

Strengthening human and institutional capabilities to support implementation of ambitious NDCs

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The CARISMA Project started in February 2015 and received funding from the European Horizon 2020 programme of the EU under the Grant Agreement No. 642242. CARISMA intends, through effective stakeholder consultation and communication, to ensure a continuous coordination and assessment of climate change mitigation options and to benefit research and innovation efficiency, as well as international cooperation on research and innovation and technology transfer.

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Abstract

Planning and implementing ambitious NDCs require capabilities in different areas. These capabilities, however, are not widely available among Parties to the Paris Agreement. Especially several developing countries are in need for capacity improvement on several NDC planning and implementation elements. First, assessing options for mitigation and adaptation requires ability to understand impacts of these options on countries' economies and societies when implemented on a larger scale. Data limitations and unfamiliarity with possible impacts of (technology) options complicate such assessment in several countries. Second, scaling up prioritised climate options requires that systems are sufficiently enabling for that. In practice, both in developed and developing countries, several barriers form obstacles to such scaling up and clearing these requires financial, institutional, legal and policy capacity. The latter requirements are often difficult to fulfil in many developing countries, due to financial and institutional limitation, but also in several developed countries enforcement of climate and energy policies is problematic due to capacity limitations. To support developing countries in strengthening capacities for more ambitious NDCs, under the Paris Agreement the Paris Committee on Capacity-building has been established.

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1 Introduction

For achieving the goal of the Paris Agreement to limit the global mean temperature increase to well below 2°C above pre-industrial levels, countries are to undertake and communicate ambitious efforts as nationally determined contributions (NDCs) (UNFCCC, Paris Agreement, 2015, pp. 3-4, Art. 3). Preparing and communicating NDCs is mandatory, but countries are free in terms of how they formulate their NDCs, depending on their domestic contexts. Consequently, NDC can take different forms and structures, such as a top-down package based on a national emission reduction goal with accompanying policy measures, or a bottom-up package with (technology) climate options with implementation strategies and action plans.

A possible challenge related to formulating and implementing ambitious national climate plans through NDCs, especially in developing countries, is that it requires capacity in several areas. For example, assessing options for emission reductions requires development of knowledge of their costs, implementation challenges and benefits, and how they might fit within the country's social, economic and political context. Moreover, decision makers need to be able to consider impacts of these options on a larger scale and within a longer timeframe, not just as a mitigation project, but as a sector or country-level programme.

The need for supporting capacity-building for planning and implementing NDCs has been recognised by, among other initiatives, UN Development via its NDC Support Programme, which was launched at the UN Climate Summit of November 2017 (COP23), together with Germany, Spain and the European Commission (UNDP, 2017). Experience with identifying capacity needs and capability building for climate action planning in developing countries includes earlier instruments and mechanisms under the Climate Convention (UNFCCC) such as Nationally Appropriate Mitigation Actions (NAMAs) (UNFCCC, 2018a), National Adaptation Plans (NAPs) (UNFCCC, 2018b), and Technology Needs Assessment (TNA) (UN Environment, 2018). In addition to these, the collaboration between developed and developing countries under the Clean Development Mechanism (CDM) can be mentioned as an example of a provision under the Convention (in particular the Kyoto Protocol) that was supported by several capacity building initiatives (Nondek & Arquit Niederberger, 2004) (CD4CDM, 2012).¹

The importance of capacity building, especially in developing countries, for taking effective climate change action, has been acknowledged by the Paris Agreement (Article 11). Such "capacity-building should be country-driven, based on a response to national needs" and not be limited to the national level, but also be focussed on subnational and

¹ The CDM is an emissions trading mechanism established under the Kyoto Protocol to enable developed countries to achieve their emission reduction or limitation commitments under the protocol via projects in developing countries. For the latter host countries, the CDM had the objective to support their domestic sustainable development. Capacity requirements relate to, a.o., the ability to identify suitable projects within the host country, calculate emission reductions, monitor project progress, as well as negotiation an agreement with the investor country on selling of certified emission reductions.

local decision-making levels (UNFCCC, 2015, pp. 15-16, Art. 11.2). This resulted in the decision at COP 2015 to establish the Paris Committee on Capacity-building with the aim “to address gaps and needs, both current and emerging, in implementing capacity-building in developing country Parties” (UNFCCC, 2016c, pp. 10, para. 71).

With the aim of contributing to a capacity building agenda for NDCs, this paper discusses what capacities, both human and institutional, are needed to formulate, under an NDC, national strategies for scaling up options for climate change mitigation (and adaptation) and taking actions for successful implementation of these strategies, with a specific focus on developing countries. It is based on a workshop entitled “Strengthening Institutional Capacities for Enhanced Implementation of NDCs” that was held as a side-event of the Bonn Climate Sessions on 8 May 2018 (see Annex 1).²³ Presentations were delivered by a representative of the Paris Committee on Capacity Building (Ms Marzena Chodór) on the mandate and envisaged activities of the committee during its rolling workplan for 2017-2019, as well as by representatives of the EU-funded projects CARISMA and TRANSrisk with a focus on enhancing the role of people as stakeholders in NDC planning and implementation.

The paper synthesizes the presentations and discussions into section 2 on capacity building aspects related to planning and implementing NDCs, presents an overview of current support for capacity building under the UNFCCC in section 3, and concludes in section 4.

² The side event was organised by the EU-funded projects CARISMA (www.carisma-project.eu) and TRANSrisk (www.transrisk-project.eu).

³ During the event, next to institutional capabilities, also human capabilities were addressed by speakers and participants. Hence, the title of the paper includes ‘human capabilities’ too.

2 Capacity-building aspects of planning and implementing nationally determined contributions

2.1 Background

At the UNFCCC climate conference (COP19) of Warsaw in 2013, all countries were requested to communicate intended nationally determined contributions (INDCs), which were voluntary pledges of climate change mitigation and adaptation measures based on national contexts. This step marked a change in the overall climate governance to deviate from a path based on Kyoto-protocol-type of top-down climate goals and related commitments, and to proceed with bottom-up, country-driven (embedded in national socio-economic and environmental planning) processes. This shift opened the door for broad contributions from both developed and developing countries, while there was still scope for differentiation (Van der Gaast, 2017, p. 108). Once a country ratified the Paris Agreement, its INDC was converted to a nationally determined contribution (NDC).

For the formulation of NDCs, countries generally identify greenhouse gas (GHG) emission reduction measures that are ambitious from a climate perspective and feasible from a domestic socio-economic perspective. There is no common methodology or template for the preparation and presentation of NDCs. As a result, the processes for NDC preparation vary widely, and so do the scopes and contents. “Even their length varies from 3 pages to almost 60 pages” (Pauw, Mbeva, & Dzebo, 2017). In 2015, the World Resources Institute and UNDP published a guidance on INDC preparation and design (Levin, et al., 2015), but as the use of this guidance is not prescribed, Parties can (and do) deviate from its recommendations.

Both before and after COP21, Parties have expressed the need for guidance for information to be provided in their NDCs “in order to facilitate clarity, transparency and understanding” (Moarif, 2017, p. 12). The NDC Partnership⁴ has developed an online database where the NDCs have been converted into a template (NDC Content Pages) with common elements to enable comparison, such as the type of mitigation contribution (e.g., a GHG target), non-GHG target types (such as renewable energy targets), covered sectors, or capacity building support needs (NDC Partnership, 2018).

2.2 Capacity building aspects of NDC planning and CARISMA and TRANSrisk contributions to these

Building further on experiences and good practices with other processes under the Convention such as NAMAs, NAPs and TNAs (Technology Executive Committee (2016a),

⁴ The NDC Partnership is made up of developing and developed countries, as well as international institutions and facilitates technical assistance and knowledge sharing, dissemination of knowledge and promotes enhanced financial support for the NDC implementation. The NDC Partnership is co-chaired by the governments of Germany and Morocco.

(2016b)), the following main elements can be identified in NDC planning and preparing for implementation:

- Identifying and prioritising (technology) options for mitigation and adaptation within a country context, including assessing their impacts when scaling up
- Identifying barriers to scaling up options and selecting enablers to clear these barriers
- Deciding on the type and ambition of the mitigation or adaptation target
- Formulating a strategy for NDC implementation including action plans
- Identification of support needs

Each of these elements has to do with human and institutional capacity requirements although there is not a unique trajectory to work through them with an 'ideal' capacity package. For instance, in case of data limitations, quantitative tools, such as models, are difficult to apply, so that, instead, more qualitative tools need to be used based on active engagement of stakeholders. Also, this observation should trigger building capabilities in data collection, management and use.

At the side event, based on the projects CARISMA and TRANSrisk, it was explained what capacity would be needed in, especially, developing countries for addressing the above elements. As both projects are EU-funded, they have the resources to support case study countries in collecting information, assessing NDC-related aspects such as scaling up and risks and benefits of that. An important objective though, especially for TRANSrisk which also carries out case studies in developing countries, is to support countries, through the case study analysis, in building knowledge and capacities so that countries can conduct such processes themselves for NDC development, without the support from EU-funded projects.

Options and target setting for mitigation and adaptation in an NDC

Decisions on options for mitigation and adaptation and at what scale they should be implemented for reaching a target as formulated in an NDC require that a country (and its stakeholders) understands what impacts these options may have when scaled up. Such impacts, both positive and negative, can be economic of nature, such as costs related to grid stability when scaling up intermittent renewable energy technologies and macro-economic effects, as well as social (e.g. employment impacts or health effects) and environmental. Modelling capacity with high-quality databases are important capacity elements for building such understanding, as a model can help to develop a set of scenarios showing the possible impacts under different assumptions.

However, for many developing countries, such modelling capacity with scenario development based on reliable data is often lacking, so that impacts of NDC targets with scaled up implementation of options for mitigation and adaptation are difficult to estimate and assess. In the TNA programme this lack of capacity for scaled up climate planning is compensated by organising active engagement of a broad group of stakeholders (Rogat, 2015). Not only does this support buy-in of stakeholders in the country's climate programme, it also helps to mobilise stakeholders tacit, practitioners'

knowledge in assessing impacts of scaled up climate action in their country. The TNA capacity building for enhanced stakeholder consultation is explained in Box 1.

Box 1. Supporting stakeholder engagement in TNAs

The Global TNA Project under the Convention is an example of a process which mainly relies on participatory tools, whereby country stakeholders, as practitioners, are regularly consulted to mobilise their tacit knowledge about scaling up possible technology options within their country context (Rogat, 2015). For successful stakeholder consultation, TNA countries are supported to undertake the following activities (UNDP, 2010):

Selection of stakeholders, with attention to be paid to a balanced representation of stakeholder / interest groups, including national and local government, financial institutes, consumer organisations, industry associations, environmental NGOs, and research organisations.

Clarify stakeholder roles and divide tasks, such as identifying a core stakeholder group that actively partakes in NDC planning stages and wider groups of affected and interested stakeholders. This aspect is also important to avoid that the NDC process becomes fragmented so that not all priorities and concerns of all groups are equally considered.

Keep stakeholders on board during the NDC planning, including keeping a focussed timeline and keeping control of the process by avoiding that some stakeholder groups manage to drive the engagement process to promote their own set of interest and capture the process.

Training of facilitators to operate a multi-criteria decision analysis (MCDA) or similar tool with stakeholders. MCDA enables stakeholders to look at potential options for mitigation and adaptation from different, sometimes conflicting, perspectives, such as climate, environmental, social and economic impacts, some of which may be positive and other negative, and balance these to arrive at a consensus.

In the TRANSrisk project, the use of models in combination with stakeholder consultation has been systematically applied in fifteen case studies, irrespective of countries' socio-economic welfare levels and capacities. With that, for each country, low-emission strategies (or pathways) are formulated, which have strong resemblance with NDC, in particular as it contains a step to discuss, with national stakeholders, ambition levels for a particular sector or the sector as a whole (note that TRANSrisk began before the Paris Agreement was reached so that the term NDC is not used in the project's work description).

With this case study approach, in terms of capacity building, TRANSrisk can support country stakeholders, including policy makers, on how an existing model can be calibrated for use in their country (e.g. the example of TIAM-ECN model applied to several African states and the IBS-MEMO model calibrated for Chile), as well as the data needs for that. In addition, it has been analysed for each case study country, how and where stakeholders can step in the process and what insights they can offer in a climate planning process.

From CARISMA, while its case studies have been carried out in EU Member States, interesting insights on estimating impacts of scaled up (renewable energy) option at the sector and country level can be obtained, which can add to countries' capacity to

anticipate potential sector-level and economy-wide costs. These insights support capacity building in at least two ways. First, it enhances knowledge of potential positive and negative impacts within a country of scaling up options for mitigation and adaptation for more ambitious NDCs, even if no modelling capacity is available to run a model. Second, in case sufficient data is available in a country and a model calibrated for use in the country, it demonstrates how a country can quantify potential economic impacts of different ambition levels in an NDC, which can form input for stakeholder consultation in the country.

In short, capacity needs for designing an ambitious NDC are that countries are able to understand and assess what are potential (positive and negative) impacts of scaling up options for mitigation and adaptation in the country, which, for instance, determines whether an NDC is affordable and socially realistic (e.g. that country stakeholders are willing to accept some negative impacts given other positive impacts from the NDC). TRANSrisk and CARISMA's contributions to building capacity for that can be summarised as follows:

TRANSrisk:

- Use of models to formulate business as usual scenarios against which emission reduction potential of scaled up options can be measured (TRANSrisk, 2018).
- Indication of consequential risks of low emission pathways (applicable for an NDC) (Vliet & Hanger, 2017).
- Structured approach to engage stakeholders to assess these consequential risks and indicate either whether these risks are acceptable or identify solutions to mitigate these risks (Gaast & Szendrei, 2016).

CARISMA:

- Improved understanding of additional costs (Bachner, Tuerk, Williges, & Steiniger, 2017) and environmental impacts (Loriaux, et al., forthcoming) of scaling up options for mitigation, such as system-level costs related to, e.g., grid balancing in case of renewable energy additions, and economy-wide costs, e.g. employment impacts, capital costs increases of decreasing wages. In developing countries, these costs may be exacerbated because of higher perceived technical and political risks (Schmidt, 2014).
- Analysis of examples of social implications of scaled up (technology) options for mitigation and viable approaches to enhance social acceptance of these options within a country context (Hagens, Koretsky, & Toemen, forthcoming).

Planning for implementation of NDC: strategies and action plans

Once a selection of options for mitigation and adaptation has been made for a strategy to be included in an NDC and to contribute to its target, an implementation plan is needed. This requires capacity to identify actions that enable scaling up of the prioritised options at the desired scale within the country. In terms of capacity development for this, UN Environment (Nygaard & Hansen, 2015) prepared a detailed guidance document to, first, identify barriers that potentially block deployment and diffusion of options for mitigation

and adaptation, and, second, characterise and prioritise these barriers in terms of most important ones to clear first. While specifically prepared for supporting technology transfer under the UNFCCC, this guidance can also be helpful for NDC planning as the guidance specifically focusses on system-level barriers, i.e. roadblocks to scaling up.

In the same document, Nygaard & Hansen (2015) provide guidance about how to identify enablers to clear the identified barriers and how to prepare for implementation of these enabling actions. However, experience with the Global TNA Project has shown that, especially in developing countries that have conducted TNAs, there is a clear capacity need for that. For instance, as analysed by the Technology Executive Committee (UNFCCC, 2014, pp. 6-7), the information provided in action plans developed for scaling up prioritised technologies for mitigation and adaptation in TNAs (based on assessments under the Global TNA Project during 2009-2013) was generally insufficient for potential investors to consider funding of a plan.

In order to enhance developing countries' capacity to prepare more solid, if not 'bankable' action plans, additional guidance has been provided with a focus on: assigning clear responsibilities to national public and private stakeholders, defining a clear timeline for implementation of the plan, defining and characterising different cost items of the plan, and identifying potential types of funding and funding providers for each item (UNFCCC, 2016a). This guidance is available, though specifically prepared for fostering climate technology transfer under the Convention can be useful for NDCs too, as it enables (developing) countries to prepare 'bankable' plans for scaled up implementation of options for mitigation and adaptation in NDCs.

TRANSrisk adds to this capacity building the development of a software tool for mapping (market) systems for low-emission transition pathways, including NDCs. The tool, called MATISE (Mapping Tool for Innovation Systems Evaluation), has been developed so that participatory discussions on institutional capacity and limitations are better facilitated. This works as a mind-mapping software, with which participants can identify key actors, institutions and enabling environments, how these are interlinked and how these interlinkages lead to institutional efficiencies and opportunities (Nikas, et al., 2017)

An important contribution to capacity development by MATISE is that it supports countries to not limit barrier analysis to the technology option itself, but also focus on its broader market or system context, including assessment of where in the system blockages or inefficiencies exist. It also supports capacity to undertake problem-tree analysis for identifying the root cause of a barrier, e.g., lack of funding for an adaptation programme may be caused by problematic governance in the country.

The focus on developing capacity for system analysis for scaled up actions in an NDC underlines the importance of understanding the policy and market context in a country well. CARISMA supports this through its analysis, in several case study countries, of the impact of contexts on the design and effectiveness of policies for mitigation. Realising that policy making takes place in complex, dynamic environments where targeted stakeholders are also targeted by other (environmental) policies, CARISMA has first categorised potential contextual factors, e.g. social, economic, political factors (Fujiwara,

Tuerk, Spyridaki, & Williges, 2017), and then analysed how and to what extent changes in these factors have affected the outcomes of climate policies in case study countries (Fujiwara, Williges, & Tuerk, 2017). Based on these findings, guidance is being developed for policy makers for improved ability to make assumptions about potential contextual changes in their (NDC) decision context and what precautionary action to take for effective mitigation policies.

Finally, CARISMA has explored ways on how countries, via their governments and business community, can facilitate and benefit from knowledge exchange for stronger innovation capacity for mitigation.

Capacity support from TRANSrisk and CARISMA for strengthened capacity to develop action plans for mitigation and adaptation in NDCs can be summarised as follows:

TRANSrisk:

- Stakeholder-based approach, with help of a software-based system mapping tool, to assess risks of unsuccessful implementation of (parts of) low-emission strategies and suggest actions to mitigate these risks (Nikas, et al., 2017).

CARISMA:

- Improved understanding of identifying contextual factors and how these can influence the effectiveness and efficiency of climate policies under an NDC (Fujiwara, Williges, & Tuerk, 2017).
- Improved understanding of how policies for energy and climate can be integrated for improved combined effectiveness (Williges, Gaast, & Tuerk, 2018).
- The role and way forward for international cooperation between government, business and in regions (Lindner & Coninck, de, 2017) (Tuokko, K., Alessi, & Behrens, 2017) (Clochard & Alberola, 2017).

2.3 Institutional capacity requirements for NDC implementation

With the system mapping analysis explained above, institutional capacity requirements in a country, or lack thereof, can be identified, as well as the interlinkages between institutions explored and highlighted. Aligning (the interactions between) institutions is an important condition for ensuring that rules and regulations are followed and agreed actions undertaken (Chaffin & Gunderson, 2016) (Young, 2016). Ways to enable productive institutional alignment depend on the specific decision context for an NDC. For instance, as countries differ in many ways, solutions that work in one country may not work in another (Fujiwara, Williges, & Tuerk, 2017). Moreover, as NDCs will increasingly have to contain measures that affect people living in peri-urban and informal settlements (Simone & Pieterse, 2017), institutional capacity enhancement should not only focus on formal measures, such as policy instruments with enforcement rules, but also on informal rules which are more suitable for creating conditions for successful implementation of options for mitigation and adaptation in these settlements (Kaika, 2017) (McGranahan, Schensul, & Singh, 2016).

From the market map structure as discussed above, and its application by over 50 developing countries in the Global TNA Project and in the TRANSrisk project case studies, as well as reviews of NAMA- and NAP-planning (Cuntz, Harms, & Eisbrenner, 2016) a number of crucial elements for institutional capacity for implementation of climate plans can be identified, which relate to: policy making, enforcement, finance, checking progress with implementation, and how these elements are interrelated.

Policy-related institutions

With respect to policy making for NDC implementation, it is important to acknowledge that climate policy making does (and should) not take place in isolation. In reality, stakeholders affected by a climate policy instrument, are also targeted by other (environmental) policy instruments. This may not be a problem, if these policy interactions are well understood, anticipated, and if possible negative impacts from interactions are mitigated (Boessner, et al., 2017). These potential interactions have also been an important reason for the EU to consider energy and climate policies as integrated packages and to ask EU Member States to design Integrated National Energy and Climate Policies (INECPs), as part of the EU Winter Package under the EU Energy Union Strategy (Williges, Gaast, & Tuerk, 2018).

The importance of organising policy institutions for successful implementation of climate plans has also been highlighted by the TNA good practice report (UNFCCC, 2014) which highlights examples of TNAs that had been prepared in two-year participatory process under leadership of the Ministry of Environment, but which were eventually not considered for policy implementation as, e.g., the Ministries of Economic Affairs, Energy or Finance had not participated in the processes. Based on that experience, it was recommended by interviewed TNA practitioners to engage key ministries in climate design and planning from the very beginning of the process and ensure their co-ownership of the process. Such a situation, ignoring a climate plan, may be less likely to occur with NDCs as these have, politically, a much stronger profile than TNAs, but, nevertheless, for the likelihood of ambitious climate action to be politically acceptable, it is important to have key ministries for national socio-economic planning fully engaged in the NDC planning and design stages.

In terms of capability requirements, the skillset of policymakers for climate change should therefore not only comprise quantitative analysis skills, but also cooperation skills and the ability to see and incorporate perspectives and interests of other governmental institutions (ministries or, for example, municipalities).

Enforcement structure

Successful implementation of climate measures requires institutions to enforce actions (Pasquini, Ziervogel, Cowling, & Shearing, 2015). Enforcement can take place in different ways, which also depends on what action is most effective and efficient in different situations. While in areas with well-developed tax collection institutions, a tax may be most effective, in areas with high cooperation skills and well-developed mutual trust between the government and other stakeholders, voluntary agreements between government and private actors may be more suitable, in combination with an incentive

scheme. Almost all countries in the world struggle with capacity challenges to enforce legislation and policy.⁵ Another aspect related to enforcement is at what level it can best be organised, e.g., at the level of the central or local government, while, as argued above, enforcement can best be informal when measures are focused on societies that live in informal settlements in developing countries with no regulatory infrastructure (Revi, et al., 2014).

Finance

In developing countries, finance is often an issue not only due to a lack of available grant finance or lending capacity, but also due to limited capacity for elaborating bankable projects and developing a strategy to access (climate) finance on the part of project developers (both public and private) (GIZ, 2017). Enhancing this capacity, is an important reason behind the “Readiness Programme” of the Green Climate Fund (GCF), a grant and lending institution under the UNFCCC.

Capacity requirements for finance can be identified from several dimensions:

- For financing NDC measures, as explained above, cost items need to be specified and potential funders identified, not only for the investment in the scaled up (technology) options, but also to pay for feasibility studies, seed capital, insurance, etc. (UNFCCC, 2014). At Session I of the meeting of the Paris Committee on Capacity Building (PCCB), the representative of the Least Developed Countries highlighted the “need for support for estimating the cost of mitigation and adaptation activities and providing a breakdown of cost to facilitate the planning process and implementation of NDCs” (UNFCCC, 2017a, pp. 9, para. 37).
- Often arrangements are needed for appropriate financing models for implementation of (technology) options, such as joint ventures or operations under licence, leasing, micro-finance, grant funding or incremental funding (Gaast & Begg, 2012).
- For many developing countries, there is a strong connection between access to funding and existence of political commitments and effective policy and regulatory, cross sectoral frameworks (Bazilian, et al., 2011).
- Finance flows are very diverse in terms of type, origin and destination and can vary from large infrastructural projects to small-scale purchases of biogas installations by farmers or improved cook stoves by households. This diversity needs to be considered to identify the most suitable finance source for each action under an NDC (Gaast & Begg, 2012).

Reporting on progress with NDC implementation

While countries are free to determine the content of their NDCs in terms of climate measures that fit in national contexts, there is a commitment under the Paris Agreement

⁵ For instance, in the Netherlands, due to lack of capacity, in particular lack of staff but also training, energy- and environment-related commitments are often not enforced by municipalities (Simons, 2013). Improvement of enforcement structure was therefore one of the key aspects of Energy agreement for sustainable growth in the Netherlands of 2013 (SER, 2013).

for countries to provide regular progress reports on the pledges for mitigation and adaptation as included in the NDCs (UNFCCC, 2015, p. art. 13). In terms of institutional capacity, this requires that countries, possibly at different governance levels, keep track of progress made with implementation of actions included in an NDC. From the CARISMA project, improved understanding of ways to evaluate climate policies and success factors for effective climate policies can be derived, which can support countries' work on preparing progress reports on NDC implementation (Boessner, et al., 2017) (Fujiwara, et al., 2017). Moreover, CARISMA offers insights on policy transfer to developing countries and under which circumstances it may work best.

In 2017, the TEC requested updates on implementation results of TNAs conducted in the Global TNA Project, which was complicated as monitoring and evaluation is not included in the (funding of the) TNA process (which stops once the technology actions plans are ready). TNA countries expressed concern that without additional funding and support, such monitoring and evaluation was not possible (UNFCCC, 2017b). Instead, the TEC recommended a lighter track and trace system, leaving TNA countries with different, voluntary-based, options to report on TNA implementation progress, in combinations with offering a platform (TT: CLEAR, 2018) for posting success stories or offering support (via the Climate Technology Centre and Network, CTCN) should countries face difficulties with implementation of prioritised technologies for mitigation and adaptation. While such a light version of monitoring progress is probably insufficient for the NDC progress reports, it could provide useful examples for building capacity in countries for monitoring progress with NDC implementation, which is often underdeveloped in many countries (Araos, et al., 2016) (Lesnikowski, et al., 2017) (Magnan & Ribera, 2016).

2.4 (Social) innovation for NDCs

The success of NDCs will depend on how well the planned policies for greenhouse gas emission reductions will be implemented. As this requires a departing from business as usual, innovative approaches are needed so that countries' technical potential for emission reductions also become increasingly affordable (managing costs and utilising benefits) and realistic (having in place institutions to manage the proposed climate measures and ensuring social acceptance). Capacity building for NDCs is mainly focussed on that the latter aspect. Naturally, the focus in that respect is on governance, finance, skills, etc., but both CARISMA and TRANSrisk have highlighted, and demonstrated, the importance of engaging people as stakeholders in both NDC planning and implementation.

This type of social innovation, which is focussed on people's co-ownership of energy and climate decision-making, has increasingly become important in, a.o., EU energy and climate policy making (Spiesberger, Gomez Prieto, & Seigneur, 2018). With social innovation and mobilising stakeholders, several benefits can be achieved as discussed in this paper:

- In countries which lack advanced models and detailed, high-quality datasets, stakeholder consultation can bring within the NDC process tacit, practitioners'

knowledge, based on which foresights for mitigation and adaptation can be developed for a sector within a country or the country as a whole.

- In countries where models and data are available, stakeholder consultation helps to add information to the discussion that cannot be quantified by models and which would otherwise be left out of the NDC design and planning picture. Adding such stakeholder insights, contributes to more robust scenarios and packages for NDCs.
- Engagement of stakeholders also helps to enhance public acceptance of an NDC during the implementation stage, as stakeholders have actively taken part in the planning, including assessments of risks as consequences of scaled up (technology) options within the country. Insights from TNAs show that among the stakeholders during the design phase should be finance experts who can advise the process on financial feasibility of considered climate options within the country context.

2.5 Conclusion

This section has discussed several capacity requirements for assessing the elements of an NDC, especially for developing countries, with a view to both human and institutional capabilities. For each element, elements from the CARISMA and TRANSrisk project that support these elements have been discussed. The discussion in this section is summarised in Figure 1, which shows required abilities to successfully complete the several elements of designing an NDC.

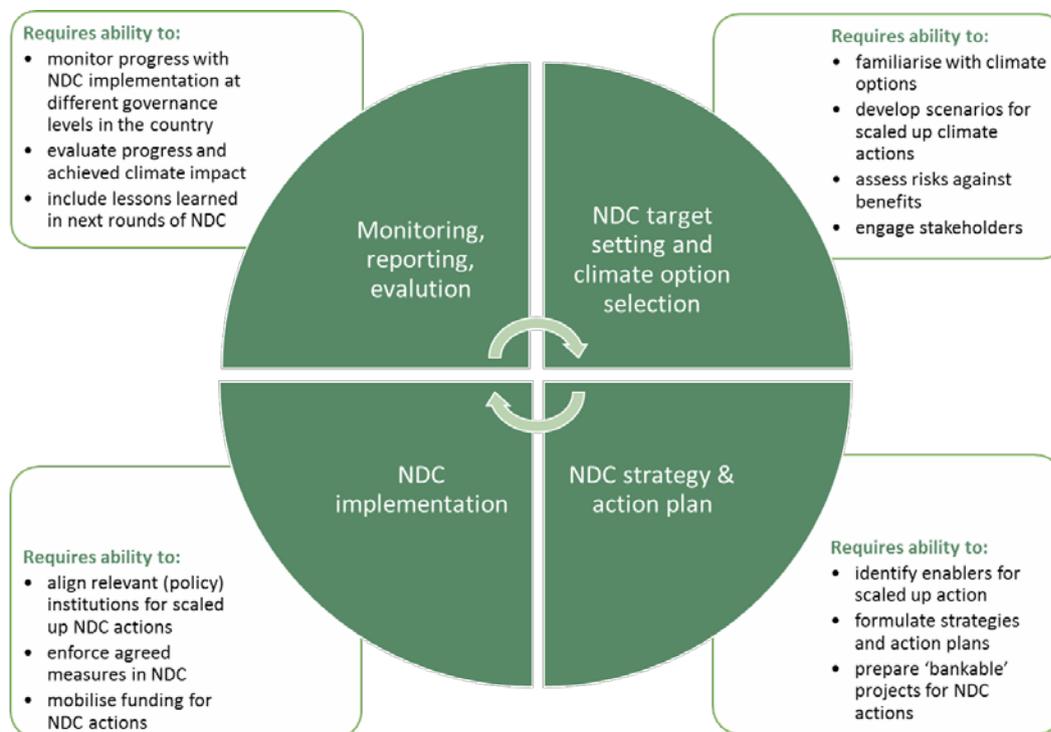


Figure 1. Overview of NDC stages and capacity needs

3 Capacity building support under the UNFCCC

Many developing countries lack the domestic capacity and resources to develop and support climate projects. Therefore, capacity building has been on the agenda of COP negotiations since the adoption of the UNFCCC in the early 1990s. The seventh COP, held in Marrakech (2001), adopted frameworks for capacity building with guiding principles and approaches and a list of priority actions. In 2011, the COP established the Durban Forum with the goal to further enhance monitoring and review of the effectiveness of capacity building and provide a platform for exchange of experience and good practice on capacity building activities in developing countries (d'Auvergne & Nummelin, 2018). In 2015, as part of the Paris Agreement, the Paris Committee on Capacity-building (PCCB) was established "to address gaps and needs, both current and emerging, in implementing capacity-building in developing country Parties".⁶ Both bodies operate simultaneously, where the good practice experience collected by the Durban Platform can be input to the work of the PCCB, whereas the PCCB may provide guidance on capacity-building topics for the Durban Platform to focus on (UNFCCC, 2017a).

PCCB will manage and oversee the capacity-work plan for the period 2016-2020, which was also launched in Paris (UNFCCC, 2016b, pp. 10-11, para. 72-73). For that, it has formulated a rolling work plan, which contains the task to assess capacity-building gaps and needs as identified in, a.o., NDCs. At a capacity-building workshop organised by the Government of Morocco (in March 2017), the role of PCCB was discussed, a.o., with respect to creating synergies between capacity-building activities for NDCs and those taking place elsewhere under the Convention. It also discussed the role of regional climate centres, networks and coalitions in capacity building for NDCs, as well collaboration with the CTCN, the Standing Committee on Finance (SCF) and the Global Environment Facility (GEF) on capacity-building issues, possibly via the national focal points of these bodies, which in practice are often the same institutions. Finally, the workshop addressed the issue of NDCs being prepared by external experts with the recommendation that in those cases 'capacity-building efforts should focus on building necessary capacities of local experts' (UNFCCC, 2017a, pp. 19, para. 24).

Based on the first round of discussions on its agenda and rolling work plan, the PCCB is expected to play a guiding role on enhancing capacity building for NDC design and implement through analysis of capacity needs and gaps. This is very likely to become a complex task as capacity gaps for undertaking ambitious climate actions in many countries, especially in least developed countries, have several deeper underlying root causes. For example, with poorly developed primary schooling, people's ability to assess impacts of climate actions for their own social and economic living environment is limited. PCCB will combine information on good practice that is already available but

⁶https://unfccc.int/files/meetings/paris_nov_2015/application/vnd.openxmlformats-officedocument.wordprocessingml.document/cp10a1_en.docx

often scattered and thus difficult to access by NDC practitioners (policy makers and other stakeholders) in developing countries.

By doing so, the PCCB can draw a larger picture of global capacity-building needs for NDCs, in terms of whether these relate to human, institutional and system capacities, to what extent capacity needs differ between regions and countries, and how (financial) resources can mobilised to address these needs.

Exchange of good practice with building capacities, based on countries' work on NDC design and implementation, as well as on experience with other processes under the Convention, such as GEF, TNAs, NAMAs, NAPs, low-carbon development strategies, green growth strategies and the role of the CTCN. Harmonising these experiences and activities has been recommended at several occasions organised by PCCB (UNFCCC, 2017a). Targeted advice can then be given to countries and regions, based on collected experience from similar countries and regions.

4 Conclusions

For achieving the Paris Agreement goals countries are to undertake and communicate ambitious efforts as nationally determined contributions (NDCs). While this process is mandatory, countries are free in terms of how they formulate these plans. No uniform methodology for NDC design and planning exists, although through initiatives such as the NDC Partnership technical and dissemination support are provided. To identify capacity requirements for planning and implementing ambitious NDCs, CARISMA and TRANSrisk projects jointly organised a workshop at the Bonn Climate Sessions.

At the workshop the following elements for ambitious NDC planning were identified:

- Identifying and prioritising (technology) options for mitigation and adaptation within a country context, including assessing their impacts when scaling up
- Identifying barriers to scaling up options and selecting enablers to clear these barriers
- Deciding on the type and ambition of the mitigation or adaptation target
- Formulating a strategy for NDC implementation including action plans
- Identification of support needs

An important capacity requirement for designing an ambitious NDC is that countries can understand and assess what are potential (positive and negative) impacts of scaling up options for mitigation and adaptation in the country. This, for instance, determines whether an NDC is affordable and socially realistic, i.e. socially acceptable in the sense that country stakeholders are willing to accept some negative impacts given other positive impacts from the NDC.

For successful implementation of NDCs, countries need to be able to identify whether their relevant market systems are sufficiently enabling for deployment and diffusion of options for mitigation and adaptation as prioritised within NDCs. This includes identification of market, policy and institutional barriers and solutions to clear these. Capacity issues in this respect relate to the capability of decision makers and other stakeholders to not only focus on quantitative analysis skills, but also on cooperation skills and the ability to see and incorporate perspectives and interests of other governmental institutions (ministries or, for example, municipalities). Obviously, formulated policy measures for scaled up climate options require an enforcement structure, including informal structures when measures are focussed on societies that live in informal settlements.

Earlier experience with, a.o., TNA projects under the Global TNA Project, has shown that many developing countries participating in the project have had difficulties with formulating bankable investment proposals. Therefore, produced technology action plans cannot be considered by potential investors. A capacity requirement for that is that countries in their NDCs clearly identify responsibilities of public and private stakeholders per action, with a timeline, and specification of cost items that need to be financed.

To support international capacity building for ambitious NDCs, a representative of the Paris Committee on Capacity-building under the Convention explained how the committee supports creating synergies between capacity-building activities for NDCs and those taking place elsewhere under the Convention, such as CTCN, SCF and GEF. The PCCB is expected to play a guiding role on enhancing capacity building for NDC design and implement through analysis of capacity needs and gaps. It combines information on good practice that is already available but often scattered and thus difficult to access by policy makers and other stakeholders in developing countries, thereby tapping into experience with other processes under the Convention.

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Strengthening institutional capabilities to support implementation of ambitious NDCs

Side event 8 May – 16:45 – 18:15 (Berlin, 112)

The goal of the Paris Agreement is to limit the global mean temperature increase to well below 2°C above pre-industrial levels and aim for 1.5°C. For achieving this goal, countries shall prepare, communicate and maintain nationally determined contributions (NDCs). While NDCs are national climate plans, there is scope for country collaboration on design and implementation of NDCs. Moreover, successful design and communication of an NDC does not mean that implementation will be always successful due to capacity limitations or other obstacles for that. This side event presents examples of creating synergies in the areas of policy transfer, technology transfer and capacity building for stronger institutional capabilities for NDCs, both during the design and implementation stages.

Programme

16.45-17.00	Introduction on CARISMA and TRANSrisk	Heleen de Coninck and Wytze van der Gaast (coordinator CARISMA; partner TRANSrisk)
17.00-17.30	Roundtable introductions	
	• Paris Committee on Capacity Building	Marzena Chodór (PCCB)
	• Integration of energy and climate policies for NDCs – EU experience	Aurélie Faure (CEPS)
	• Innovation policies in Kenya in support of low-emission transition pathways	Richard Klein (SEI)
17.30-18.15	Roundtable discussion	
18.10 -18.15	Conclusion	