NTRODUCTION

The present document seeks to answer the questions stated in the page entitled "**Call for inputs on how to respond to the COP 20 mandate: provision of guidance on how the results of the TNAs, in particular the TAPs, can be developed into projects that can be ultimately implemented.**"

1. Identify what you perceive to be the strengths and deficiencies of the TNA process?

Strengths:

Framework:
- Technology for climate change is dealt in the context of national needs and priorities.
- The introduction of short, medium, and long perspectives makes the approach realistic and objective, particularly when urbanization and other forces influence technology needs over time.
- The encouragement of the participation of different stakeholders is an important strength. Adequate emphasis on administrative issues is an important enabler.
- Attention to time-varying nature of needs and the interrelationship among various factors for producing plans and strategies.
- A good degree of rigor of is given to the dealing with uncertainties through robustness tests and sensitivity analyses.

Resources:
- Handbook is comprehensive and goes into detail in each stage, including administrative components
- Supporting tools facilitate the various processes.
- National TNAs and other material available online for further consultation.

Deficiencies:
- Handbook is available in English only. It is important to make it available in other languages. Depending on the nations, language could be an important impediment in following the TNA process, particularly if the government (i.e. ministry) is leading the process. This could also unbalance empowerment of the different stakeholders. The

handbook makes explicit this need: "It is important that people in rural communities are provided with the necessary resources and infrastructure to access and use this Handbook." However it does not elaborate further nor delegates responsibilities.

- A structured and prescribed approach for implementing the TNA process is very adequate. However, stakeholders that are knowledgeable of similar processes might find the process too prescriptive and not provide adequate and explicit flexibilities for the identification of critical sectors and technologies. This might be particularly relevant to nations that have mature NAMAs, NAPAs and NAPs. National administrative circumstances might be relevant in this regard. Most of the Parties reported that they did not consider the TNA process to be a stand-alone process. Thus a more flexible option (i.e. a 'express' option) that explicitly taps into other processes might be necessary. Alternatively "entry" points could be made explicit in the handbook. Then time might be better spent in the elaboration of TAPs and project identification and planning.

- The Excel tool could be inefficient and it is proprietary. An open source version needs to be available, preferably on the form on an online/offline app that can run in small devices and several languages.

- The rigor of a required vulnerability assessment is not adequately discussed. While Annex 3 favors sectors whose data can be obtained through model projections or GIS-based approaches, other sectors seem to be largely excluded. Similarly, no mention of comprehensiveness is mentioned; this relevant as some nations present stark contrasts among regions and further among sectors. IPCC sector-based (categorization) vulnerability assessment of a nation generally includes the evaluation of exposure, sensitivity and adaptive capacity.

2. Outline what recommendations or solutions would you make to improve the TNA process? Are there process improvements required for accelerating implementation of the TNA results?

- Appropriate tools such as real-life videos of a TNA process in appropriate languages could complement the handbook, further accelerating a nation's process. The showcasing of the dynamics of successfully implemented TNAs might also be relevant.

- ICT and non-ICT-based social networks could be instruments that reinforce and better current processes.

- Some stakeholders (NGOs and rural stakeholders) may become disconnected with the process because of the lack of adequate terminology that fits their area. Terms such "appropriate technology", "empowerment" and others are largely absent in the process. These are also important for connecting to already existing national processes. As climate change adaptation and mitigation is expected to be streamed into development, a change in tone might be necessary. While the TNA process taps very well into national development plans, appropriate terminologies and allusion to global goals might be relevant.

- Because stakeholders of the finance community were largely absent in the process of most nations, adequate emphasis to their inclusion must be done in the handbook. This can be accompanied with descriptions of the types of entities that compose the "finance community." Furthermore, the fact that the main barriers and key enablers were identified as "economic", highlights the necessity of making sure the finance community is appropriately represented. Similarly, the small participation of NGOs in the case of Latin American nations might imply that some geographical areas (i.e. rural regions) are not adequately represented, for example. The participation of local authorities might also need to be encouraged.

3. Are the steps of the TNA process (as developed in the updated UNDP handbook for conducting TNAs for climate change) sufficient and well-targeted to cover all the aspects of the identification and prioritization of technology needs? Are there other steps you would suggest adding to the TNA process?

The process, as outlined in the handbook and assisted with tools, is very comprehensive. Because technologies might be used to benefit some stakeholders rather than others or some regions rather than others, some sort of "ground truthing" might be appropriate. This might include the creation of a national committee composed of experts and other stakeholders that create consultations with the citizenry. In a final report, concurring and dissenting opinions might provide transparency and ensure that all stakeholders are listened to. If carried out with the utmost transparency, these grievances might indeed reflect important concerns of the stakeholders.

The fact that the budget of some nations (Cuba, Argentina, Morocco, Bangladesh) are almost entirely allocated to mitigation or adaptation might reflect the need of adequate handbook emphasis.

4. What do you consider the best way of organizing and synchronizing the stakeholders involved in the TNA process? How a formal coordination amongst the stakeholders could be developed, in order to promote a common goal and to organize the information provided?

The handbook allows all stakeholders to have a similar vision of what is required at each stage. However there does not exist detailed examples of how stakeholders follow processes. Real-life videos of these processes along successful showcasing of interaction between stakeholders might catalyze a more unified vision and highlight the importance of their work. Information and communication technologies (i.e. social networks) might be important tools for organizing and synchronizing.

The ultimate question that each stakeholder poses is: "what is it for me"?. Incentives depending on the stakeholder's interests might be important, particularly if such would enhance the support of their organization. Adequate public acknowledgements, mentions, or other incentives might be adequate.

5. Could you identify appropriate means for TNAs to be conducted whereby project ideas turn into concrete ideas which can be ultimately implemented? How could the support related to the identification of technology needs and the implementation of the results of TNAs be further enhanced?

The technological needs identified for specific sector or subsector might have already been identified in a project, initiative, process, or program. This can be an opportunity to tap into already existing projects that would welcome continuity, thus leveraging knowledge acquisition and socialization processes.

The acquisition of knowledge through appropriate literature review and connection to the reality of the nation is very important, particularly for the process of turning ideas into implementation. The participation of relevant NGOs is very relevant in this regard. In the case of Latin America, it is encouraged to determine the reason of the minimum NGO participation. Development equity, one of the goals of the TNA process, is dependent on the participation of informed stakeholders.

6. Do you consider existing guidance sufficient and appropriate to draft technology action plans and project ideas? How can the guidance be improved?

Existing guidance is sufficient and appropriate, given that the right mix of stakeholders are part of the process. Appropriateness could be enhanced by highlighting the importance of partnerships between academia, industry and beneficiaries in the context of a need-solution framework. Several nations have prioritized research; the putting together of a research plan can be quite different to a mainstream development project idea. Appropriate international enabling might be necessary in some cases.

7. What information would be needed for investors and funding entities to make well informed investment decisions about TAPs and project ideas emanating from TNAs?

Assurance that the priorities and needs are indeed real. And assurance that national policies will be adequate and enabling for the context.

8. How effectively are the TNA and TAP results used in other processes such as National Communications, NAPAs, NAPs?

Ideally these should provide mutual feedback and reinforce each other. Evidence indicates that stakeholders utilize the outputs of NAPAs and NAPs as inputs to various stages of TNAs. The opposite also needs to happen, particularly when priorities seem to change over time.

The TNA process is well thought and offers a very effective way to identify technologies and sectors. A second look at nations that have not provided TNAs might be important in order to identify the barriers.

A relevant question could also be: How effectively are NAPAs and NAPs used for the provision of more appropriate TNAs and TAPs? or could TNAs and TAPs be streamlined in NAPAs and NAPs? (for example).

9. How successful has the TNA been in the country in terms of increasing awareness on climate change issues, and also in obtaining support? How specifically can the TNA and TAP be supported to facilitate their implementation?

- Citizen consultation can raise awareness and facilitate eventual implementation. The utilization of adequate terminology and appropriate discourses could also help gain support.

- TNA's inclusion or compatibility with NAPAs, NAPs and NAMAs might increase awareness on climate change issues and further obtain support for implementation of projects at wider scales.

- Most of the population live in cities. Terms such as "smart cities" and "sustainable cities" might take priority in future reports. Thus it is important to establish bridges between subjects at early stages. The use of several technologies might not present a dead zone.

- The latest Synthesis Report indicates a change on priorities in some nation. The workbook could be enhanced with a section where stakeholders justify reasons why their priorities have changed from previous TNAs and TAPs. This could ensure that such changes are due to actual need and not because other reasons.

About ND-GAIN

The Notre Dame Global Adaptation Index (ND-GAIN) is the leading index that annually ranks more than 175 countries and geographical areas based on their vulnerability to climate change and their readiness to adapt to the droughts, superstorms and natural disasters that climate change can cause. The Index is open, transparent, actionable and is enhanced with open-source, state-of-the-art data and analysis tools. The ND-GAIN team is starting to evaluate vulnerabilities of cities and rural areas in an effort to downscale the country index.

Authors:
Martin Murillo, Notre Dame Global Adaptation Index, University of Notre Dame, mmurillo@nd.edu
Nitesh Chawla, Notre Dame Global Adaptation Index and Interdisciplinary Center for Network Science and Applications, University of Notre Dame, nchawla@nd.edu