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BARRIERS AND ENABLERS TOWARD EFFECTUAL IMPLEMENTATION OF NATIONALLY DETERMINED CONTRIBUTIONS IN CENTRAL AFRICA

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Abbreviation List

AUDA-NEPAD	The African Union Development Agency
BURs	Biennial Update Reports
CIFOR	Centre for International Forestry Research
CILSS	Permanent Inter-State Committee for Drought Control in the Sahel
CTCN	Climate Technology Centre and Network
COMIFAC	Central African Forest Commission
ECCAS	Economic Community of Central African States
LCBC	Lake Chad Basin Commission
MPGs	Modalities, Procedures and Guidelines
NAPA	National Adaptation Programmes of Action
NDCs	Nationally determined contributions
NOCC	National Observatory on Climate Change
REC	Regional Economic Community
SINEPAD	Secretariat for the Environment Component of NEPAD
TNAs	Technology Needs Assessments
UNFCCC	United Nations Framework Convention on Climate Change

Abstract

The Paris Agreement mandates all Parties track and report progress toward their Nationally Determined Contributions (NDCs) to limit global warming below 2°C. Central African countries face significant technology development and transfer deficits, requiring substantial support in finance and capacity building for effective climate action. This research employs a qualitative multiple-case study design with stakeholder interviews to examine institutional frameworks supporting NDC implementation in Central Africa, addressing the Technology Executive Committee's mandate to map technology needs assessments, NDCs, and technical assistance regarding enabling environments and barriers.

Findings reveal that while economic and financial constraints are central barriers, they must be addressed through multifaceted approaches rather than single-causality solutions. Successful technology development and transfer require policy and regulatory framework revisions, engagement with private investors and technology suppliers, and creation of markets suited to local circumstances. The research develops a multi-criteria framework for designing and evaluating NDC tracking systems, applying it to Central Africa with results indicating relatively low progress in selecting appropriate indicators, enacting legislation, and enhancing transparency. Substantial improvement is needed in data collection, socio-economic outcome reporting, and national policy integration. Central African countries urgently require supplementary resources and capacity to establish effective NDC tracking systems for achieving their climate commitments.

Keywords: Nationally Determined Contributions, technology transfer, Central Africa, climate change adaptation

1. Introduction

The 2015 Paris agreement, which aims to limit global warming to "well below" +2°C compared to the industrial era, and if possible +1.5°C, does not contain the words "coal", "oil", "gas", or even "fossil fuels", yet these directly impact climate change. The first mention of these polluting energies in a decision of some 200 signatory countries has therefore been hailed as "historic". This way, the Paris Agreement established an enhanced transparency framework for action and support (United Nations Framework Convention on Climate Change (UNFCCC) 2015; Article 13). The aim of this report is to provide a clear understanding of climate change action; that is, to understand progress toward individual Parties' contributions, as well as the collective goals agreed to under the Paris Agreement. The enhanced transparency framework requires all Parties to track and report progress in implementing their nationally determined contributions (NDCs) (UNFCCC 2015, Article 13.7(b)). A carefully distinct elucidation of Article 13.7(b) entails that the extent of NDC tracking is compulsory for attenuation exclusively (Winkler *et al.,* 2019).

In 2018, Parties agreed on the modalities, procedures, and guidelines (MPGs) that will lead the implementation of the enhanced transparency framework (UNFCCC, 2018). The MPGs include guidance for tracking progress made in implementing and achieving NDCs, which again solely factors in attenuation (UNFCCC 2018; paragraphs 65-79). Furthermore, MPGs for NDC tracking provide both moral requirement and flexibility for Parties, implying prescriptive terms that suggest compulsory reporting ('shall'), as well as modifying words ('as appropriate'), which guide Parties on what would best practices be (Winkler *et al.,* 2019).

In recent years, several developing countries Parties, including Central African countries, have advanced domestic arrangements for attenuation goal tracking and reporting, as demonstrated through consecutive submissions of biennial update reports (BURs). The latter are considered as the primary vehicle for reporting internationally on progress toward attenuation goals, policies and actions (UNFCCC, 2020). The scholarship exemplifying attenuation goal tracking has also grown exponentially since the adoption of the Bali Action Plan in 2007 (UNFCCC 2007). Concomitantly, scholars expanded results-based management tools for measuring, assessing, and reporting, by providing pathways of how it proceeds. One notable thing is that following the adoption of the Paris Agreement, policymakers deepened thinking on the MPGs to include information needed to facilitate the clarity, and understanding of attenuation contributions of enhancing transparency (Briner and Moarif 2016). The same goes for accounting for attenuation targets in NDCs and for mapping the

linkages between the transparency framework and other provisions of the Paris Agreement (Hood and Soo 2017).

Despite the above-mentioned progress, it is worth noting that many developing countries, among them Central African countries, remain ill-prepared for the complex nature of attenuation goal tracking (Briner and Moarif, 2016). The table below depicts a relatively low pace in delivering their subsequent BURs by developing countries as of 2020

Table 1: Record of BURS communicated by developing countries by 2020

	Target: Year 2020				
	No submission	Submission of 1st BUR	Submission of 2nd BUR	Submission of 3rd BUR	Submission of 4th BUR
Number of developing countries	100	63	31	13	5

Source: (UNFCCC, 2020)

The fact is that many environment-related institutions in Africa, and more so in Central Africa, were created some fifty years ago with specific standalone mandates – food security and desertification, water resources, and tend not to be well-equipped for the myriad complex changes – of which climate change is only one (Musa, 2013). Examples include: (i) the Lake Chad Basin Commission (LCBC) - established in 1964, and which focuses on the sustainable management of the Lake Chad Basin's resources, including water, agriculture, and fisheries; and (ii) the Permanent Inter-State Committee for Drought Control in the Sahel (CILSS) - established in 1973, and which addresses issues of food security, desertification, and promoting sustainable land management in the Sahel region. In going forward, the transition to biennially reporting on progress toward NDCs from 2024 onward will likely represent a substantial step-up for developing countries and may impose additional obligations beyond their current capacities and the business-as-usual scenario.

In light of these capacity constraints, it becomes important to investigate whether NDC tracking systems can be designed to assist with meeting domestic targets, while also meeting international reporting obligations. For instance, can NDC tracking help to inform domestic policy and decision-making in Central Africa? Can it help motivate further climate action? Can it help to promote trust and accountability amongst domestic actors? This will require partnering with a broad range of stakeholders, which is key for achieving a lasting impact, and when it comes to effectually implementing NDC

tracking, programming requires an all-hands-on-deck approach.

It is against this backdrop that this research sample aims to develop a structured approach for designing an NDC tracking system that responds to both domestic needs and the MPGs. That is, a framework for effectual NDC tracking. The qualitative assessment framework comprises eight effectual criteria related to NDC tracking, and applicable to all stages of a typical attenuation goal-tracking process. This means that tracking begins with planning, before establishing a means for achieving that vision (where inputs are mobilized and fed into processes, which in turn deliver immediate results that support the achievement of intermediary and long-term observable changes). This goes along with adaptive management to support regular review and ensure that stated goals are being met. Such a scenario provides that adaptive management will serve as an intentional way to make planning decisions and adjustments during implementation in response to changing circumstances. If NDCs tracking has a larger than anticipated impact or if understanding of NDCs tracking improves during the life of the project or activity, adaptive management should be employed. This framework is not intended to be seen as distinct from every Central African country's existing climate change monitoring and reporting system (which is likely to have a broader range, encompassing attenuation, adaptation, and finance tracking), but rather as an approach that can be built into an existing system.

Using Central African countries as a case study, and drawing from literature and interactions with key informants, this research sample first establishes a qualitative, multicriteria framework for effectual NDC tracking (section 3). It then uses the framework to assess Central Africa's preparedness for effectual NDC tracking and proffers recommendations to advance domestic arrangements (section 4). The findings reveal key procedural, contextual, and financial constraints to future NDC tracking in Central Africa and indicate a need to place emphasis on improving technology development and transfer, and to connect NDC tracking with broader national policymaking. This entails that policy spaces are seen as opportunities, and channels where citizens can act to potentially affect policies, narratives, decisions and relationships that affect their lives and interests (Gaventa, 2020).

The framework developed in this research sample is aimed primarily at the institutional organisations responsible for NDC tracking in national governments, typically the environmental, nature protection and sustainable development department. In the case of the Central Africa region, this is the monitoring, adaptation and attenuation unit of ECCAS, the regional economic community (REC).

While the recommendations presented in this research sample are aimed at REC of Central Africa, the framework that is developed has a broader utility in (i) designing effectual NDC tracking processes within countries, or (ii) evaluating the extent to which Parties are prepared for effectual NDC tracking and identifying areas for enhancing existing climate change monitoring and evaluation systems.

2. Research design and methodology

Tracking NDCs in the context of the Central Africa region is still in the nascent stages. Qualitative research is essential when exploring topics still in the early stages, which can contribute to theory development (Bansal, Smith & Vaara, 2018). This research sample employed a qualitative research design and multicriteria framework for effectual NDCs tracking. The framework, in turn, was used to assess Central Africa's preparedness for effectual NDCs tracking. The inductive approach was used to gather insights from respondents and generate new themes to enhance our understanding of NDC tracking

2.1 The embedded units of analysis

The purpose of the research sample was to understand the level of preparedness of the Central Africa region in tracking NDCs. As such, our embedded units of analysis are NDCs of Central African countries' ecosystem, successes and challenges.

2.2 Participant selection

The population of the study consisted of different institutional organisations and stakeholders within the attenuation (and adaptation) of climate change ecosystem who play a supporting role in advancing NDCs tracking in Central Africa. A nonprobability, purposive sampling approach was used to select the study's participants. Purposive sampling ensured that the chosen participants were actively engaged in NDCs activities and would provide insights that could answer the study's research questions (Saunders, Lewis & Thornhill, 2009).

2.3 Data collection

Data across the countries were collected through semi-structured interviews. These interviews enabled the researchers to probe and ask for clarification during the interview process. The interview guide was designed based on the existing literature, following the principle by Stam (2015). Due to the COVID-19 social distancing and lockdown regulations in the targeted countries, we used hybrid interviewing methods, including online platforms such as Skype, Zoom, and Microsoft Teams, and, where possible, face-to-face. The interviews lasted an average of an hour. Before the discussions could begin, the researchers asked participants to sign a consent letter to ensure they agreed to voluntary participation in the interviews. In addition, the researcher sought permission to record the interviews and take notes. In cases where permission to record was not granted, the researcher took field notes.

2.4 Data analysis

Before data analysis could begin, the recorded interviews were transcribed manually. After the transcription, the researchers listened to the interviews to ensure that information was not lost during the transcription process.

After checking the quality of the data, a six-step thematic content analysis was used to analyse the data (Braun & Clarke, 2006). The designed themes were reviewed against the existing literature to ensure rigor and robustness. Across case, analysis was conducted in Phase II, where data patterns across the different countries were analysed to provide a comprehensive overview of NDCs tracking state in Central Africa.

2.5 Data quality

The quality of the data involved trustworthiness, credibility, and transferability (Daniel, 2020). To ascertain the reliability of the findings, the researchers reported that the data presents the participants' opinions. This was further demonstrated by providing a clear and systematic approach for analysing the data. The credibility aspect of data quality was ensured by engaging with the participants during data analysis to verify the preliminary outcomes of the findings. Transferability of the research findings was achieved by describing the research context and looking for patterns in other cases. Finally, data were triangulated by interviewing different NDCs ecosystem actors.

3. A comprehensive framework for effectual NDC tracking in Central Africa

The MPGs provide guidance for tracking progress toward the implementation and achievement of NDCs. Broadly speaking, Parties are required to select tracking indicators, report on information relevant to those indicators, and provide information on actions, policies and measures that support the implementation and achievement of the NDC (UNFCCC 2018).

While Parties have a long history of reporting information to the UNFCCC (e.g., through national communications), national governments are increasingly seeing the value of tracking actions to address climate actions, beyond meeting multilateral reporting obligations. If done well, this tracking can support a range of domestic objectives, including promoting climate change action and supporting evidence-based decision-making (Aldy, 2016).

Results chain typically underpins successful processes to track progress toward climate change goals. This means that goal tracking begins with planning (i.e., identifying the vision and objectives of tracking), before establishing a means for achieving that vision, where inputs feed into processes, which deliver outputs leading to the achievement of outcomes. Additionally, there is iteration, meaning that outputs and outcomes inform planning, which allows for adaptive management and learning and improvement. The process of regular iteration ensures that tracking is performance-oriented to effectually support the achievement of a set of objectives (Lamhauge et al. 2012). Drawing from literature, Figure 1 and the text below illustrate results chain applied in the context of NDC tracking – essentially depicting an effectual framework for NDC tracking that meets both domestic objectives and the MPG requirements. The top (pink) section of Figure 1 highlights the formal requirements of the MPGs.

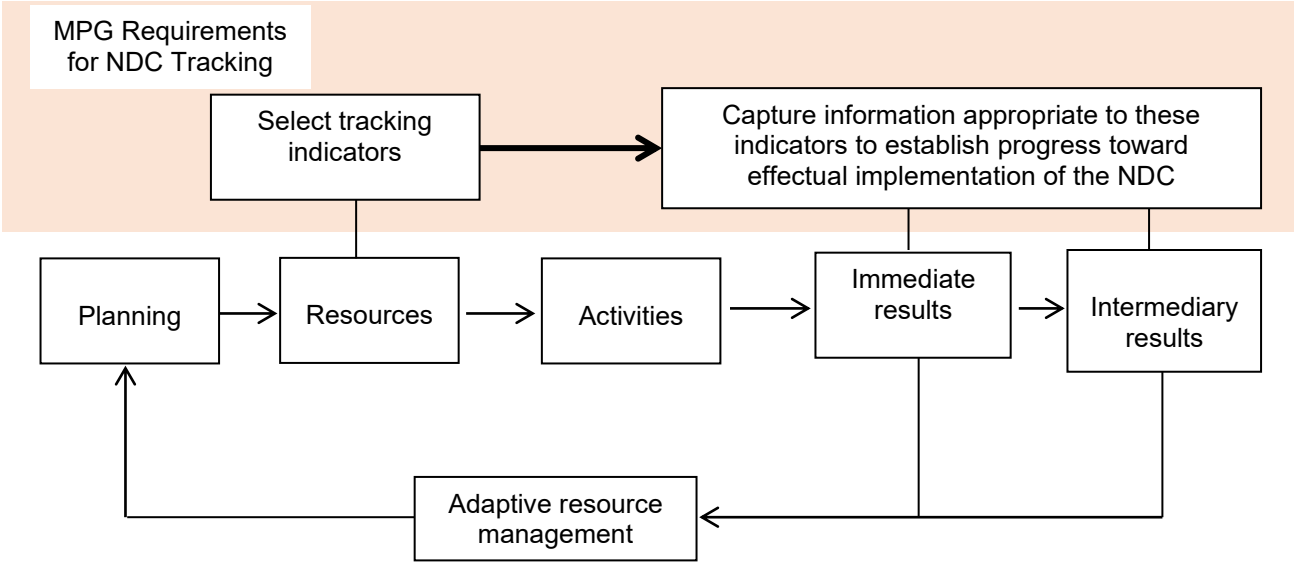

Figure 1: Schematic of the effectual NDC tracking framework with the MPGs highlighted

3.1. Planning

The planning stage provides information about NDC tracking targets, with a primary focus on supporting the mission of the environment, nature protection and sustainable development department in national government rather than all users of attenuation monitoring data. Targets could include, for instance, meeting international reporting requirements, promoting convergence between disaster risk reduction and climate action and evidence-based decision-making, and/or other domestic priorities.

3.2. Resources

The resources stage focuses on the data needed for NDC tracking. These are the indicators used for tracking progress toward the NDCs, which are selected by countries following UNFCCC guidelines (UNFCCC 2018, para. 66) as well as domestic requirements. Indicators could measure net GHG emissions and removals and percentage reduction of GHG intensity. In line with MPGs, Parties can select their indicators for tracking NDC progress, which 'shall be relevant to a Party's NDC under Article 4 and may be either qualitative or quantitative' (UNFCCC, 2018). This way, Parties would want to track progress to the best of their abilities as they have enough margin available to them (Winker et al. 2019). Indicators are generally considered to be effectual if they are relevant to the desired changes, precise and measurable (Aldy, 2016).

3.3 Activities

The activities stage considers the management processes and set of actions that are required to convert inputs into products or services, which in turn support institutional change and institutional performance and overall objectives of NDC tracking. Activities are generally considered to be effectual when information collection is easy to perform (i.e., the information collected for NDC tracking meets the needs of the indicators), and when there are legal provisions to collect information and protect confidentiality.

3.4. Immediate results

The immediate results stage focuses on the results of NDC tracking and examines the extent to which the NDC has been implemented. These are operational change in terms of products and services (knowledge, skills, and capacities). Immediate results may include current and historical greenhouse gas (GHG) emissions, GHG emissions projections, and assessments of the impacts of attenuation policies and actions. Immediate results are generally considered effectual when (i) governments have sufficient information to evaluate progress leading to attenuation goal and the likelihood of achieving the goal; (ii) governments and other domestic and international stakeholders have a clearer sense of the status of policies, plans, programmes and projects implemented to address climate change root causes and impacts, and (iii) governments can quantify the socio-economic impacts resulting from climate attenuation actions (a growing body of literature highlights the fundamental role of socio-economic factors in shaping how energy and climate transitions unfold

3.5. Intermediary results

The intermediary results stage assesses the extent to which the NDC is achieved. Intermediary results are effectual when the NDC is met, or on track to be met. International and domestic stakeholders want to see demonstrable impacts and observable changes from climate change policies and actions helping to build trust that overall objectives are achievable, and that the government is committed to achieving them.

3.6. Adaptive Management

Adaptive Management is an "*alternative to conventional, reductionist management that should enable effective action within complex socio-ecological systems"* (Pahl-Wostl, 2007b). That is, both immediate and intermediary results of NDC tracking should provide insightful information for decision- and policy-making. When effectual, there should be a clear link between the immediate and intermediary results that are produced through NDC tracking and changes in policy direction. The process is operationalized through an iterative process of planning, action, reflection and modified

action (Figure 2).

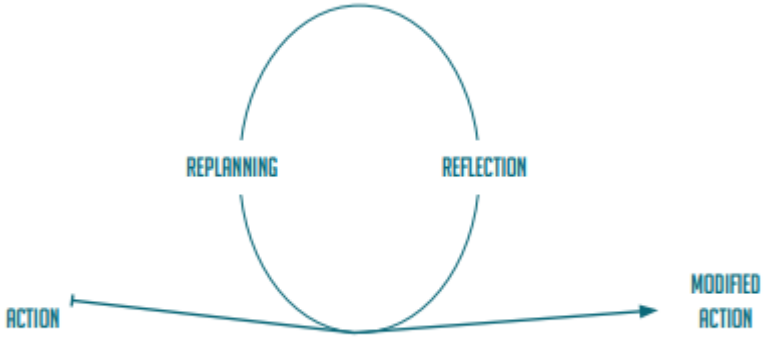

Figure 2: Action Learning/Research Loop

For instance, if certain attenuation policies and actions are not delivering the expected changes, there will be course corrections along the way to address any challenges or hurdles (Weiner 2015). Similarly, if certain policies are producing excellent outcomes, this learning will be harnessed and employed in other areas. Effectual tracking helps to inform policy and decision-making and can be a powerful tool for motivating further action (Winkler et al. 2019).

3.7. A qualitative and multi-criteria framework for effectual NDC tracking

To apply the qualitative and associated multicriteria framework presented in Table 2, a measurement scale is required to assess each criterion.

Table 2: A qualitative and multi-criteria framework for effectual NDC tracking

Items	Effectualness criteria	Means of verification
Resources	Criterion 1: The indicators for NDC tracking are appropriate to the desired change, and are accurate and measurable	Indicators
Activities	Criterion 2: The information collected for NDC tracking meets the needs of the indicators outlined in criterion 1	Information available
	Criterion 3: There is legislative support for collecting data for NDC tracking and protecting confidential information	Regulations and legislation provisions
Immediate results	Criterion 4: Central Africa governments can assess progress toward the NDC attenuation target by using immediate results from the monitoring and evaluation system	Immediate results information
	Criterion 5: Central Africa governments and key actors can understand the ambition of, and progress towards, attenuation targets, actions, and measures	
	Criterion 6: Central Africa governments can quantify the socio-economic impacts resulting from climate attenuation actions	
Intermediary results	Criterion 7: Central Africa governments outline information that would enable an assessment of whether countries are on track to achieve the NDC or, as a proxy, on track to achieve the Copenhagen pledge	Current GHG emissions and an assessment of the likelihood of goal achievement
Adaptive management	Criterion 8: The NDC tracking process is iterative and information is used to adjust its course	Evidence of adaptive management and continuous improvement

This relates to an ordinal scale (Table 3), which turns to be most appropriate, as it proposes an order/ranking of items and helps assess the extent to which intended results are achieved.

Table 3: Overview of the ordinal measurement scale used for the current assessment

Score	Necessary requisites
– –	Insufficient evidence to draw a conclusion
x	Evidence suggests that the criterion is not met. This means that a particular aspect is neglected.
◒	Evidence suggests that the criterion is partly met. This suggests that certain aspects are recognised as important indeed! Yet, additional consideration may be required to make it truly effectual
√	Evidence suggests that the criteria is fully met. This entails that all aspects are effectual

Criterion 1: The indicators for NDC tracking are appropriate to the desired change, and are accurate and measurable

Score: ◒

Evidence suggests that criterion 1 is only partially met. Central Africa's evaluation system includes indicators for tracking transition toward a lower-carbon economy, encompassing: (i) lower carbon productivity, which is measured by the percentage reduction of carbon intensity; (ii) lower carbon resourcing, which is measured by the proportion of renewables and carbon-free energy to total primary energy; (iii) increase carbon sinks which is measured by the surface area of reforested land and sustainable forest managed. The indicators presented above are relevant for tracking attenuation actions and are quantifiable and precise.

Criterion 2: The information collected for NDC tracking meets the needs of the indicators outlined in criterion 1

Score: x

Evidence suggests that criterion 2 is not met. To be successful, attenuation strategies need to make use of the best available climate information, including assessments of recent climatic trends and projected future climate change that may be experienced in the years to come. Central African countries are still very far from achieving this (Ozor & Nyambane, 2018). These countries face challenges: technical incapacity to collect, analyse, communicate and use climate information (World Bank, 2011), insufficient qualitative and quantitative skilled personnel despite the effort of

training and development of capacities started by these governments with the support of development partners, and insufficient financial capacity to support the climate networks systems and infrastructure as well as Investment in new and updated technology (Ozor & Nyambane, 2018). For instance, the results obtained over the last three decades from substantial investments particularly when viewed from the lens of long-term sustainability and attenuation actions have been discouraging. In many cases, government agencies, private sector businesses, and the general public are still unable to access critical local climate information. This message is echoed by on the ground experts, with some government officials describing problems they are encountering, such as poor-quality data, information not being provided in the correct format, or entities not willing to share their data. For most of these countries, 'data quality, access, timeliness, appropriateness, and consistency' are all issues dealt with by the Ministry of Transport.

Criterion 3: There is legislative support for collecting data for NDC tracking and protecting confidential information

Score: √

Evidence suggests that criterion 3 is fully met. Aware of the challenges pertaining to climate change, the Heads of State Central Africa mobilised on 17 March 1999 in Yaoundé (Cameroon) at the first Summit on the conservation and sustainable management of tropical forests. During this event, they signed the so-called "Yaoundé Declaration", which solemnly proclaimed their commitment to the principle of biodiversity conservation and sustainable of forest ecosystems to support their resources and their economic and social development efforts. To operationalise the commitments, Heads of State of the sub-region meeting during their second Summit held in Brazzaville (Congo republic) on 5 February 2005, adopted the Treaty on the Conservation and Sustainable Management of Central African forest ecosystems and establishing the Central African Forest Commission (COMIFAC). As such, COMIFAC is the reference sub-regional institution for harmonisation of forestry and environmental policies in Central Africa. It orientates, coordinates and takes decisions on sub-regional actions and initiatives in the field of conservation and sustainable management of forest ecosystems (COMIFAC, 2014). The climate policy arena in Central Africa focus on the preeminent role of the forestry sector and REDD+ in structuring responses to climate change in the continent. In Central Africa, the climate debate has so far focused on forests, and to a lesser extent on energy and agriculture (Eba'a Atyi et al., 2018). This sub region is home to the

Congo Basin forests, which represent the most important forest block in Africa and the second in the World after the Amazon Basin (Sonwa et al. 2011; Nkiaka and Lovett, 2018). Somorin et al. (2014) reports that Cameroon's interest in REDD+ stems from various past and present problems which can be summarised as: (i) the deforestation rate which is highest in the Congo Basin region (1% per annum) and (ii) the direct causes of agriculture, particularly shifting slash and burn cultivation, and wood extraction on deforestation and forest degradation.

Criterion 4: The government can evaluate progress toward the NDC attenuation target by using immediate results from the monitoring and evaluation system

Score: 

Evidence suggests that criterion 4 is partially met. Most developing countries do not have an absolute-level NDC attenuation target. This point is echoed by Eba'a Atyi et al. (2018) who clearly raise the fact that all countries in Central Africa recognise that these NDCs should be revisited to make them more accurate and realistic.

Criterion 5: The government and relevant actors can understand the ambition of, and progress towards, attenuation targets, actions, and measures

Score: **x**

Evidence suggests that criterion 5 is not met. From an international standpoint, even though central Africa, countries are members of the UNFCCC, they do not comply with the reporting requirements of the UNFCCC through the submission of national inventory reports and biennial update reports, as well as participation in the technical analysis and facilitative sharing of views. However, how the state apparatus operates, which are organised in sectoral silos, make it difficult to formulate and implement climate commitments at the national level which require intra- and inter-sectoral coordination (Eba'a Atyi et al., 2018). This is because of insufficient financial means for the implementation of climate change-related activities, lack of skilled personnel and technical incapacity. Also from a domestic standpoint, local stakeholders face challenges in producing climate change reports and progress.

Criterion 6: The government can quantify the socio-economic impacts resulting from climate attenuation actions

Score: 

Evidence suggests that criterion 6 is partly met. Central African countries have each developed national economic development policies, often linked to their desire for economic emergence. These so-called emergence policies are, in this region, largely based on the different modes of land use (agriculture, forestry, and mining) and aim to reduce poverty and increase job creation. Based on the principle of common but differentiated responsibilities, the Central African countries expect that the contribution to the fight against climate change will reinforce their quest for economic development through less carbon-intensive development trajectories (Eba'a Atyi et al., 2018).

Criterion 7: The government presents information that would enable an assessment of whether the country is on track to achieve the NDC or, as a proxy, on track to achieve the Copenhagen pledge

Score: **x**

Evidence suggests that criterion 7 is not met. The set objective for Central Africa is to meet its Copenhagen Pledge, which calls for a 34% emission reduction below business-as-usual levels by 2035. Up to date, no government has published numbers associated with the 'peak, plateau, and decline' emissions trajectory, on which the Copenhagen Pledge is based.

Criterion 8: The NDC tracking process is iterative and information is used to adjust its course

Score: 

Evidence suggests that criterion 8 is partly met. It is clear that Central African countries intends to use the outputs from the monitoring and evaluation system to inform policy direction indeed. Yet, despite good intentions, it is often difficult to sustain the effort required for monitoring and evaluation. There is no published evidence to suggest that climate change monitoring and evaluation directly induces changes in national policy.

The research sample now turns to applying the qualitative and associated multicriteria framework to Central Africa, to evaluate the countries' preparedness for effectual NDC tracking and identify areas for enhancement.

4. Central Africa case study

4.1 Applying the qualitative and associated multicriteria framework

The UN, Multilateral Development Banks (MDBs), innovative partnerships such as the NDC Partnership and bilateral financing mechanisms, are identifying frameworks and methodologies to help implement NDCs. This implementation hinges on a variety of factors: degree of economic, social and human development within a country, reliance on internal and external funding, geographical location, stability and reliability of the governance, and natural resources endowment.

The literature review presents different frameworks in assessing the implementation of NDCs. The Africa NDCs Hub set out the Africa NDC Hub Roadmap in 2018. Taking account of multiple drivers, this approach takes cognizance of the fact that countries are all at different stages of socio-economic development and hence at varied levels of their NDC implementation.

On the other hand, Farrukh Khan (2019) designed the DEAL Framework structure to provide help in assessing the progress of countries vis-a-vis the transformation towards low carbon emission pathways in line with their respective NDCs and the peculiar and complex national characteristics. It will look at the policy options that countries must - at the very least - employ or exercise to be on a path to economic transformation that considers the impacts of climate change. It shall also assess whether or not the NDC-led pledges made by Paris Agreement signatories take into account minimal factors for low carbon/sustainable economic transition.

Both of them are assessing the implementation of NDCs framework, but Farrukh Khan's design is global and Africa NDC Hub Roadmap is just for African countries.

4.2 Designing the DEAL framework

The DEAL will assess the NDCs and their implementation into four main categories: Decision-making, Economic growth, Alignment and Livelihood (DEAL). More specifically, DEAL is a scorecard towards NDC implementation and economic transformation. It is aimed at:

(i) Providing a framework for evaluating a country's climate change action against the commitments stated in its respective NDC;

(ii) Assigning a score between zero and one and

(iii) Establishing a starting point for identifying strengths and weaknesses of the existing NDCs to strengthen them.

Every country's attempt to address climate challenges is distinct. Applied to two different countries with similar regulatory, fiscal, and monetary measures, DEAL could yield different results, largely due to distinct industrial or agro make-up. These differentiations result from degrees of

multidimensionality, policy options utilized by a country, economic risks and composition, cost differential due to capital input and the capital vintage effect.

Developing a scorecard, to assess progress towards the implementation of the NDCs, is therefore a challenging task. The figure below shows the DEAL scorecard with its components.

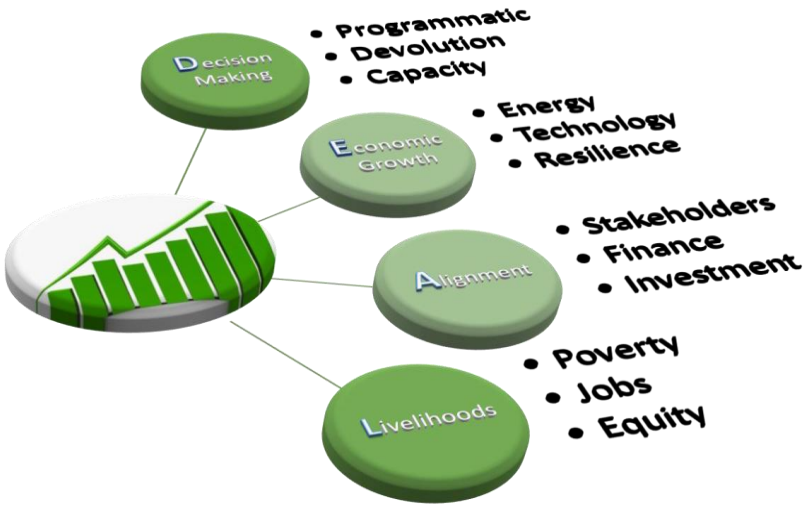

Figure 3: The DEAL Score Card Framework
Source: NDC Score Card, Farrukh Khan. 2018

A set of successful instruments and their indicators are deduced/identified from this tool. These indicators and instruments are put together, to construct a scorecard. The next paragraph gives a brief review of each of the four elements of the DEAL scorecard.

4.2.1 Decision Making

A. Programmatic Approach

What represents a country's unequivocal desire to transform its economic growth patterns?

The fourth IPCC report states, "*Effectual decision-making to limit climate change and its effects can be informed by a wide range of analytical approaches for evaluating expected risks and benefits, recognizing the importance of governance, ethical dimensions, equity, value judgments, economic assessments and diverse perceptions and responses to risk and uncertainty*". There is no fixed formula for determining the type of analytical process best suited to the policy-making on climate change.

B. Devolution/Localization

At least five factors underline the critical importance of devolving climate decision-making at the local level.

i) Climate change is broadly understood as a global rise in temperature however, its manifestations occur locally and impact local livelihood activities, communities' resources, health conditions and so on.

ii) Sensitivity on one side and adaptation capacity on the other, are both realized locally, as they are context-specific, resulting from the interaction between an array of socio-ecological factors such as income level, infrastructures, human development and individual behavior.

iii) Adaptation initiatives are best observable at the local level, in the form of households' livelihood practices, investment decisions and individual consumption.

C. Capacity to Implement

The stand-alone presence of a functioning and well-designed decision-making system as well as long-term planning are not sufficient if these are not accompanied by the capacity to implement the decisions and policies. Capacity-building remains one of the most important challenges for the undertaking of effectual climate action.

4.2.2 Economic Growth

The Paris Agreement declared that the goals of fighting climate change and economic growth are compatible. Economic growth and development are seen as one of the most critical factors in all NDCs.

A. Energy: Renewable and Decoupling

The share of fossil fuel-led growth, which hitherto was paramount, is gradually giving way to an increase in the use of renewable sources.

B. Technology

Technology has been included in 75% of the total 194 NDCs, and 95% of the NDCs issued by developing countries. 100 developing countries explicitly stated the need for international support in the development, adoption and diffusion of technologically advanced solutions.

C. Resilience

Building resilience is central to combatting climate. It could amount to a specific area of climate adaptation, to create an enabling environment, such as information collecting and spreading, transforming governance systems and increasing technical capacities, and the investments directed to fill the infrastructure gap.

4.2.3 Alignment

One of the central purposes of the NDCs has been to go past the idea of climate change as an isolated discipline, recognizing its interrelation with fields other than environmental science, politics,

economics and the like. Policymakers should treat climate change as a part of a larger system and not as an independent problem since it affects several key economic sectors, notably agriculture, forestry, fisheries, water resource management, human health, nature conservation, tourism and infrastructure.

A. Multi-stakeholder Approach:

The Paris Agreement underlines the need for national governments to engage other stakeholders in improving climate action.

B. Finance and Investment

The Paris Agreement called for making financial flows consistent with a low-carbon and climate-resilient pathway. Its implementation means aligning approaches with the private sector financial actors, asset managers and other business communities.

4.2.4 Livelihood

For any national policy to succeed, it must have a direct and incontrovertible link with the livelihoods of people. Therefore, policies and strategies must consider the rights, needs and development of the weaker segment of the society. Embracing principles like equity, common but differentiated responsibility, resilience and protection of vulnerable entities are some of the considerations in this regard.

A. Poverty Alleviation

Climate change and poverty are linked in a two-way relationship i.e. they feed one another. Negative impacts are borne heavily by the poor and often marginalized.

B. Jobs Creation

Within the NDCs nearly 307 listed activities target decent job creation. In comparison to poverty eradication, countries have focused more on job creation. The labour market is changing and changing for good. On the one hand, it is impacted by climate change on the other hand, from technological advancement and globalization.

C. Equity

As much as climate change impacts are inequitable both within and amongst countries, so are the impacts of responses to climate change.

A total of 111 of the submitted NDCs included a section on equity and fairness. Out of these, 94 contextualized their emissions in the same section. While 36 parties mentioned gender considerations in their contribution, but only less than half dedicated an entire section to the matter.

Consequently, the scope of the DEAL scorecard is limited. It is not designed to measure the impact but rather on what enables the implementation and transformation that countries are seeking through their respective NDCs. By focusing on policies and regulations, the DEAL scorecard will avoid making any attempt to place countries in one or other category. Yet, this scorecard could help visualize the path so far taken and highlight areas where further intervention may be needed.

The working assumption is that the intent of structural transformation would manifest into policy formulation and reforms, integrating climate change-related challenges into the larger economic framework and finally making a consistent effort to improve them. Once the intent is translated into policies, the impact – in all likelihood – will occur and in most cases accelerate. Consequently, this simple and narrow focus of the DEAL scorecard is based on the counts of essential and critical policies and regulations as the actual starting point of impact, change and transformation. The scorecard will capture this by giving a score on the number of policies captured through indicators and identifying what policy measures are missing.

4.2.5 Africa NDC Hub Roadmap

This section presents high-level narratives on how the Africa NDC Hub might support African countries in achieving their NDC targets by 2030, taking into account multiple drivers. The approach is non-prescriptive as it recognizes that African countries are at different stages of socio-economic development and hence at varied levels of their NDC implementation. It aims to provide the partners of the Africa NDC Hub with a disciplined method for imagining possible futures by considering how driving forces may change in future and the interaction between them, as they undertake decisions on NDC activities to be prioritized and implemented in respective African countries. Scenarios and methods were developed by the way.

The Roadmap development utilizes the scenario planning approach which is a particularly useful way of considering the complex interaction between socio-economic, physical and political driving forces which will determine the success of African countries in meeting their NDCs and identifying action required to support them.

Scenarios Development

To create meaningful scenarios, the two drivers selected to form the x and y axes of the scenario's matrix represent drivers having a high degree of impact and a high level of uncertainty from now until 2030.

As a result of the ranking exercise, the drivers of Climate Finance and Governance were identified as having the highest level of impact and the highest level of uncertainty.

The availability and level of climate finance (both public and private sector) is likely to significantly affect the ability of African countries to undertake a low carbon, climate resilient development pathway which, in turn, will have a significant impact on the achievement of NDCs. Similarly, the existence, strength and coordination of state institutions at a range of scales (i.e. governance) is critical to the achievement of NDCs but is highly uncertain over a ten-year horizon due to the nature of political cycles.

Scenario Application

Country scenarios are not predictions of the future but viewed together, they start to put a plausible boundary on the range of directions that the future may take to inform decision-making today. They provide a range of insights to inform the selection of activities for implementation

In general, there are two phases in scenario planning: scenario development; and scenario application. Whilst there are several methods used for developing scenarios, there are a series of steps which are generally common to scenario development. In developing scenarios, we have used a method which involves the following steps: i) Determination of scenario scope; ii) Identification of forces; iii) Grouping forces into key drivers; iv) Selecting drivers to form a 2x2 matrix; vi) Developing scenario narratives.

- Determination of Scenario Scope

The first stage in scenario development was to determine the scope of the scenario planning exercise. It is important to determine the temporal and spatial scale that scenarios are to cover at the outset of the development process, as well as setting out the purpose of the scenario planning exercise

- Identification of Forces

The second stage in scenario development was to compile a long list of forces which could affect whether African countries meet their NDCs between now and 2030. A STEEP framework was used to categorise forces and ensure as wide a range of forces as possible were collected, where:

S = Social forces

T = Technological forces

E = Economic forces

E = Environmental forces

P = Political forces

4.2.6 Options for improving tracking of progress

Implementation progress of all the NDC activities per country will be monitored, evaluated and reported regularly by a dedicated secretariat. This process will help promote accountability of the Hub secretariat to all its stakeholders including beneficiary countries, development partners, donors and Hub partners themselves amongst others. Monitoring, evaluation and reporting will be carried out iteratively.

The Work Programme activity outputs will be evaluated against relevance and fulfilment of objectives, development effectualness, efficiency, impact and sustainability:

• *Relevance* – The extent to which an activity is suited to the priorities and policies of the target group, recipient and donor.

• *Effectualness* – relates to the level by which the activities of a program produce the desired effect. It determines the measure of the extent to which activities attain their objectives.

• *Efficiency* – relates to the measure of qualitative and quantitative outputs in relation to the inputs. It looks at the cost of producing products or services relative to other programs or to some ideal process, and efficiency is achieved where the least costly resources possible are used to achieve desired results

• *Impact* – the extent to which long-term and sustained positive and negative changes are produced by an intervention, directly or indirectly, intended or unintended.

• *Sustainability* – relates to measuring whether the benefits of an activity are likely to continue after funding has ended. Sustainability can be viewed in both environmental and financial terms. It is ideal for activities to be both environmentally as well as financially sustainable

However, in the context of COVID-19, much can still be done to support the revision and update of NDCs, and their enhanced ambition.

Conclusion and Recommendations

This research sample presented a qualitative, multi-criteria framework that can be used to either design effectual NDC tracking systems or evaluate the extent to which Central African country Parties are prepared for NDC tracking, complementing the international NDC tracking and reporting rules agreed to in 2018. The framework is applied ex-ante, as the Paris Agreement's enhanced transparency framework only comes into effect in 2024. In future, the framework of indicators for attenuation might be applied for ex-post assessment, as part of Central African countries' broader monitoring and evaluation system.

The framework was applied to an in-depth case study on Central Africa. The assessment showed that Central Africa is progressing at a relatively low rate in several areas of NDC tracking, and so there are large areas for improvement. Furthermore, Central African countries are in dire need to get down attenuation indicators that are easy to articulate and appropriate to NDC tracking. Toward this end, there is a need for legislative support for collecting and protecting information. Evidence suggests that the outputs produced from Central Africa's monitoring and evaluation system do little to enhance transparency and will hardly allow governments to assess progress toward the NDC target. Likewise, Central African countries can enhance their domestic arrangements for NDC tracking by significantly improving data collection, establishing the linkages between climate action and socio-economic gains, and by adjusting national policy in response to the outputs of monitoring and evaluation system.

Central African countries are yet to have an advanced monitoring and evaluation system, though they are regular submitters of BURs to the UNFCCC. Hence Central African countries are considered to lag behind in terms of international reporting too. As such, the findings of this research sample would suggest that Central Africa countries, who are also country Parties, mobilize sufficient resources and capacity to track NDCs more consistently rather than in uncoordinated ways.

Central African countries are at varying levels of socio-economic development and hence at relatively different stages of NDC development and implementation. Taking cognisance of this, the non-prescriptive Africa NDC Hub Roadmap aims to provide decision-makers with a framework for the prioritisation of NDC activities to be implemented in countries.

Recommendations for Development Partners and international Donors:

- To reflect on how service delivery can be adjusted and improved upon based on the characteristics of the Central African NDCs, such as their development efforts are tailored to specific country needs.
- To continue development partner/donor coordination efforts with respective country line ministries of environment, nature protection and sustainable development responsible for NDC implementation such that the effectual and efficient utilisation of limited technical and financial resources are promoted.
- To communicate envisaged technical and financial support as well as planned timeframes and modalities for access on time, to enable Central African countries and development partners alike to budget and plan their NDC implementation accordingly.

Recommendations for Central African Countries:

- To appropriately align NDC implementation processes with respective national development plans.
- To engage with the Africa NDC Hub in a strategic and targeted manner, ensuring the activities presented for support are those which the Hub is best suited to respond to.
- To continually drive the establishment of a conducive environment – political, legal, technical, financial, and programmatic – for NDC implementation, along with external support including from the Hub where required. This entails, for example, the establishment of a dedicated secretariat led by COMIFAC, Central African Forest Commission, which is the single body for orientation, decision-making and coordination of sub-regional actions and initiatives in the field of conservation and sustainable management of forest ecosystems" for Central Africa (table 4).

Table 4 : Typology of COMIFAC

Central Africa	Economic Community of Central African States (ECCAS)	Technical Wing: Central African Forests Commission (COMIFAC)	Activities: Support central African countries to track NDCs and establish NAPA and their point persons Potential: to influence decision-makers; work closely with SINEPAD and the parliamentary network for sustainable management of forestry and ecosystem of the Central Africa Region Gaps: Too much focus on mitigation and CDM; shortcoming in resources mobilization

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Annex 1

A semi structured questionnaire organised into six sections to assess the barriers and enablers toward the effectual implementation of Nationally Determined Contributions (NDCs) in Central Africa.

Section 1: Personal Information

1. Name (Optional):
2. Age:
3. Gender:
4. Country/Region:
5. Organization/Institution:
6. Position/Title:
7. Years of experience in climate-related work**:**

Section 2: Awareness and Understanding of NDCs

8. How would you rate your understanding of the Nationally Determined Contributions (NDCs)?
    - Very Good
    - Good
    - Fair
    - Poor
9. Are you familiar with Central Africa countries' specific NDC commitments?
    - Yes
    - No

Section 3: Barriers to Implementation

10. What do you perceive to be the primary barriers to the effective implementation of NDCs in Central Africa? (Select all that apply)
    - Lack of political will
    - Insufficient funding
    - Limited technical capacity
    - Inadequate infrastructure
    - Lack of stakeholder engagement
    - Insufficient data and information
    - Other (please specify): _____
11. On a scale of 1 to 5, how significant do you believe each barrier is to NDC implementation in Central Africa?
    (1 - Not significant, 5 - Very significant)

- Lack of political will: 1 2 3 4 5
- Insufficient funding: 1 2 3 4 5
- Limited technical capacity: 1 2 3 4 5
- Inadequate infrastructure: 1 2 3 4 5
- Lack of stakeholder engagement: 1 2 3 4 5
- Insufficient data and information: 1 2 3 4 5

Section 4: Enablers of Implementation

12. What factors do you believe can facilitate effective NDC implementation in the Central Africa context? (Select all that apply)

    - Supportive government policies
    - Availability of funding/resources
    - Strong stakeholder collaboration
    - Public awareness and education
    - Technical assistance and capacity building
    - International support and partnerships
    - Other (please specify): _____

13. On a scale of 1 to 5, how important do you believe each enabler is for NDC implementation in Central Africa?
    (1 - Not important, 5 - Very important)

    - Supportive government policies: 1 2 3 4 5
    - Availability of funding/resources: 1 2 3 4 5
    - Strong stakeholder collaboration: 1 2 3 4 5
    - Public awareness and education: 1 2 3 4 5
    - Technical assistance and capacity building: 1 2 3 4 5
    - International support and partnerships: 1 2 3 4 5

Section 5: Stakeholder Engagement

14. How would you rate the level of stakeholder engagement in the NDC implementation process in Central Africa?

    - Very High
    - High
    - Moderate
    - Low
    - Very Low

15. Who do you believe should be more actively involved in the NDC implementation process in the Central Africa context? (Select all that apply)

    - Government agencies
    - NGOs/Civil society
    - Private sector
    - Local communities
    - International organizations
    - Other (please specify): _____

Section 6: Additional Comments

16. Please provide any additional comments or suggestions regarding the barriers and enablers to the implementation of NDCs in Central Africa:

Authors note

This research sample examining the Barriers and enablers toward effectual implementation of Nationally Determined Contributions in Central Africa is based on views of relevant literature. It will form a basis for ongoing collaboration and learning between NOCC and researchers in the field of both adaptation and attenuation in Central Africa countries. We are interested in how this review might be further used to inform and scale up effectual adaptation and attenuation efforts.

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