

TAPPING INTO THE FULL POTENTIAL OF CLIMATE CHANGE MITIGATION



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What is the issue?

“Human influence on the climate system is clear, and recent anthropogenic emissions of greenhouse gases are the highest in history” (IPCC, 2014, p.2).

The Intergovernmental Panel on Climate Change (IPCC), in their most recent Special Report on Global Warming of 1.5°C, indicates that the planet has currently warmed 1°C above pre-industrial levels primarily due to anthropogenic greenhouse gas emissions (IPCC, 2018). Given global ‘business as usual’ practices, warming is projected to likely rise above 3°C by the end of the century (IPCC, 2014). The impact of this warming and subsequent overarching climatic change on human and natural systems would be and already is, far-reaching. The Small Island Developing States (SIDS) of the Caribbean, although one of the least contributors to anthropogenic emissions, are among the most vulnerable to the impacts of climate change. Under the business as usual scenario, SIDS face projected economic costs associated with climate change of at least 15% of their combined Gross Domestic Product (GDP). In

comparison to the projected global costs of 1 to 4% of GDP for the same emissions pathway, this is substantial (UN-OHRLLS, 2017). Unhinged climate change would also cause adverse effects on the environmental and social sectors in the form of sea-level rise, saline intrusion, increased extreme events, climate-induced diseases, food security issues, degraded ecosystems and migration (UN-OHRLLS, 2017).

The increasingly urgent and global nature of climate change led to the formation of the Paris Agreement. The mandate of the Paris Agreement is to restrict global temperature rise to 2°C (and ideally 1.5°C) above pre-industrial levels (UN, 2015a). This mandate sits on the two pillars of mitigation and adaptation, wherein countries pursue low carbon development via greenhouse gas emission reduction and climate-resilient development by implementing measures to deal with the impacts of climate change. The Agreement recognizes Parties’ “common but differentiated responsibility and respective capabilities” (UN, 1992, pg. 1). Given that developed countries have contributed the majority of greenhouse gas emissions, they are expected to take the leading role in mitigation action and provide overall support to developing countries via the

financial, technical, and capacity-building mechanisms in the Agreement.

Since SIDS contribute less than 1% of global greenhouse gas emissions, their development plans have focused more on the crucial need for adaptation. For instance, the SIDS Accelerated Modalities of Action (SAMOA) Pathway, which outlines SIDS' priorities, emphasises adaptation as an immediate and urgent need while mitigation is expressed as a secondary item (UN, 2014). Nevertheless, the Paris Agreement requires each Party to communicate planned mitigation efforts in Nationally Determined Contributions (NDCs) every five years. Additionally, commitments should be increased with each succeeding NDC. Mitigation action either involves the reduction of greenhouse gas emissions through initiatives such as renewable energy generation and improved energy efficiency or the enhancement of carbon sinks through, for instance, reforestation and forest management. Based on the stipulations of the Paris Agreement, developing countries are expected to incorporate mitigation at a pace which aligns with their national priorities

“NDCs embody efforts by each country to reduce national emissions and adapt to the impacts of climate change. The Paris Agreement (Article 4, paragraph 2) requires each Party to prepare, communicate and maintain successive nationally determined contributions (NDCs) that it intends to achieve. Parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions” (UNCC 2020)

Herein lies the issue. Given SIDS' overarching goals of inter alia sustainable development and poverty eradication, how should they approach the formation of their NDCs? Are there benefits from mitigation that can be capitalised on for broader sustainable development?

Why is it important?

Many SIDS wrestle with limited resources. Evaluating the opportunities for holistic sustainable development, through mitigation, leads to the identification of sectoral co-benefits which are critical in maximising limited financial and human resources (Northrop et al., 2016).

In recent times, 70% of climate finance has been directed towards mitigation (UN-OHRLLS, 2018). Given the availability of mitigation finance, and considering that the market is characterized by decreasing costs of renewable energy (UN-OHRLLS, 2018) as well as generally low costs of emissions reduction and carbon sink enhancement, SIDS should make use of mitigation pathways and the development opportunities it offers (Mitchell and Maxwell, 2010).

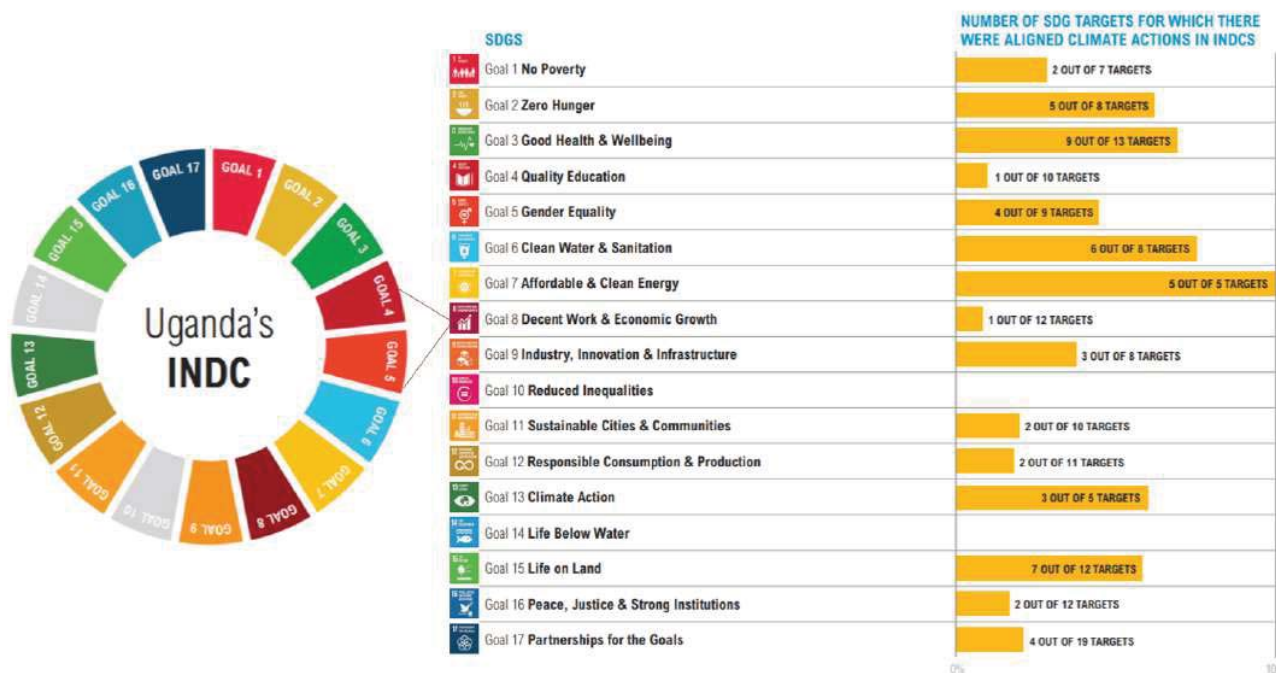
What should be done?

Utilize the Sustainable Development Goal Framework

To capitalise on these opportunities, NDCs should be designed, and subsequently assessed, based on identified multi-sectoral benefits which support national priorities. The Sustainable Development Goals (SDGs) provide a lens to view society's multifaceted issues (UN, 2015b). The globally accepted framework consists of 17 goals and 169 targets which were designed to span the entirety of the human system and its interaction with the human-made world and the natural environment. Northrop et al. (2016) evaluated the intersection between the aims of the Paris Agreement's NDCs and the SDGs. The paper highlights Uganda's Intended Nationally Determined Contribution (INDC) as it successfully aligned climate actions to 15 of the 17 SDGs. Uganda was a front-runner in localising the SDGs and strategically

integrating them in their INDC. The INDC was therefore aimed towards SDG targets that influenced Uganda’s national priorities and key economic sectors- thus maximizing allocated local and international funding.

Figure 3: Alignment between Uganda’s INDC and the SDG Targets



Sourced and adapted from Northrop et al. (2016)

Identify Critical Sustainable Development Pathways

The SDG framework was developed following the end of the tenure of the Millennium Development Goals (MDGs). The MDGs were criticized for lack of internal integration which led to, for instance, economic advancement at the expense of environmental well-being. Correcting this wrong, the SDGs were specifically designed to operate as an interlinked network (Le Blanc, 2015).

Research has been done to evaluate interaction among the SDGs themselves (Le Blanc, 2015) as well as among chosen SDG nexuses (Weitz et al., 2014; Lui et al., 2018; Mainali et al.; 2018). For instance, Mainali et al. (2018) investigated

the water, energy, food nexus and its interaction with poverty. This work highlighted key development pathways which show that, for example, increased use of renewable energy under SDG 7 (affordable and clean energy) has the potential to contribute to SDG 2 (zero hunger) by improving agricultural productivity via more affordable energy for irrigation pumping. This, in turn, increases farmers’ incomes, decreasing poverty and reinforcing SDG 1 (no poverty) and SDG 8 (decent work and economic growth). Increased income levels translate to, among others, increased ability to afford sanitation needs such as toilets (SDG 6 clean water and sanitation) and education (SDG 4 quality education).

Of specific interest to the topic at hand, research mapping the interactions between

mitigation and the SDGs has revealed mitigations' potential to influence more than 70% of SDGs (Fuso Nerini et al., 2019). Further, the IPCC (2018) considered the interactions between mitigation activities, particularly in energy supply, energy demand, land management, and the ocean and the SDGs. This work found strong synergies for SDG 3 (good health and well-being), SDG 7 (affordable and clean energy), SDG 11 (sustainable cities and communities), SDG 12 (responsible consumption and production), and SDG 14 (life below water). Moreover, "low energy demand, low material consumption, and low greenhouse gas-intensive food consumption" (IPCC, 2018) were highlighted as pathways characterized with the most SDG synergies. These studies demonstrate the sustainable development reach of singular well-planned mitigation action.

Pinpoint Significant Sectors for Mitigation Action

The infrastructure system presents a noteworthy and somewhat hidden opportunity to apply these insights. Infrastructure systems, particularly networked infrastructure, are often the cause of the majority of greenhouse gas emissions within a country. Networked infrastructure systems facilitate the distribution of energy, transportation, water, waste management, and digital communications services. Their greenhouse gas-intensive nature combined with the presence of ageing infrastructure and rising populations make infrastructure development a critical launching pad for mitigation action.

Research has indicated that infrastructure can underpin all 17 SDGs and 72% of the 169 targets either directly or indirectly (Thacker et al., 2019). Zooming in on recent research, specifically on mitigation initiatives within the infrastructure network system, action in this area

can positively influence all the goals and 50% of the targets (Vital, 2019). Particularly, it was found that mitigation action within networked infrastructure exhibits a strong influence on SDG 6 (clean water and sanitation), SDG 7 (affordable and clean energy), SDG 9 (industry, innovation and infrastructure), and SDG 11 (sustainable cities and communities). Moreover, upon evaluation of mitigation in each infrastructure service, it was found that the energy, transport, and water systems influenced the highest proportion of SDGs both directly and indirectly (Vital, 2019).

Integrated SDG centric infrastructure planning is beginning to take off. Adshead et al. (2018) laid a foundation with an evidence-based infrastructure development plan for the Government of Curacao. The vision for future infrastructure was shaped by Curacao's identified challenges and sustainable development through the SDGs. Thacker et al. (2019) reports that the assessment resulted in the identification of cost-effective short-term measures and aided in coordination across government ministries.

Adding to this work, Vital (2019) quantitatively applied the evaluation of infrastructure and mitigation within the SDGs to a case study in St. Lucia. The findings were used to develop an SDG influence metric to assess mitigation strategies to 2050 for the island. The strategies were developed given varying scenarios informed by national priorities and subsequent policy analysis, existing infrastructure life span, projected population growth and infrastructure needs, and key stakeholder insight. The devised strategies were classified by the metric which aggregated potential SDG impact based on environmental/climate impact, access to infrastructure services, and ease of implementation. For example, of the six mitigation strategies developed for the energy sector the highest scoring strategy achieved St.

Lucia's projected electricity needs, renewable energy, and energy efficiency targets without costly options such as a new diesel power generation plant, a waste to energy facility, natural gas, and anaerobic digestion. Beyond the SDG metric which captured indirect SDG influence, this strategy also directly influenced the most SDG targets. By considering the sustainability impact through the SDG framework, an effective pathway to meet the island's energy needs was found through enhanced renewable energy generation and maximum cost-effective energy efficiency measures.

Bringing It All Together

The findings from such studies illuminate high impact development pathways and provide guidance for policy-making and long-term planning. They show that to extract every ounce of benefit from mitigation action NDCs should focus on the infrastructure-mitigation nexus and particularly on energy generation, sustainable city and community development, innovation in industry and infrastructure, and clean water and sanitation. They also highlight the most impactful sectors for NDCs: energy, transportation and water. Moreover, mitigation action within these sectors has the potential to reverberate and impact all aspects of sustainable development.

From the brief case studies presented, it is clear that applying mitigation strategies to critical SDGs and sectors and understanding their linkages has immense potential to produce the best outcomes. Such actions necessitate cross-sector discourse which fosters policy coherence and informed decision making- further reinforcing sustainable development (Lui et al., 2018). Carefully crafted climate change mitigation action through the NDCs in

conjunction with measures such as context-specific cost-benefit analyses, vigilant implementation, monitoring and evaluation, and good governance have the capacity to propel truly resilient growth in Caribbean SIDS.

“To extract every ounce of benefit from mitigation action NDCs should focus on the infrastructure-mitigation nexus and particularly on energy generation, sustainable city and community development, innovation in industry and infrastructure, and clean water and sanitation.”

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