholder groups are described in Figure 2.

Figure 2. Role of main stakeholder groups
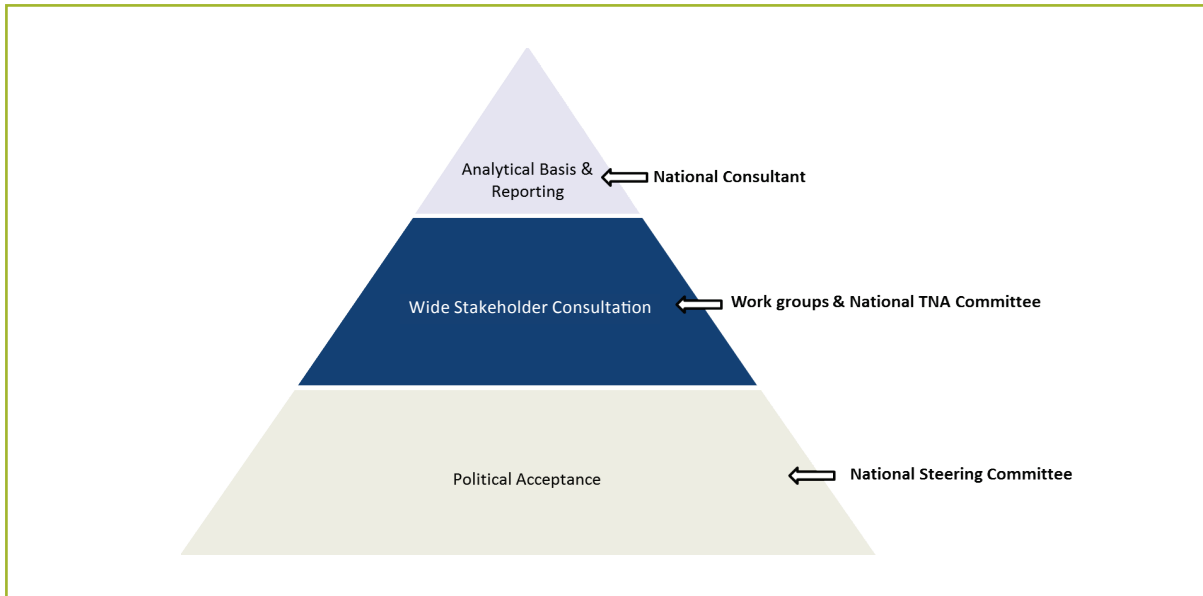
Source: (Dhar, Painuly, Nygaard, & Rogat, 2014).

1.3 Stakeholder involvement through the steps of the TNA process

The TNA process aims to identify technology options to support pathways of low emission climate resilient development. In order to achieve this, three steps have been identified for the process: Technology Identification and Prioritisation; Barrier Analysis and Enabling Frameworks; and Technologies Action Plan (TAP). Each of the steps has a specific objective and a report as main output, as specified in Figure 3.

Figure 3. The three steps of the TNA process
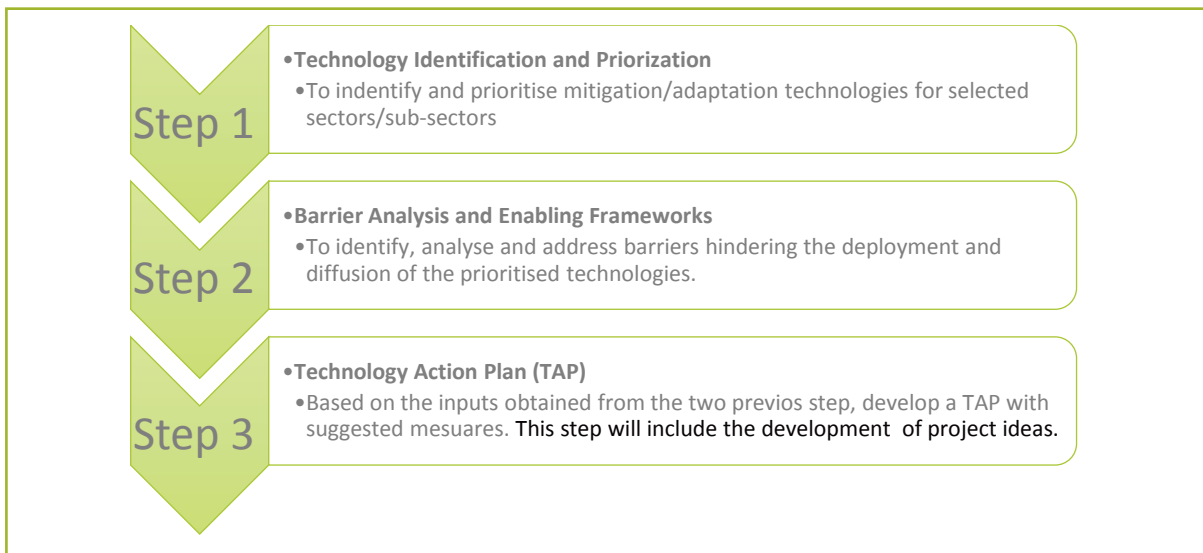
Each of the steps of the TNA process requires the involvement of different stakeholders from an early stage. For instance, in step 1 it is crucial to get initial political and technical support. Significant effort must be devoted to identifying and engaging a critical mass of stakeholders. The extent to which interest groups are represented will differ from country to country (Chowdhury, Higelin, Holmes, & Karlsson, 2010). Step 2, may in turn

require the inclusion of stakeholders that operate directly in the market chain, and therefore, will be able to better identify the barriers on transfer and diffusion of technologies (Boldt, Nygaard, Hansen, & Trærup, 2012). Finally, for step 3, the team may want to think in advance and involve those stakeholders directly responsible both for implementing the actions outlined in the TAP and those responsible for creating the enabling environment described in step 2.

There are actors that will be involved throughout the process, as they are responsible for the design and organisation of the project at the national level, and the coordination with UNEP/UDP and the Regional Centre. These roles will be played, in an early stage, by a focal point at the governmental entity that takes on the project, and later by the TNA Coordinator appointed to run it.

In order to decide which stakeholders to involve and when, each country team will need to analyse the roles needed for each step. Table 1 provides a tool for this analysis. For each step, a set of questions and examples of stakeholders is provided. It is relevant to note that through this analysis the team could also decide to exclude a set of stakeholders that may disturb or block the process.

TABLE 1. Steps of the TNA Process

STEP	Description	Question about the roles needed for this step	Examples of stakeholders
1. Technology identification and prioritisation	The technology identification and prioritisation step is set out to establish and rank the most appropriate technologies for low carbon emissions and reduced vulnerability according to each countries requirement. It involves the identification and classification of technologies for mitigation and adaptation, starting by generating a comprehensive vision of technologies available, including new or unfamiliar technologies. This extensive sweep is normally evaluated using the Multiple-Criteria Decision Analysis, by quantifying the selection process and determining to what extent each potential technology contributes to sustainable development goals, reduces GHG emissions and/or benefits adaptation, while being cost effective. The results of this analysis produce a weighted score that is used to prioritise the technologies for each sector.	• Who could provide information about environmentally sound technologies (EST)? • Who could benefit from the results of the technology identification and prioritisation? • Who is already using these (or similar) technologies? • What government entities are involved in technology development or promotion? • What government entities coordinate the sectors that will be analysed? • Who are the leading institutions conducting research on climate change? • What other organisations participate in the implementation of new technologies?	• Climate change experts who provide technical support to reach the objectives in adaptation and mitigation. • Technology producers or providers (private sector) who provide technical support and will open the market to new technologies • Government representatives from ministries of sectors related to the request (political decision makers) • NGOs that promote social or environmental objectives, and or technologies • Institutions that provide technical support to both government and industry

STEP	Description	Question about the roles needed for this step	Examples of stakeholders
2. Barrier analysis and enabling environments	This second step aims to identify barriers in order to "trace the reasons that hinder the transfer and diffusion of technologies" (Boldt, Nygaard, Hansen, & Trærup, 2012). Therefore a study must be conducted to determine why the technologies identified in step 1 are not currently in (widespread) use and why there are no significant investments. This must start with a run through technical documents, policies, environmental impacts, institutional capacities, economic assessments, etc., as well as the input from different stakeholders through interviews and workshops. The full list of barriers needs to be screened in order to identify the essential ones to be addressed. An analysis of the causal relations between barriers allows a deeper understanding of the underlying problems. Based on this knowledge, measures to overcome these barriers can be developed to find solutions.	What stakeholders could be affected by the technology? What stakeholders could actively support or oppose the technology? Who may have influence or is needed to reduce or eliminate barriers? What organisations have experience in implementing environmentally sound technologies (EST)?	• Climate change experts who provide technical support to reach the objectives in adaptation and mitigation. • Technology producers or providers (private sector) who provide technical support and will open the market to new technologies • Government representatives from ministries of sectors related to the request (political decision makers) • Interest groups such as trade unions, labour unions and the media. • Technology users or consumers • Interest groups such as trade unions, labour unions and the media. • Institutions that provide technical support to both government and industry
3. Technologies Action Plan (TAP)	The assembly of a strategy and an action plan for prioritised technologies is necessary to accelerate the adoption of the prioritised technologies for adaptation and mitigation. The strategy and plan is presented as an integral part of the country's national climate change strategy. It also provides suggestions for the accelerated implementation of prioritised technologies available in the short term. The third step requires, first, to clarify priorities and establish main goals for sectors and technologies. With this, measures should be identified to develop capacities and enabling frameworks. The national strategy and plan should also include a justification of the measures proposed for developing capabilities at a national level, costs and benefits of the technological investments.	Who has intervened in the country's national climate change strategy? What government entities have influence in the generation of policies and goals for the priority sectors or technologies? What institutions have experience in technology investments? What organisations may provide funding for the implementation of technologies? Who are the current providers of the technologies? Which groups are the main beneficiaries of the technologies?	• Government departments, ministries or agencies • Decision makers including advisors to cabinet and congress • NGOs that promote social or environmental objective, and or technologies • Institutions that provide technical support to both government and industry • Technology users or consumers • Financiers and donors • Private investors • Technology developers

3. Identifying and keeping key stakeholders engaged during the TNA process

This section provides methods, tools and recommendations to identify relevant stakeholders for the entire TNA process and beyond. Although all the recommendations suggested were based on experience from Phase 1, they should be taken as a reference and adapted to the unique circumstances of each country. After the identification stage it is important to achieve engagement from the stakeholders. In this sense, this section also covers practical advice to conduct stakeholder consultations and optimise the management of actors to ensure effective participation during the crucial moments of the process.

2.1 Identifying stakeholders in the process

Box 4 – Key stakeholders identified in Colombia (Patiño, 2015)

In Colombia stakeholders such as researchers, private associations and local authorities were very important for the success of the process. Stakeholders from academia participated providing information and research about emerging technologies. Stakeholders from the private sector were central in promoting the change of technologies into the companies. Finally, stakeholders from sub-national government were crucial in providing policies that promote implementation of TAPs and include climate change in development plans.

Section 2 showed that the TNA process involves different steps and objectives that require different kinds of stakeholders. In order to identify properly who is going to be a relevant stakeholder for the TNA process it is necessary to understand clearly the roles that need to be fulfilled by stakeholders. It is recommended to consider each stakeholder individually because although some stakeholders may come from the same group or sector, they may not necessarily share the same priorities or concerns, or even the same position.

The set of techniques or tools used to identify key stakeholders for a specific project is called Stakeholder Analysis. There are plenty of approaches proposed for Stakeholder Analysis that can be used, depending on the type and complexity of the project. In order to identify, bring a stakeholder in and to avoid relevant stakeholders being overlooked, it is recommended to follow a rigorous step by step approach:

i. **Mapping the entire field:** Start with a brain-storming activity with the participation of a small core group (no more than six or eight people) who should have good knowledge of the objectives of the TNA project and an initial idea of the desired characteristics of the process. This small working group will give the activity a good perspective of the problem that needs to be addressed. A matrix providing examples that can help to organise the brain-storming session and minimise the risk of overlooking a stakeholder, can be found in Table 2.

TABLE 2. Stakeholders Analysis – Grid for Organising Stakeholders (Hovland, 2005)

| Private sector	Public Sector Stakeholders	Civil Society Stakeholders
✓ Corporate and business ✓ Business associations	✓ Ministers and advisors (executive) Civil servants and departments (bureaucracy) ✓ Elected representatives Legislature Courts (Judiciary) ✓ Political parties ✓ Local governments/councils Military ✓ Commissions ✓ International bodies (World Bank, UN, etc.)	✓ Media ✓ Churches / Religion ✓ Schools and Universities ✓ Social movements and advocacy groups ✓ Trade unions ✓ National NGOs ✓ International NGOs

Another tool for mapping stakeholders is the chart shown in Table 3, which proposes to divide stakeholders in 5 groups with specific roles that are relevant for a project such as TNA. In the table, Driving Group refers to stakeholders who take a lead role during the process and will be vital to drive the project ideas into the next level of implementation; Political Decision Makers facilitate the execution of the process; Technical Support refers mainly to actors that provide technical and financial information to help identify and validate the proposed technologies; Interest and Opinion includes stakeholders that will provide "soft" information on possible interests around the technologies; finally, Social & Institutional Support refers to actors that will facilitate the interaction with local populations directly affected by the proposed technology. The stakeholders shown in Table 3 are some examples of actors involved in Phase l of the process in some countries consulted during the elaboration of this guide.

TABLE 3. Identification of Stakeholders for the TNA Process – Main Roles of the Process (Santadreu, 2014)

Driving Group	Political Decision Makers	Technical Support	Interest and Opinion	Social & Institutional Support
✓ Ministry of Environment	✓ Regional environment authorities ✓ Government authorities (such as Ministries of Commerce, Industries, Agriculture, Finance, Energy and Transport).	✓ Academic institutions (technical background) ✓ Researches ✓ Private business (large industries and SMEs) ✓ Finance institutions	✓ *Business associations, private sector*	✓ *NGO* ✓ *Local authorities*

ii. **Ensuring good knowledge of each stakeholder:** identifying the interest and impact level of each of the stakeholders selected in the previous stage will help to better prioritise and also know which stakeholders should be fully engaged in most steps of the project. Arranging identified stakeholders according to the matrix proposed in Figure 4, will allow concentrating the efforts depending on the characteristics of each group. For instance, stakeholders with high interest but low power should be kept informed about the project; but those with high power and low interest are the ones that at the end should be able to see the relevance of the project. The most relevant stakeholders for the project will be those with high power and interest.

Figure 4. Stakeholders Interest / Power Matrix (Hovland, 2005)
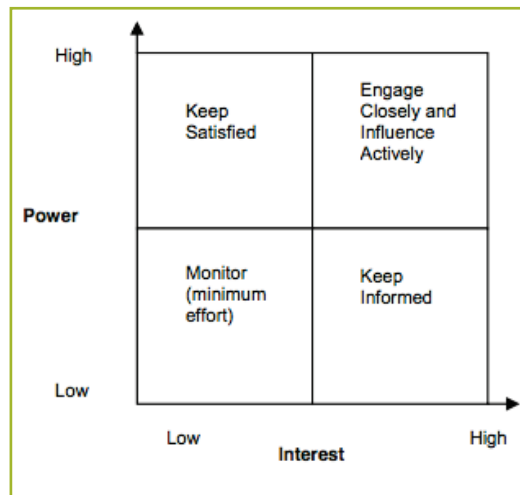
iii. **Defining the timing for participation:** Stakeholders are usually people with busy schedules, so it should not be assumed that they will have plenty of time for the project. In that sense, a useful tool for organising and ensuring the participation of a stakeholder is the matrix shown in Figure 5. This helps define when the critical participation of each stakeholder should be for each step of the TNA process. In this way, stakeholders could book the time in advance. This should not be a difficult task considering that the TNA process has already set activities and objectives for each step.

Figure 5. Stakeholder Participation Matrix Adapted from (Hovland, 2005)

2.2 Keeping stakeholders engaged throughout the process

Box 5 – A Lebanese perspective to stakeholder engagement (Lea Kai Aboujaoude, National Coordinator of the TNA project)

Through the **TNA Project Newsletter** the Lebanon TNA team shared some useful tips and recommendations for managing stakeholders in the process and to mainstream the TNA outcomes into other national projects. Those recommendations can be summarised as follows:

<u>Start with a good initial stakeholder mapping.</u> It is highly recommended to know from the beginning all the actors that are related with climate change issues into the country, and to include actors close and friendly to the project but also the ones that are sceptic and pessimistic.

<u>Stakeholders should feel as an important part of the project.</u> Coordinating with many actors can be difficult, however it is important to think ahead and organise the meetings in a way to secure that everyone finds a space to share and ask questions. In addition, to achieve stakeholder engagement during the whole project it is recommended to keep them informed. It is useful to make summaries of some relevant findings or technical information to share with them.

In earlier decades, stakeholder participation was expected for specific queries, mostly through a public meeting during the planning stage of the project. The relationship with stakeholders rarely stretched or came to be integrated into the core of the project. Nowadays, it is more common to hear about "Stakeholder Engagement", which refers to a broader and more inclusive process with a continuous participation of relevant actors during the entire process of a project" (International Finance Corporation, 2007). Moreover, the management of stakeholder relationships is expected to be much more dynamic now because of an international context where unexpected events, such as changes in the international market or new developments in technologies can occur.

The argument for engaging stakeholders goes beyond merely building rapport or engendering goodwill, but becomes a viable tool that can be used to identify needs and track perceptions, solicit feedback, and evaluate processes and developments. Through stakeholder consultation, resources can be allocated more efficiently and effectively and enhance the sustainability of interventions (in this case, the TAP), increasing the chances of successful implementation.

As seen in section 2, TNA process requires a high level of commitment from different stakeholders, but not at the same time. Hence, it is important to set an appropriate timetable and communicated it in advance.

Before starting the process of engagement for stakeholders, it is important to be clear about why we are seeking this engagement and who it is that is going to be engaged. Also, it is recommended to be clear about the right time to start the engagement process. It is useful to see the engagement process as a process of continuous improvement with four steps: (1) planning activities, (2) execute activities to build engagement, (3) verify results and (4) improve the activities and start over again. Table 4 provides eight elements that can be considered the basis to build a good Stakeholder Engagement, These elements should be considered (if they are relevant to the project) as a referent in the planning activities stage.

TABLE 4. MAIN components of stakeholder engagement (International Finance Corporation, 2007)

Component	Description
1. Stakeholder Identification Analysis	As a first step of Stakeholder Engagement we need to be sure that relevant stakeholders have been already identified and prioritised.
2. Information Disclosure	Communicate information (i.e., Technology Fact Sheets) to stakeholders early in the decision-making process, in ways that are meaningful and accessible, and continue this communication throughout project implementation.
3. Stakeholder Consultation	Plan out each consultation process, consult inclusively, document the process, and communicate follow-up.
4. Negotiation and Partnership	For controversial and complex issues enter into good faith negotiations that satisfy the interest of all parties. Add value to impact mitigation or project benefits by forming strategic partnerships.
5. Grievance Management	Establish accessible and responsive means for stakeholders to raise concerns and grievances about the project throughout project implementation.
6. Stakeholder Involvement in Project Monitoring	Involve directly affected stakeholders in monitoring project impacts, mitigation and benefits, and involve external monitors where they can enhance transparency and credibility.
7. Stakeholder Documentation and Reporting	Process of systematising, analysing and addressing stakeholders concerns. It also should be considered report back to stakeholders on all the aspect of the project.
8. Management Functions	Build and maintain sufficient capacity within the project to manage the processes of stakeholder engagement, track commitments, and report on progress.

The third component, stakeholder consultation, is at the core of stakeholder engagement and is worth further consideration and elaboration.

Stakeholder consultation is, "the process of gathering information or advice from stakeholders and taking those views into consideration to amend plans, make decisions or set directions" (Partridge et al., 2005). Table 5 provides a list of consultations tools and techniques that can be built into the national TNA methodology for stakeholder consultation. It is recommended to undertake stakeholder consultations using an iterative range of tools in order to achieve effective results and avoid knowledge gaps.

Table 5. Consultation tools and techniques for the TNA Process (Adapted from: REQB, 2014 and IFC, 2008)

Technique	Description	Possible application in the TNA process
Questionnaires and Surveys	Primarily used for gathering quantitative information but can include both open and closed-ended questions. They are generally used to target larger audiences, and help to capture the wide spectrum of stakeholder knowledge.	Most useful during Step 1 to: ▪ Detail and confirm relevant stakeholder information (such as secondary sources and studies on mitigation and adaptation, perceptions on main sectors, etc.) ▪ Organise content of stakeholder requirements/ interests around the TNA process ▪ Preview and select potential technologies (Fact sheets).
Interviews	Primarily qualitative. Allows the user to ask questions and gain responses from the stakeholder on specific areas and topics, and allow for adaptive interviewing techniques where new information, pertinent to the overall objectives of the assessment, can be added to the interview questionnaire as it is brought up during the interview.	Most useful during Step 2 to: ▪ Obtain information on a specific sub sector or technology barriers
Field Observation	Field observation involves watching stakeholder activities and processes, and documenting processes and results. These observations have the added benefit of allowing the user to identify processes or activities that may have been missed during surveys or interviews.	Most useful during Step 2 to: ▪ Identify the main technological barriers by observing stakeholder activities
Workshops and Focus Groups	A workshop or focus group draws together key stakeholders representative of certain sectors, agencies and communities for focused discussion on a specified topic or area. These should ideally involve stakeholders who hold differing points of view in order to help outline concerns and requirements coming from different perspectives, and help build consensus around solutions.	Useful during Steps 1, 2 and 3 to: ▪ Define priorities of requirements or reach consensus on sector, sub sectors and technologies ▪ Discover and resolves potential conflicts between stakeholders around a particular technology ▪ Identify requirements to establish solutions scope within TAPs
Brainstorming	Brainstorming with stakeholders allows for the rapid collection of inputs and ideas at relatively low cost. Stakeholders are asked to submit ideas and concepts related to a specific topic or problem.	Useful during Steps 1, 2 and 3 to: ▪ Resolve requirements or conflicts ▪ Outline various options and solutions
Public Forums	Public forums allow an outlet for the general public to provide meaningful inputs into the decision making process, and can be used as an early warning system for public concerns. Public forums also give voice to any relevant stakeholders that maybe have been missed out in the stakeholder identification process.	Most useful at the beginning and end of the TNA process to: ▪ Communicate the TNA process to a larger audience ▪ Identify and address public concerns.

While there is no one "best approach" for all stakeholder consultation processes (nor for any single one, for that matter), it is important to establish a checklist to ensure a "best practice" mode, regardless of the approach used. The IFC identifies 11 practices for successful stakeholder consultations (see table 6).

Table 6. Best practices checklist (adapted from IFC, 2008)

TARGETED	**Consultations should be targeted towards those most likely to be effected by the project.**
EARLY	Consultations should take place far enough in advance to identify the main issues and their potential impact on the future project direction.
INFORMED	Stakeholders should be informed about the scope of the project and the task at hand, due to the early distribution of pertinent information.
MEANINGFUL	Consultations should be presented to stakeholders in a way that is mindful of the local context and follow techniques sensitive to cultural perspectives.
INCLUSIVE	Consultations should be structured in such a way that all participants have the opportunity to express their views and have their issues addressed.
GENDER SENSITIVE	Consultations should also take into consideration the fact that men and women often have different viewpoints as well as different needs.
LOCALIZED	Consultations should take into account and reflect local context, language and timeframes.
UNBIASED	Consultations should endeavour to remain as unbiased as possible, and remain free from manipulation or coercion.
DOCUMENTED	Consultations should be thoroughly documented in order to maintain an index of the key issues and concerns of participants, as well as record a list of those consulted.
FEEDBACK	Timely feedback to stakeholders should be a priority, as well as clarification of any next steps or on-going processes.
FOLLOW-UP	Consultations with stakeholders should be on-going throughout the duration of the project.

Box 6 - Relevant tips for a successful engagement

Make an early call: involving stakeholders early in the TNA process allows building a good relationship. Intangibles such as trust, mutual respect and understanding can only be developed over time.

Build long-term relationships: establishing and maintaining good relationships require a long time-horizon. It is important to notice that most of the stakeholders identified will have a central role at the implementation stage, after the TNA process.

Maintain good communication: a clear and precise message provided with a good timing will contribute to build a sense of transparency of the project. It is also important to report the most relevant facts.

Build consensus along the way: identify agreement and disagreement points; all of them should be discussed. Always welcome the diversity of the contributions.

4. The role of the stakeholders post-project implementation

> The real "action" linked to the TNA/ TAP process takes place after the project, namely, when TAPs are implemented and technology development and transfer actually happens. This section emphasises the roles of stakeholders in this crucial phase and provides specific advice on how to smooth the transition from assessment/ planning to implementation by thinking strategically about whom to involve.

The TNA project proposes participatory activities for identification and selection of technologies that will comprise a portfolio of Environmentally Sound Technologies (EST) for developing countries. ESTs are crucial to support action to mitigate Greenhouse Gases (GHG) and to adapt to the effects of climate change. The final objective of the TNA is to develop project ideas for technology development and transfer which should be later implemented by the countries.

To start thinking about the role of stakeholders post-project implementation, the aftermath of the TNA process needs to be envisaged as part of a bigger system. Because of the nature of the project, the concept of "innovation ecosystems" applies. An innovation ecosystem is the space where complex relationships are formed between stakeholders or entities whose aim is the development and innovation of technologies (Jackson, 2011). In an innovation ecosystem there are different components, such as industry, universities, government, entrepreneurs, capital and tech transfer, all of which play different roles aiming to achieve innovation. Figure 6 presents the organisations, relationships and flows of money and knowledge by which innovation can be translated into jobs and wealth, often termed the innovation ecosystem. (House of Commons, Science and Technology Committee, 2013)

Figure 6. The complex Innovation Ecosystem
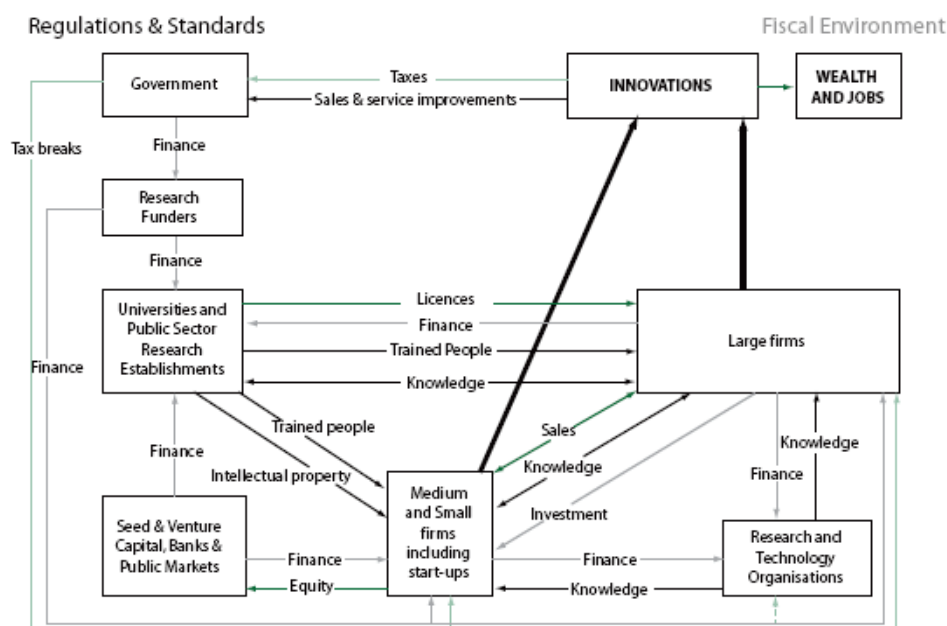
Innovation ecosystems include two separate economies, the knowledge economy and the commercial economy, "where all the different partners of each one should deliver their offers or contributions on time in order to achieve innovation" (Adner, 2006). For instance, in order to deploy a technology that has been developed by researchers at a University (with good knowledge of technologies and their improvements), a regulatory framework set by the government has to be in place. Also, in order to get access to the technology the private sector through Small and Medium Enterprises (SMEs) or large firms may be required to invest. As we can see, there are plenty of stakeholders which have to deliver their contributions on time in order to generate an environment that generates value for everyone involved.

Perhaps most of the project ideas within the TAP will relate to technologies that are already in the market or being implementing by communities (i.e., innovative community monitoring of degraded natural resources). However, countries may also identify project ideas to develop further a technology, or to strengthen research and development around a set of solutions for mitigation and adaptation. In this line, successful implementation of the project ideas requires considerable support and effort from many actors. Thus, it is recommended to reach this stage with relevant engaged and knowledgeable stakeholders.

A strategic recommendation is to try to map the whole innovation ecosystem for the country and identify critical players at the very beginning of the TNA process. Then, when the technologies are selected, a more specific mapping can be done for each technology, identifying those stakeholders who are directly responsible for policy level decision making, those who will participate in the market chain from development to final use, and investors that currently finance this kinds of technologies or overall initiatives (NAPs or NAMAs) that include them. This process could be very well done in conjunction with the barrier analysis. These key players could be asked to be involved in TAP development and could also be invited to a final high level presentation of the outcomes of the project.

In addition, groups of technologies may already have their own "champions" in the country (e.g., a guild for renewable energy or an association for sustainable transport). It is very important to involve them early in the process - as soon as the final set of technologies has been identified – because they will inject enthusiasm and passion during and after the process.

A final recommendation for post-project implementation is to give emphasis to "stakeholder documentation" during the TNA project. Stakeholder documentation is the process of systematising, analysing and addressing stakeholder concerns during the project. It is used for follow-up and report back to stakeholders in order to demonstrate how their priorities or concerns have been addressed (IFC, 2008), thus improving the likelihood for their later involvement. Timely follow-up with stakeholders constitutes good practice. It will keep, them updated on the project cycle and next steps in the process. Follow-up allows for the double-checking of information and documentation, or refining approaches, commitments or processes before implementation. It would also allow the country team to gain support for post-project implementation given a record of involvement, an established reputation for credibility, and documented 'buy-in' from previous stakeholders.

The ultimate objective of the TNA project is to achieve implementation of the TAPs, which should contribute to integrating technology into national climate change strategies and plans. After phase l of the TNA project "over 60% of the countries managed to link their TNA process with other domestic processes under the Convention and 75% with domestic processes related with national sustainable development priorities and goals" (United Nations Framework Convention on Climate Change, 2013). Also, 50% of the countries mentioned that the TNA process managed to link with NAMAs or NAPs. For instance, in Colombia, TNA outcomes are now part of a NAMA for metal mechanics and steel industries, and in Lebanon, a NAMA for transport is under preparation, which will include the 3 technologies prioritised by the TNA project (Patiño, 2015) (Aboujaoude, 2015).

A unique opportunity for actual implementation after the TNA Process has recently been given by the creation of the Climate Technology Centre and Network (CTCN)1. The CTCN is the operational arm of the UNFCCC Technology Mechanism and it is hosted and managed by UNEP in collaboration with UNIDO and with the support of 11 Centres of Excellence located in developing and developed countries.

The CTCN promotes accelerated, diversified and scaled-up transfer of environmentally sound technologies for climate change mitigation and adaptation in developing countries in line with their sustainable development priorities. Their mission is to stimulate technology cooperation and enhance the development and transfer of technologies to developing country parties at their request. It fulfils its mission by providing technical assistance, fostering collaboration and access to information and knowledge to accelerate climate technology transfer and strengthening networks, partnerships and capacity building for climate technology transfer.

Each country that is a signatory to the UNFCCC has been asked to designate a National Entity for the CTCN (NDE). The NDE is the body granted responsibility by a Party to manage technology related requests to the CTCN. Thus, the national NDE of a TNA country is a very important stakeholder for post-implementation of the TNA project.

> **To know if your country has an NDE and who to contact go to:**
>
> **http://unfccc.int/ttclear/templates/render_cms_page?s=TEM_nda**

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1   http://www.unep.org/climatechange/ctcn/

5. Lessons learned from TNA Phase I

> This section provides strategic advice from the "doers" themselves. These lessons learned aim to provide a set of recommendations that have proven useful on the ground.

The first Phase of TNA (TNA Phase I) process involved 36 developing countries distributed over all regions and was conducted between 2009 and 2013. Within this set of countries, there were 9 least development countries, 3 small-island developing states and 3 countries with economies in transition to a market economy. As was expected, most of the countries took their own national development priorities as the starting point for sector prioritisation.

From the TNA synthesis report, and also after conducting interviews with a group of Phase 1 countries, two main topics related to the issue of stakeholder involvement were identified: political buy-in, and technical and facilitation support. That most relevant findings and lesson learned under those topics are:

i. Political buy-in

National circumstances call for nationally determined institutional arrangements

- National circumstances play an important role for the TNA process and for tailoring stakeholder involvement. National circumstances determine the sectors and later technologies that will be selected. This, mainly because the TNA process aims to contribute with the national environmental, economic and social development goals of the country (Asian Institute of Technology, 2013). For instance, in Colombia – a country with a strong regional focus - Regional Environmental Authorities were crucial stakeholders who led the deployment of the process in their regions and also allowed linkage of TNA outcomes with other local initiatives. As a result of the synergies, the Development Plan of Cartagena (a highly vulnerable region in Colombia) included important outcomes from TNA in the Adaptation Plan for Cartagena (Patiño, 2015).

- The structure proposed by the TNA project methodology was not always easy to achieve for the countries. For instance, in Ghana, the existing National Climate Change Committee was given the Steering Committee role. A similar case was evidenced in Thailand, where the team considered it unnecessary to create a Steering Committee exclusively for TNA and instead used another consulting group that was already established (Virunhakarun, 2015). On the other hand, some countries such as Sudan and Senegal maintain the networking formed as a result of establishing Steering Committees for their TNAs and considered this a necessary step for strengthening discussions on national climate issues (ENDA, 2013).

- The TNA process requires a diverse group of stakeholders to obtain political buy-in and also to be part of the consultation group; all of them should be selected "based on the participatory approach of each country" (Asian Institute of Technology, 2013). Countries differ also in the way they make decisions, with some having a high level of consultation and participation deeply embedded in their decision making process and some having lower levels of participation.

ii. Technical and facilitation support

Tailor the team to the project, but also the project to the team.

According with the TNA handbook and guidelines, the TNA process should be inherently participatory. A participatory process requires resources, experience and time. Some countries considered closing the project in time with the required level of participation a real challenge. It has been evidenced that one of the main reasons is that the TNA Coordinator is usually a designated government official, who already has other responsibilities, and may not have the necessary resources, experience and/ or time (Aboujaoude, 2015). The role of the consultants and careful consideration of their technical, coordination and facilitation skills becomes thus, fundamental. In addition, considering that all these skills might not be gathered by the core team, there should be flexibility for additional contracting. In general, it is recommended to rethink the scope, budget and/or time allocated for the project in order to match the level of ambition and the capacities of the established TNA team (Fundación Bariloche and Libélula - Regional Centres of Excellences for the TNA Project Latin America and Caribbean, 2013).

Bring financial expertise to the assessment.

The barrier analysis conducted as part of the TNA process by Phase I parties, evidenced economic and financial barriers as the most common obstacles identified for the development and transfer of prioritised technologies, for both mitigation and adaptation. Accordingly, measures to provide or expand financial incentives and increasing national budgets for technologies purposes were among the most common in TAPs. Conversely, just a few countries reported stakeholders from the finance sector being involved in the TNA process. This is however very important in order to facilitate financing to the implementation. It is very important to include this as a relevant sector, also, creative financial structuring to include the private sector and also capacity building to access funds needs to be included in the toolbox provided to countries (Fundación Bariloche and Libélula - Regional Centres of Excellences for the TNA Project Latin America and Caribbean, 2013).

Consider the circumstances of your own private sector.

The private sector is more relevant in some countries than in others. Moreover, the private sector differs from one country to the other. For example, Thailand included stakeholders from the private sector since the beginning of the process, but mostly big companies. During the process however, they noticed that SMEs were also significant because some prioritised technologies needed to be introduced to the Thailand market through SMEs instead of through large firms. (Virunhakarun, 2015).

6. Conclusions

1. The Technology Needs Assessment process has proved to be a "learning by doing" process. Currently, it provides country teams with a set of handbooks, guidelines and tools that allow for a well-structured efficient implementation process. However, when it comes to stakeholders' involvement, tools are useful but not enough. Dealing with people and their particular interests and positions requires a set of "soft" skills to complement tools that can be helpful along the way. **Dealing with multiple stakeholders in a successful way will call for a "sense of flexibility" around the proposed set of project guidelines**.

2. Common ways to evidence stakeholder engagement include long lists of assistance to workshops. While these are useful as records, it is important to stress that **involving as many stakeholders as possible in the process does not guarantee success**. Success will rather depend on involving "the right people at the right time", and combining this participatory approach with a rigorous technical methodology and a complete set of expertise in the core team. Only processes that have relevance, credibility and legitimacy achieve the expected outcomes.

3. **TNA Phase II offers a new and particularly enabling context with unprecedented opportunities for connecting the project with other processes and mechanisms under the UNFCCC and beyond**. As countries prepare to present their Intended Nationally Determined Contributions (INDCs) for mitigation and adaptation, their National Adaptation Plans (NAPs) and become ready to access climate finance through the Green Climate Fund, the unique approach the TNA process provides for technologies and solutions needed for actual GHG reduction and adaptation on the ground, becomes highly relevant. Moreover, having a fully operational Technology Committee (TEC) under the Convention, including the Climate Technology Centre and Network (CTCN) services, provides an opportunity for technical assistance that could allow TAPS to be taken to the next level. This context adds more relevance to the TNA process thus helping also with stakeholder involvement. It also provides new opportunities to bring new stakeholders into the "climate change arena".

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