

Thirteenth meeting of the Technology Executive Committee

United Nations Campus (AHH building), Bonn, Germany
6–9 September 2016

Draft paper

Linkages between the technology needs assessment process and the nationally determined contribution process

I. Background

1. The COP-21 welcomed the interim report by the TEC on guidance on enhanced implementation of the results of TNAs.¹ In the interim report it was noted that the TAP Guidance was provided to describe the scope and rationale for the TAP, and that as a starting point, the TAP formulates and discusses the ambition for this technology implementation, which should be based on existing country development plans, as well as other processes under the Convention such as the development of intended nationally determined contributions (INDCs).

2. The TEC at its twelfth meeting included in its work plan for 2016-2018 the following relevant activities:

(a) In collaboration with the Adaptation Committee (AC), the LCD Expert Group (LEG), and the CTCN, consider how parties could be helped to align their TNAs with the process to formulate and implement NAPs, Drawing on the previous work, prepare an update to inform the TEC;

(b) Analyze linkages between TNA process and Nationally Determined Contribution (NDC) process.

II. Scope of the note

3. This draft paper provides an overview of linkages between the technology needs assessment process and the nationally determined contribution process.

4. The draft paper builds on work on the current state of play of the relevant decisions from COP-20 and COP-21, the TNA process including conducting and reporting of TNAs and TAPs, TNA background paper on linkages between TNAs and other climate policy making processes, the TEC brief on Possible integration of the TNA process with NAMA, NAP, and NC processes, the work plan of the TEC for 2016-2018 and its relevant activities, experiences and lessons learned from linking TNAs with NDCs, and other relevant documents and literature.

III. Expected action by the Technology Executive Committee

5. The TEC will be invited to consider the draft paper and provide further guidance on this work.

¹ FCCC/SB/2015/INF.3.



Annex

Draft paper on Linkages between Technology Needs Assessments and National Determined Contributions

I. Introduction

A. Background

1. The Conference of Parties, at its eighteenth session, welcomed the report on activities and performance of the Technology Executive Committee (TEC) for 2012.² This includes an activity on the review of technology needs from various sources, with a view to strengthening the understanding of technology needs, to complement the processes for nationally appropriate mitigation actions (NAMAs), national adaptation plans (NAPs), and national communications (NCs), and to support the TEC in preparing its recommendations on guidance on policies and programmes.
2. The TEC, in its report to the Conference of Parties (COP) 18, delivered the following key messages:³
 - (a) Development and implementation of Technology Needs Assessments (TNAs) should continue and become integrated with other UNFCCC related processes, including the preparation of NAMAs, NAPs and NCs;
 - (b) There is a need to engage the financial and business communities and funding sources under and outside the Convention to facilitate the implementation of the TNA outcomes.
3. The secretariat, in collaboration with the TEC, organized an in-session workshop on TNAs in conjunction with the seventh meeting of the TEC. The aims of the workshop were also to discuss linkages between the TNA process and other planning tools under the Convention, such as NAMAs, NAPs, and NCs. The workshop was attended by members of the TEC and the Advisory Board of the Climate Technology Centre and Network (CTCN), TNA country coordinators, NC country coordinators, NAMA and NAP practitioners. Taking into account the outcomes of the workshop, the TEC finalized two TEC briefs on TNAs.⁴
4. Building on the work that has been undertaken by the TEC in 2013, the TEC delivered in its report to COP-19 the following key messages:⁵
 - (a) Parties, when identifying and preparing mitigation and adaptation actions such as NAMAs and NAPs, could ensure coherence with the methodology and results of their TNA processes;
 - (b) The use of a road-mapping approach may help to improve planning processes, including technology action plans, NAMAs and NAPs, and may help parties to transform the results of their TNAs into actions;
 - (c) National Designated Entities (NDEs) have the potential to play a key role in establishing strong linkages and maintaining coherence at the national and regional levels between the different planning processes under the Convention, such as TNAs, NAMAs and NAPs.
5. The TEC at its eight meeting included in its work plan for 2014-2015 the following activities:
 - (a) Further work on possible ways to establish linkages between TNAs and NAMAs, NAPs and NCs, and involve NDEs in the process;
 - (b) Deliver guidelines to assist parties in implementing the results of TNAs;

² FCCC/SB/2012/2.

³ FCCC/SB/2012/2 paragraph 30.

⁴ <http://unfccc.int/ttclear/pages/tec_home.html>.

⁵ FCCC/SB/2013/1 paragraph 45.

- (c) Assist policymakers to integrate the TNA process with other processes under the Convention, and to enhance implementation of TNA results;
 - (d) Prepare recommendations to COP-20 on TNAs and the linkages between TNAs and NAMA, NAPs and national communications, based upon the above activities.
6. The COP-20 requested the TEC to provide guidance on how the results of the TNAs, in particular the Technology Action Plans (TAPs), can be developed into projects that can be implemented, and to provide an interim report on its preliminary findings to SB-43.
7. The COP-21 welcomed the interim report by the TEC on guidance on enhanced implementation of the results of TNAs.⁶ In the interim report it was noted that the TAP Guidance was provided to describe the scope and rationale for the TAP, and that as a starting point, the TAP formulates and discusses the ambition for this technology implementation, which should be based on existing country development plans, as well as other processes under the Convention such as the development of intended nationally determined contributions (INDCs).
8. The TEC at its twelfth meeting included in its work plan for 2016-2018 the following relevant activities:
- (a) In collaboration with the Adaptation Committee (AC), the LCD Expert Group (LEG), and the CTCN, consider how parties could be helped to align their TNAs with the process to formulate and implement NAPs, Drawing on the previous work, prepare an update to inform the TEC;
 - (b) Analyze linkages between TNA process and Nationally Determined Contribution (NDC) process.

B. Objectives

9. The objectives of this paper are to:
- (a) Enhance understanding on linkages between TNAs and NDCs, and on how these could be achieved;
 - (b) Propose options to establish concrete linkages between TNAs and NDCs; and
 - (c) Assist the TEC in delivering relevant key messages and recommendations to parties through the COP-22.

C. Scope of the paper

10. This paper builds on work on the current state of play of:
- (a) The relevant decisions from COP-20 and COP-21;
 - (b) The TNA process including conducting and reporting of TNAs and TAPs;
 - (c) TNA background paper on linkages between TNAs and other climate policy making processes;
 - (d) The TEC brief on Possible integration of the TNA process with NAMA, NAP, and NC processes;
 - (e) The work plan of the TEC for 2016-2018 and its relevant activities;
 - (f) Experiences and lessons learned from linking TNAs with NDCs;
 - (g) Other relevant documents and literature.

⁶ FCCC/SB/2015/INF.3.

D. Possible action by the TEC

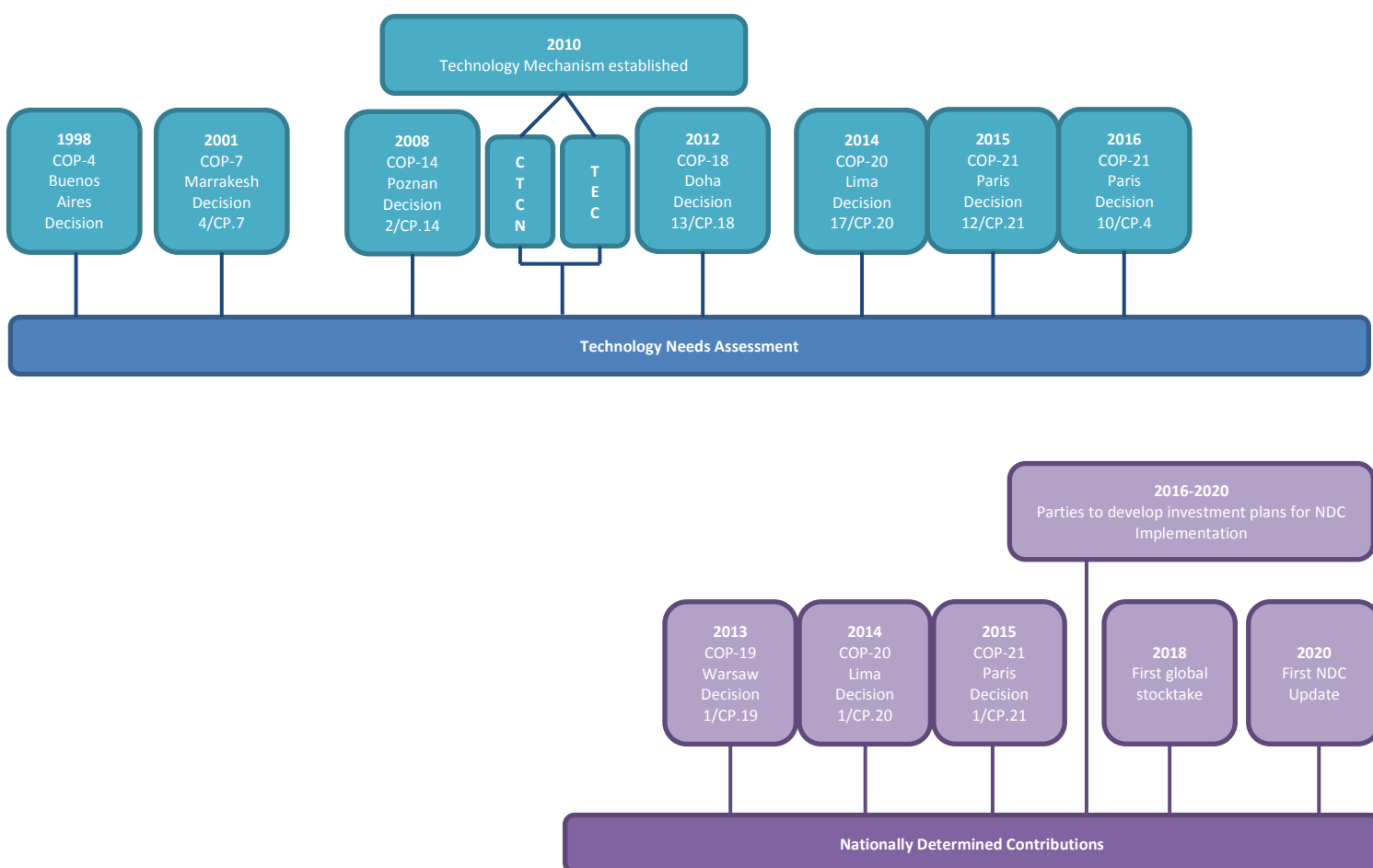
11. The TEC may wish to consider the draft, and:
 - (a) Identify follow-up actions, including agreeing on a process for finalising the paper after TEC 13;
 - (b) Provide initial guidance to the task force on TNAs on possible elements of draft key messages/recommendations to the COP on this matter.

II. TNA and NDC processes under the Convention

12. Commitments to promote technology transfer to developing countries have been renewed at every COP to the Convention. In 2010, this level of commitment led to the establishment of the Technology Mechanism, which aims to ‘facilitate enhanced action’ on technology development and transfer to support progress on climate change mitigation and adaptation. Related to this are numerous on-going initiatives in developing countries, including TNAs, Low Carbon Development Strategies, NAPs and NAMAs, financed by bilateral and multilateral organisations as well as, in some cases, developing country budgets.

13. Intended Nationally Determined Contributions (INDCs) were introduced at COP-19, with the Convention inviting Parties to prepare their INDCs to address climate change. COP-20 further elaborated this decision, and in the lead-up to COP-21 Parties prepared their INDCs, outlining the post-2020 climate actions and agendas they intend to implement under the Paris Agreement. After the Paris Agreement is ratified by each party, INDCs become first NDCs, unless parties choose to submit a revised NDC along with ratification as the first NDC.

Figure 1: Development of TNA and NDC processes under the Convention.



A. TNA process

14. In 1999, the Global Environment Facility (GEF) Council agreed that “some of the immediate capacity building priorities of non-Annex I Countries, identified in the COP decision 2/CP.4, may initially be met through additional funding under expedited procedures for enabling activities.” Based on the above COP Decision, the GEF identified a list of eligible activities for the top-up projects, including identification and submission of technology needs and capacity building to assess those needs. Consequently, the GEF funded the development of the first 69 TNA reports from 1999 until 2008.

15. TNAs were introduced under the Convention at COP-7, which defined TNAs as “a set of country-driven activities that identify and determine the mitigation and adaptation technology priorities of Parties” and “particularly developing Parties.”⁷

16. At COP-14 in 2008, TNA development was included in the Poznan Strategic Programme on Technology Transfer as a key component for “scaling up the level of investment in technology transfer in order to help developing countries address their needs for environmentally sound technologies.”⁸

17. COP-18 recognized that TNAs and their syntheses “are a key information source for the work of the Technology Executive Committee in prioritizing its activities under the Technology Mechanism, and could be a rich source of information for governments, relevant bodies under the Convention and other stakeholders.”⁹

18. COP-20 requested that the TEC provide guidance on how the results of the TNAs, in particular the TAPs, can be developed into projects that can be ultimately implemented. The COP-21 welcomed the interim report by the TEC on guidance on enhanced implementation of the results of TNAs.¹⁰

19. Based on a COP-21 mandate,¹¹ parties at SB-44 in May 2016 initiated the elaboration of the Technology Framework, which will further promote and facilitate enhanced actions on technology development and transfer. The TNA process will play a central role in the implementation of environmentally sound mitigation and adaptation technologies.

20. A TNA process usually takes between 18 and 24 months, and is organized around three main steps and deliverables (Figure 2), with three main objectives:

(a) To identify and prioritise mitigation and adaptation technologies for selected sectors;

(b) To identify, analyse and address barriers hindering the deployment and diffusion of the prioritised technologies including enabling the framework for the said technologies;

(c) To articulate, based on the inputs obtained from the two previous steps, a TAP, which is a medium/long term plan for increasing the uptake of identified technologies. The plan outlines actions to be undertaken to enhance the uptake, which are further elaborated as project concept notes.

21. In addition to these steps, a national organisational structure is set up for the TNA process. For each of the steps, guidance and methodologies are available.¹²

⁷ Decision 4/CP.7, pp. 22-30.

⁸ Decision 2/CP.14, FCCC/CP/2008/7/Add.1, para 1.

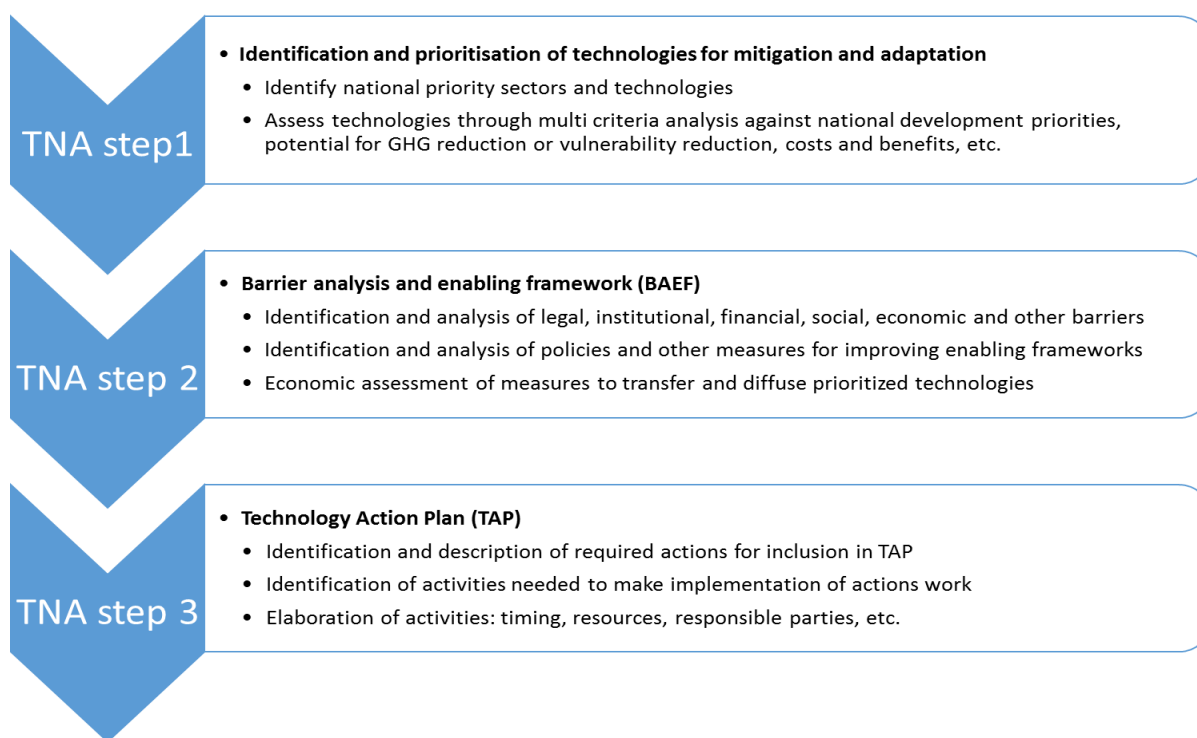
⁹ Decision 13/CP.18, FCCC/CP/2012/8/Add.2, para 10.

¹⁰ FCCC/SB/2015/INF.3.

¹¹ Decision 1/CP.21, para 67.

¹² <<http://www.tech-action.org/Publications/TNA-Guidebooks>>.

Figure 2: Key steps and components of the TNA process



B. NDC process

22. INDCs were introduced at COP-19, where Parties decided ‘to invite all Parties to initiate or intensify domestic preparations for their intended nationally determined contributions,...’ while at the same time facilitating ‘**the clarity, transparency and understanding** of the intended contributions, without prejudice to the legal nature of the contributions’.¹³

23. In 2014, this decision was reiterated at COP-20.¹⁴ Parties also agreed that INDCs towards achieving the objective of the Convention should represent a progression beyond current mitigation efforts. Furthermore, parties agreed that in order to facilitate clarity, transparency and understanding, the information to be provided by Parties communicating their intended nationally determined contributions may include, as appropriate, inter alia, quantifiable information on the base year, timeframes and/or periods for implementation, scope and coverage, planning processes, assumptions and methodological approaches.

24. The Paris Agreement, agreed by Parties at COP-21, called upon each party to prepare, communicate and maintain their successive NDC.¹⁵ As part of the Paris Agreement and its adopting decision, the Adaptation Committee and Least Developed Countries Expert Group were requested to develop modalities for recognizing parties' adaptation efforts.

25. Implications from the Paris Agreement on NDCs include, but are not limited to:

- (a) Parties may update their NDCs any time and are required to do so at least every five years starting from 2020;
- (b) Parties are encouraged to submit an updated contribution upon ratification of the Agreement;
- (c) A global stocktake should monitor progress towards the long-term goals every 5 years, starting in 2023;

¹³ Decision 1/CP.19, p. 4.

¹⁴ Decision 1/CP.20, p. 3.

¹⁵ Decision 1/CP.21, Annex, Article 4, p. 2.

(d) A facilitative implementation committee should monitor the progress of NDC implementation at the national level and every update must be at least as strong as the previous contribution;

(e) An international review process will provide each party with suggestions for increasing ambition.

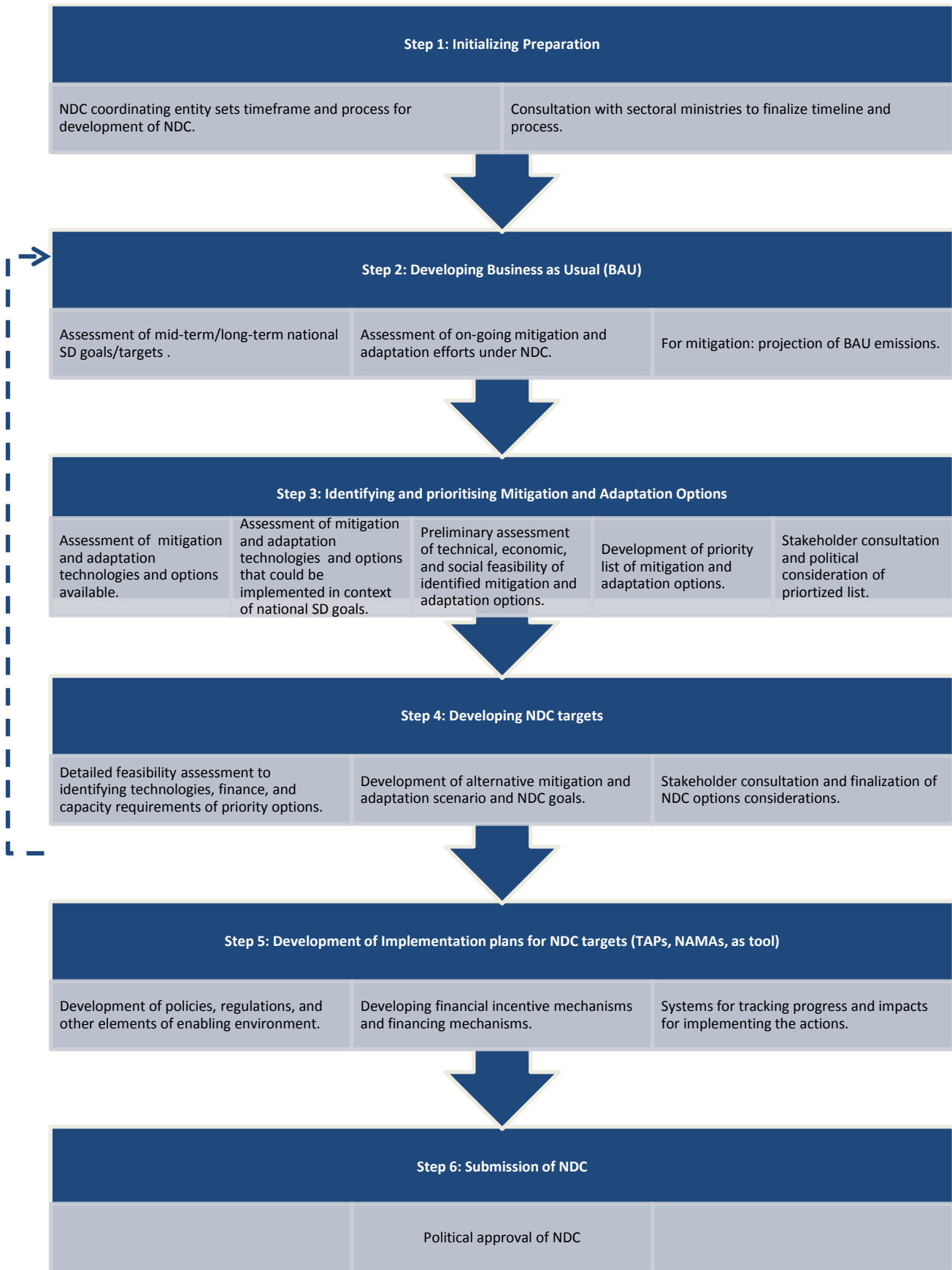
26. In terms of support, the Paris Agreement implies that resources (climate finance, technology transfer, knowledge sharing and capacity building, among others) should be provided to support Non-Annex I Parties with the implementation of NDCs in continuation of previous support. And Non-Annex I Parties should, through the period 2016 to 2020, develop thorough investment plans to increase readiness and to access support for NDC implementation.

27. Parties established institutional arrangements building on the existing climate change policy coordination arrangements in developing their INDCs. These were ad-hoc arrangements given the short time available for parties to develop their INDCs. Going forward parties will submit NDC every five years starting 2025. Thus an institutionalization of the NDC process is required to ensure continuity and consistency in parties' NDCs. Moreover, NDCs reflect national circumstances and henceforth the structure and content of NDCs vary between parties.

28. Figure 3, below, illustrates a possible process for developing and updating NDCs and is based on the process followed by many Non-Annex I Parties in the preparation of their INDCs.¹⁶ In the current exercise of INDC development, given the short time, parties relied on existing analysis and information. Going forward one would envisage a detailed assessment of potential for climate change actions before political approval of the NDC. The NDC will be submitted five years in advance of the start of implementation period. For example, the NDC for period 2035 - 2040 is to be submitted by early 2030. Thus one anticipates that NDCs will be developed parallel to a detailed implementation plan for the previous period's NDC (in the case of above example this would be the NDC for period 2030 - 2035). The process, though depicted as linear in the figure, is not expected to be completely linear in reality. The steps 3, 4, and 5 potentially have feedback loops and result in some iteration before the final NDC is prepared and submitted to the UNFCCC. For NDC preparations, the process would be expected to follow the same sequencing.

¹⁶ Observation made by UNEP DTU in supporting development of INDCs in 31 parties through a UNEP-GEF INDC support project.

Figure 3: NDC development process



III. Linkages between the TNA and NDC processes

29. COP-18 agreed that ‘the technology needs assessment process should be integrated with other related processes under the Convention, including nationally appropriate mitigation actions, national adaptation plans and low-emission development strategies’.¹⁷ This is recognized in the work by the TEC and illustrated by the TEC brief on possible integration of the TNA process with NAMA and NAP processes.¹⁸ At the time NDC process was yet to be established and henceforth previous work did not include NDC efforts in its considerations. Thus there is a need to create coherence among climate policies and projects to realise these co-benefits.

30. National TNA processes take their starting point in the respective parties’ sustainable development objectives. The TNA process, therefore, not only maps out a party’s long-term development priorities, but also identifies technologies to realise these priorities while simultaneously reducing emissions and enhancing climate resilience.

31. COP-19 defined INDCs as contributions “towards achieving the objective of the Convention as set out in its Article 2.”¹⁹ Besides the contribution to the objective of stabilization of greenhouse gas (GHG) concentrations in the atmosphere, NDCs may also contribute to numerous domestic objectives associated with a shift to a low-carbon, climate resilient development path. This is underlined by the phrasing of “nationally determined” contributions, which emphasizes that contributions will be developed in accordance with national circumstances rather than determined top-down by the Parties.

32. Both processes use national development priorities as a starting point, and aim for integration of climate change into other national planning processes, with the overall objective of ensuring a low carbon, climate resilient sustainable development path. Achieving such an objective requires strong coordination and interlinkages between national planning efforts.

A. Commonalities and differences between the processes of TNAs and NDCs

33. An overview of envisaged commonalities and differences between TNA process and NDC process are presented in Table 1. For both planning tools, there is no process prescribed by the Convention. In the TNAs, through practice procedures, methodologies and tools have evolved over time to support the process. In the case of NDCs, these are still to develop with time.

Table 1: Overview of envisaged commonalities and similarities between TNA and NDC processes.

Process area	Commonalities	Differences
Identification of technologies and options	Based on national context, existing ongoing efforts, and national sustainable development priorities.	The TNA process developed through practice over the years has sector guidebooks for both mitigation and adaptation. Technologies are identified through national consultants in collaboration with sector experts. For NDCs, the process is developing and will be flexible to accommodate country circumstances. The focus in NDC is not technology per se but mitigation/adaptation actions and technology needs in that context.
Prioritization of sector technologies and options	Both processes take starting point in national sustainable development objectives.	The TNA process has a well-established methodology, while no common methodology exists for the NDC prioritization process.
Development of targets	Both processes identify targets.	Whereas NDCs focus mainly on identifying and establishing targets, TNAs focus largely on development of the pathways to reach the targets. TNA

¹⁷ Decision 13/CP.18, FCCC/CP/2012/8/Add.2, para 12.

¹⁸ Available at

<http://unfccc.int/ttclear/misc/_StaticFiles/gnwoerk_static/TEC_column_L/4f85c880f1b54a6bb1ed32a3b7e1bc94/7262a425eab84ac8a0ab4a5980d7e58d.pdf>.

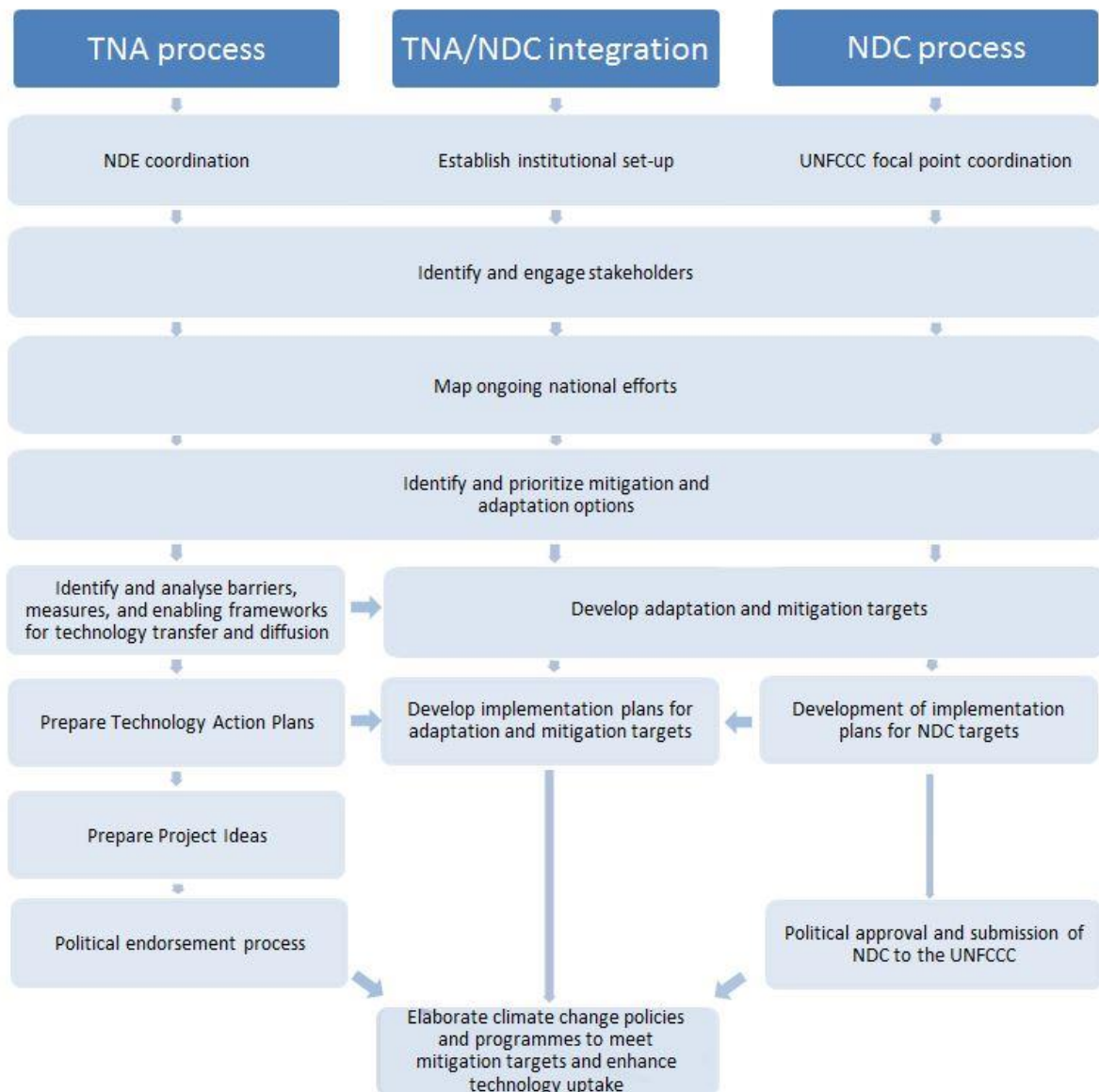
		<p>targets are often technology specific, while NDC targets are often of a more general nature, incorporating technology, capacity building, transparency, policy, etc.</p> <p>In NDCs, a target is presented as a (sector) collective target, while in TNAs it is established as a technology specific target.</p>
National coordination	Both processes have a nationally nominated coordinator who sets up the national team.	The TNA process calls for a national steering committee.
Stakeholder involvement	Both processes provide opportunity for a stakeholder driven process, and by their nature involve line ministries.	Whereas TNAs calls for stakeholder involvement, NDCs are more flexible to which extent they require stakeholder engagement.
Implementation Planning	Both processes have a common focus on developing targets and plans to achieve the targets.	TNA process includes elaboration of project concept notes.

34. Some related issues include:

- (a) Technologies are central to achieving NDC targets, thus the TNA becomes an integral part of the NDC process;
- (b) NDCs require update every five years as per the Paris Agreement, whereas TNAs have no such specified periodicity in UNFCCC decisions;
- (c) Whereas NDCs so far focus on targets and implementation plans, TNAs provide the opportunity for more in-depth, thorough analyses, including identification of barriers, measures, and enabling frameworks for technology development and transfer.

35. The above points urge for an integrative planning approach linking TNA and NDC processes, rather than separate processes. Figure 4 shows how such an approach might be structured based on on-going work and experience from parties in integrating TNAs and NDCs.

Figure 4: TNA and NDC process interlinkages

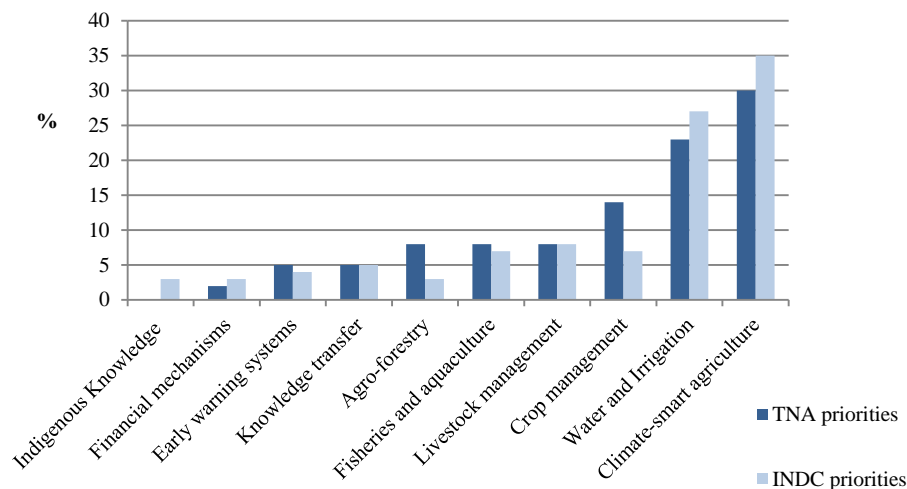


IV. Existing good practices on linking TNA and NDC processes

36. The majority of Parties noted, in their INDCs, the need for enhanced international support in the form of finance, technology transfer, knowledge sharing, market systems facilitation and capacity-building for the implementation of the INDCs and for enhancing ambition over time.²⁰

37. The priorities of TNAs and INDCs show a common tendency of national priorities, as demonstrated in Figure 5, below.

²⁰ FCCC/CP/2016/2, para. 185.

Figure 5: Adaptation priorities for agriculture sector in TNAs and Non-Annex I INDCs.²¹

38. The inter-linkages between TNAs and NDCs are perhaps implicit as both processes develop and move forward. However, parties would benefit by making these inter-linkages explicit, and capitalising on the efficiencies that may be realised through commonalities between the two processes. Inter-linkages between the processes are explored further in the subsequent sections of the paper.

A. Prioritization of sectors, technologies and measures

39. In developing both their INDCs and TNAs, the majority of parties took a sectoral approach, identifying key priority sectors for both mitigation and adaptation that were in line with their national sustainable development priorities.

40. The existing TNA methodology includes detailed identification, prioritization, and assessment of sectors, technologies and implementation measures to overcome barriers for technology development and transfer. This could serve as a logical starting point for Parties that are preparing their NDC. Linking sectors, technologies, and implementation measures across TNAs and NDCs furthermore ensures that coherent climate targets and actions are mainstreamed and embedded in national policies and frameworks.

B. Development of targets

41. Within priority sectors, emissions reduction potential and vulnerability reduction potential were identified for both mitigation and adaptation, respectively; often with an emphasis on potential reduction strategies that offer co-benefits. Particularly for NDC development, realising where reduction potential lies is an important step for setting actionable targets addressing climate change, and it is important that NDCs take into consideration technologies that are relevant in reaching these targets.

42. Identifying reduction potential is directly in line with the TNA process, which assesses and estimates a technology's contribution to climate change mitigation and adaptation. TNAs identify both the gaps and barriers for prioritized technologies, as well as actions for overcoming them. Such actions can be directly translated or incorporated into potential targets to be included in an NDC and facilitate both development and technology transfer.

²¹ On TNA priorities, analysis is based on data collected from 25 national TNA reports 2010–2012, all available at www.tech-action.org. On INDC priorities, analysis is based on data collection made by Richards, M.; Bruun, T.; Campbell, B.; Gregersen, L. E.; Huyer, S.; Kuntze, V.; Madsen, S.; Oldvig, M. AND Vasileiou, I. (2015) How countries plan to address agricultural adaptation and mitigation: An analysis of Intended Nationally Determined Contributions. CCAFS Info Note. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

43. Moreover, given that TNAs will have already identified measures for implementing technologies, inclusion of TNAs in the NDCs can have an effect on Parties' ability to concretely realise targets and co-benefits (as well as measure distance from targets).

C. Reporting on costs and finance

44. A common challenge of NDCs is to identify and report on the costs of climate change adaptation and mitigation, as well as the sources of finance necessary to meet these costs. TNAs can act as a useful starting point for both cost estimates and the identification of funding sources, as these are both activities undertaken in the TNA process that can feed directly into NDC development.

45. TAPs estimate the costs and financing needs for the actions and activities prioritised within the TNA process. While doing this, it is recognized that the majority of Parties face budget constraints and it is important that cost-estimates are made based on available and reliable data so that potential financiers have the opportunity to make valid assessments and decisions. TAP cost estimates are broken down into both 'actions and activities aimed at preparing a full programme for the diffusion of a prioritised technology' (i.e. public domestic and public international finance) and 'actions and activities aimed at the implementation of a full programme for the diffusion of a prioritised technology' (i.e. public domestic and international, as well as private domestic and international finance).

46. Having identified the financial need (or cost), the TAP goes onto identify sources of finance that could fulfil such a need. This is done on multiple levels: small or large scale, market or nonmarket, mitigation or adaptation financing sources. Breaking down the financial needs on such levels then allows the TAP to target the most suitable types and sources of both public and private financing, such as grants, commercial loans, subsidies and revenue from goods and services.

47. This has direct implications for NDC development, as INDCs struggled to both estimate and ground valid cost estimates, and costs that were reported were of a highly preliminary nature.²² Drawing on the work already undertaken in TNAs could enhance the robustness of cost estimates as well as bring NDCs closer to identifying likely sources of finance.

D. Capacity building

48. Oftentimes Parties may lack the domestic resources to support climate projects or innovations that would lead to low carbon development and increase climate resilience. Capacity building is essential for advancing low carbon development and climate resilience and developing a strong NDC.

49. As part of the TNA process, Parties will already have undergone both regional and global capacity building events focused on identifying and assessing technology needs that they can draw upon for inclusion in their NDCs. These capacity building efforts include technical guidance and support, where exchanges of experience and information between Parties and stakeholders can establish the basis for cooperative arrangements. These capacity building events cover methodologies for technology prioritization, financial analysis models, stakeholder engagement, barrier analysis, including markets readiness and regulations and enabling environments.

50. The TNA process could be viewed as a facilitating process, providing in-depth analyses of technology development, market systems, regulations, and transfer paths elaborated materialized in TAPs and providing capacity building and knowledge sharing to national technology champions.

E. Focus on implementation

51. TNAs can play a unique role in the development of NDCs due to the information they offer on the implementation potential, ability and scale of technologies. TNA results can also be used to help report on and monitor progress towards achieving targets set in NDCs, and enhance understanding of how technologies can be applied or used within specific policies, programmes or projects.

²² UNEP (2015). The adaptation finance gap update: with insights from the INDCs. Nairobi, Kenya.

52. If TNA outputs were considered as means to reach NDC targets, financing support allocated to NDC implementation would also, indirectly, support implementation of TNA results. Actions identified within TAPs highlights the required activities to facilitate robust market systems for technology diffusion and uptake, which would underpin longer-term activities elaborated in NDCs and NAMAs.

F. Examples

1. Harmonising planning tools across ministries

Togo

- Togo presents a good example of the need to harmonise national planning processes internally, as they formed a National Committee of key decision makers on issues related to the management of project activities for both INDCs as well as the TNA.
- This committee includes representatives responsible for the implementation of policies from relevant ministries, and other officials familiar with national development objectives, sectoral policies, the science of climate change, and the potential impacts of climate change for the party and mitigation needs.

Seychelles

- The Seychelles also recognized the necessity of integrating UNFCCC-related initiatives (such as National Communications), Biennial Update Reports (BURs), National Adaptation Planning (NAP), NAMAs, and TNAs in order for their INDC to be successful.
- This is to be done through the newly redefined National Climate Change Committee (NCCC).

2. From TNA to NDC

The Gambia

- The Gambia is an example of a TNA report that actively tries to align with the targets developed in the INDCs.
- The Gambia's INDC identified and assigned emission reduction targets within the agriculture, energy, manufacturing, transport, waste, and household consumption sectors while concurrently underlining the critical role of technology transfer in the response to climate change, making recommendations for specific technology transfer requirements in the afore-mentioned sectors.
- Such an approach generates the continuity and value-addition required to consolidate gains for achieving national goals.

Swaziland

- Swaziland undertook development of their INDC and TNA process in tandem, using the same team of consultants for both, facilitating the interlinkages between the two planning tools.
- Priority sectors and targets were identified using the Third National Communication in order to be used in the INDC.
- After these had been identified for the INDC, Swaziland then undertook development of their TNA process, where they prioritized based on the technologies for the selected sectors.

Zambia

- Zambia writes in its INDC that it intends to reach INDC mitigation targets by implementing three programs driven by the party's Climate Response Strategy and supported by other national development policies. It further elaborates that 'these three programs have been developed based on Zambia's plans and actions and supported by various climate-related activities such as REDD+, NAMAs and Technology Needs Assessment (TNA)'.

Bangladesh

- In its TNA, Bangladesh express that 'in the country context, technology needs assessments (TNA) become an important management tool to formulate development strategies as well as to identify NAMAs'²³.

²³ Technology Needs Assessment and Technology Action Plans for Climate Change Mitigation. Ministry of Environment and Forests (MoEF), Government of the People's Republic of Bangladesh (2011).

- Both the INDC and TNA processes were conducted using the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) as a reference for how the implementation should be carried forward. This also means that for Bangladesh, INDC implementation will be taken forward by existing governance arrangements under the BCCSAP and other key policies/plans.

Lebanon

- Lebanon built INDC efforts on previous and existing national processes, including the TNA process.
- For its INDC priority sectors, technologies identified and assessed through the TNA process were included. This allowed the INDC process in Lebanon to utilize further and build upon the existing assessment of barriers and enablers for these technologies, which had already been prioritized and assessed through a nationally driven participatory process.

Mali

- Mali in part based the identification of the mitigation and adaptation needs in its INDC on its sustainable development objectives, including a focus on the implementation of the Technology Action Plan for adaptation and mitigation.
- For adaptation, the INDC included technologies related to the practice of forage crops, the development of land cultivation, agro-meteorological techniques, and improved crop varieties.
- For mitigation, the INDC included technologies on small water dams, the deepening of ponds and modern wells.

V. Possibilities of creating linkages on an institutional level

53. Many Parties have well established institutional frameworks to support the coordination of climate change initiatives. These include national level inter-ministerial climate change coordination committees, technical working groups undertaking specific studies on inventories, mitigation, vulnerability and adaptation, and research centres coordinating national studies within the area of climate change. Coordination of these endeavours across all climate-related planning processes will ensure greater efficiency and policy coherence and support the enhancement of knowledge sharing.

A. TNAs

54. A TNA process is usually initiated through the UNFCCC focal point, which make recommendations on who should be the responsible government entity for the TNA process. In many cases, the NDE has been nominated as TNA coordinators, which is in line with their role as designated national technology champions.

55. Being designed as a country driven, participatory process, the institutional set up for a TNA process requires the involvement of a wide range of national stakeholders. The process is led by a national TNA coordinator, nominated by the responsible government entity. Information on national institutional arrangements to support the TNA process is available in a guidance note on institutional organization for conducting TNAs.²⁴

56. Most countries state in their TNA reports that they build the TNA process on pre-established institutional structures, i.e. the preparation of National Communications. For example, Lebanon notes in its TNA report that ‘the stakeholders were identified according to their expertise, decision making positions, involvement and knowledge of the selected sectors and capability to influence the implementation of the proposed TAP. Most of the stakeholders had already been involved in the National Communication processes, which created a common knowledge base and has built strong inter-institutional relations.’

²⁴ UNEP DTU Partnership (2014) Organising the National Technology Needs Assessment (TNA) Process: An Explanatory Note.

B. NDCs

57. For NDCs, most parties are yet to formalize institutional structures for coordination and implementation. In line with the TNA process, INDC efforts were typically coordinated by the UNFCCC focal point.

58. Some experiences on institutional structures can be derived from INDCs, though at the time where INDCs were prepared, there was some uncertainty on the future regularity, procedures and requirements of NDC updates. For example, Bhutan notes in its INDC that ‘...the priority mitigation and adaptation actions within this INDC will be considered and integrated in the preparation of the 12th Five Year Development Plan (2018–2023) and also subsequent five year plan periods. The cycles of the national five-year development plan process along with the cycles of the INDCs, yet to be determined under the new climate agreement, will form the basis for the national process to review progress in actions and support received.’²⁵

59. Experience from the INDC process shows that many Parties took a combined stakeholder and expert driven approach. For example, Bangladesh notes in its INDC that, ‘This INDC has been prepared through consultation and dialogue with the Government’s Advisory and Technical Committees, which include a range of stakeholders including line ministries, Planning Commission, technical departments, professionals, experts, and the private sector.’²⁶

C. Enhancing linkages between TNAs and NDCs at an institutional level

60. To enhance linkages between the two processes, the existing structures with institutions and arrangements, including existing strategies, planning tools, assessment frameworks, research and development programmes, technologies, networks and working groups could be utilized. By bringing together the institutional arrangements, it would enhance the exchange of relevant ideas, guidance, stakeholders, information and resources.

61. Already in many countries there is some streamlining of involvement of stakeholders, for example, the existence of a national climate change steering committee typically composed of members responsible for policy making from all relevant ministries, as well as key stakeholders from the private sector. The role of the steering committee is to support strong linkages between both processes and sector activities. However, both processes must make a concerted effort to ensure a diversity of stakeholders are consulted and remain involved in the implementation process, in particular climate-vulnerable groups and representative community-based organizations, for whom adaptation plans and co-benefit projects are vital.

62. Another means to ensure coordination and alignment of processes is for Parties to establish and promote local champions to lead processes and ensure the exchange of good practices and information, including institutional arrangements. These national champions could be additional to the United Nations Framework Convention on Climate Change (UNFCCC) focal point.

63. Establishment of national and international systems for monitoring and evaluation of processes and the implementation of their results could be another way of supporting the streamlining of processes. By utilizing information generated through such systems, the resources and information provided for the national processes could be better targeted and used more efficiently.

64. Regular monitoring and reporting of progress on the national processes would allow consistently documented experience sharing and review of the processes, as well as the institutional organization of these, and offer the opportunity for targeting support to parties through information generated from the monitoring system.

²⁵ National Environment Commission, Royal Government of Bhutan (2015) INDC of the Kingdom of Bhutan. Available at: <<http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Bhutan/1/Bhutan-INDC-20150930.pdf>>.

²⁶ Ministry of Environment and Forests (MOEF), Government of the People’s Republic of Bangladesh (2015) Intended Nationally Determined Contributions (INDC). Available at: <http://www4.unfccc.int/submissions/INDC/Published%20Documents/Bangladesh/1/INDC_2015_of_Bangladesh.pdf>.

VI. Way forward

65. Based on the above analysis of linkages between TNA and NDC processes, this section suggests ways forward towards improved alignment of the processes, with a view to maximize benefits from these processes towards a low carbon, climate resilient sustainable development path.

66. The TNA process provides a methodology for considering and integrating technologies in national planning processes and initiatives to reach national sustainable development objectives, including climate change related goals. Likewise, TNAs can be seen as a national planning tool for identifying current and future technology needs for sustainable development, in combination with achieving mitigation and adaptation benefits.

67. To utilize the synergies between the processes of TNAs and NDCs, the methodology of TNAs provide a sound basis for identifying pathways for parties to reach their NDC targets (as well as NAMAs and NAPs). With that in mind, an integrated approach by parties towards TNAs and NDCs could possibly support a post-2020 climate policy framework by means of:

- The TNA process should work in sync with the NDC process by prioritization of technologies in line with NDC targets and sectors, and align targets set in technology action plans to achieve the targets set in NDCs.

68. When NDC targets have been identified, parties could utilize the TNA process to identify, prioritize, and assess which technologies, and measures for their transfer, development and diffusion, are needed for parties to meet these targets. The TNA process could be viewed as a planning support tool to formulate strategies on how to reach targets set in NDCs.

- TNAs are often perceived by Parties as a project, not a process. The NDC process is established by the Paris Agreement as a five year process. Establishing TNAs as a regular process for updating technology needs and technology action plans for development and transfer of technologies to address climate change would enhance the effectiveness of the NDC process. It would also enable TNAs and related TAPs to be more responsive to dynamic implementation contexts, which may change as a consequence of climate variations. The NDC process also provides the channel for implementing some TNA outcomes;
- The existing TNA process could serve as a logical starting point for parties that are developing their NDC. Linking sectors, technologies, and implementation measures across TNAs and NDCs furthermore ensures that coherent climate targets and actions are mainstreamed and embedded in national policies and frameworks;
- Monitoring of progress in achieving NDC targets should integrate monitoring of the implementation and impacts of TNA results;
- If TNA outputs were considered as means to reach NDC targets, financial support allocated to NDC implementation could also, indirectly, support implementation of TNA results;
- Harmonizing the institutional structure for TNA and NDC processes as well as for NAPs and NAMAs would increase the alignment of processes, avoid duplications, and improve efficiency towards reaching joint objectives. Such harmonization efforts would require further exploration, and need to take into account any existing climate change policy coordination arrangements;
- TNA and NDC processes are not identical, though there are numerous similarities between them. Incorporating lessons learned from TNA process into the NDC process could prove beneficial for future work on NDCs.

VII. Summary and conclusions

69. Having reviewed the commonalities and differences between the TNA and NDC processes, this paper has suggested a series of recommendations and options for encouraging stronger inter-linkages between them:

- NDCs will define the five year goals of a Party to address climate change pursuant to Paris Agreement and, hence, other national process under the UNFCCC should be guided by it and

should be in support of both the development and implementation of NDCs. Thus, the TNA process should be guided by, and an integral part of, the NDC process;

- TNA outputs can serve as inputs for developing NDCs, as the technology identification process in the TNAs, in context of sustainable development and mitigation/adaptation opportunities, is aligned with the process of NDC development. Furthermore, technology action plans (TAPs) developed as part of the TNA process provide a platform for NDC implementation plan preparation and implementation;
- The approach of the NDC and TNA process is grounded in the sustainable development plans and strategies, climate change policies, low carbon resilient development strategies, and on-going programmes and plans to address sustainable development and climate change. This provides a natural synergy between the two processes. Harmonizing approaches across the two processes and learning from the TNA experience and practices thus provides a foundation for utilizing party capacities for NDC process;
- Interlinking the two planning tools should help to eliminate duplication and allow party resources to be used more effectively and efficiently. Institutional and process linkages of NDCs and TNAs are important for achieving this objective.

70. However, in order to achieve the above recommendations, a level of integration will need to be undertaken between both planning tools. This paper lays out a potential pathway for achieving this (see Figure 4), but in order to be successful, the following considerations must be taken into account when undertaking an integrative planning process:

- Identify and develop institutional arrangements, which integrate the responsibilities of TNA and NDC coordination across sectors and ministries;
 - Parties should support strong linkages between both processes and sector activities and ensure the exchange of good practices and information, including institutional arrangements between relevant stakeholders;
 - Parties should also clearly define processes for adaptation and mitigation, as well as related actions and the multiple roles of different stakeholders in these processes, in order to ensure greater alignment between planning tools;
 - Stakeholder participation by nongovernmental organizations (NGOs), private and public sector industries, vulnerable groups, university representatives and others, is an important means of ensuring continuity of climate change activities.
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