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# Green financial reporting framework for Paris Agreement parties

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## 1 Introduction

To tackle the climate change issue, green climate finance is reported as the most crucial component for carbon-neutral development in the developing world (den Elzen et al., 2022; Sattar, 2022). The Paris Agreement (PA) under Article 9 institutionalizes the provision of green financial support to the developing world with these words: “Developed country Parties shall provide financial resources to assist developing country Parties concerning both mitigation and adaptation in continuation of their existing obligations under the Convention” (United Nations, 2015). The developing party countries are encouraged to communicate their green financial needs through their nationally determined contribution (NDC) submissions. The PA under Article 4 states that “Each Party shall prepare, communicate and maintain successive nationally determined contributions that it intends to achieve,” and report it to the Convention—United Nations Framework Convention on Climate Change (UNFCCC). To acknowledge, validate, and keep a record of such financial support provided by the developed country parties to the developing world, Article 9 paragraph 7 directs the developed party countries that “Developed country Parties shall provide transparent and consistent information on support for developing country Parties provided and mobilized . . . .” Similarly, developing countries are directed to provide information on the financial support received. However, the review of NDC submissions from both sides—the developing and the developed party countries—reveals that neither the developing countries have reported their green financial needs in a quantifiable manner nor the developed country parties have provided any note on financial support provided to the developing countries. This has caused a fundamental gap in policymaking and action strategies for achieving carbon-neutral development in the developing world. Hence, academic researchers lack sufficient data on the exact amount of green climate funds developing countries need and receive under the PA (Sattar, 2022; 2023). It requires a consistent structure or a framework for assessing green financial needs in a quantifiable and coherent manner (Mayer, 2023). To justify this gap in the green financial reporting framework and improve the reporting mechanism, we cite some NDC publications randomly accessed from the NDC public registry maintained by the UNFCCC and propose a reporting framework for the green financial needs of developing countries under Article 9 of the PA. COP28 reports to fill this gap with an enhanced transparency framework (UNFCCC, 2023b). The UNFCCC’s financial mechanism—Green Climate Fund and Global Environmental Facility—can

play a crucial role to bridge this gap with a unified and specified financial reporting framework.

## 2 Gaps in green financial reporting

The NDC submissions of some developing countries like Albania, Armenia, Azerbaijan, Brazil, Dominica, Georgia, Jamaica, Kazakhstan, Macedonia, Maldives, Serbia, Thailand, Tonga, and Tuvalu report no quantifiable information on green financial needs under Article 9 of the PA. Some other developing countries provide general information on green financial needs such as Belize \$1.71 billion (NDC., p. 33), Fiji \$2.97 billion (NDC., p. 15), Mauritius \$4.5 billion (NDC., p. 30), Palau \$5.5 million (NDC., p. 5), and Suriname \$696 million (NDC., p. 27). However, they did not clarify whether this amount is required for climate change mitigation or adaptation actions. Hence, this cost is reported for their conditional or unconditional targets. Only a few countries have partly provided categorical information on green financial needs for conditional and unconditional targets. For instance, Indonesia reports \$285 billion (NDC., p. 19) for conditional mitigation targets and \$281 billion (NDC., p. 19) for unconditional mitigation targets. Saint Lucia reports \$368 million (NDC., p. 2) for conditional mitigation targets but no information on unconditional mitigation targets. However, none of them provided complete information on their green financial needs both for mitigation and adaptation targets categorically, except Namibia, which seeks a \$5.33 billion total cost, including \$3.25 billion for conditional mitigation targets, \$0.36 billion for unconditional mitigation targets, \$1.55 billion for conditional adaptation, and \$0.17 billion for unconditional adaptation (NDC., p. 2). On the other hand, developed party countries provide no information on green financial support provided to developing party countries. It confirms a fundamental gap in green financial reporting mechanisms and requires a clear reporting framework for more transparent and coherent data to improve the implementability of NDCs (Pauw and Klein, 2020). Röser et al. (2020) validated it by noting that “More analytical, financial, and technical resources are needed to implement the first round of NDCs and support countries in preparing future NDC cycles (p. 415).” COP members and climate science experts report political institutions as the leading force to implement such frameworks (AL-Abrow et al., 2018; Adloff and Neckel, 2019; Victor et al., 2022).

### 2.1 Gaps in the policy framework

The PA under Article 4 paragraph 2 states that “Each Party shall prepare, communicate, and maintain successive nationally determined contributions that it intends to achieve. Parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions.” The point of focus is that it lacks a clear direction for reporting green financial needs in a quantifiable manner. It does not provide further specifications on green financial reporting. For instance, how much funds do the developing party countries need to achieve their conditional and unconditional

mitigation targets? Similarly, how much finance do they need for their conditional and unconditional adaptation targets? Most of the NDC targets by the developing party countries are conditional on external support (Mills-Novoa and Liverman, 2019; Pauw et al., 2020; Ali et al., 2022; Shah et al., 2022; Latif et al., 2023; Xu et al., 2023). It is, therefore, crucial to have a consistent reporting framework. Some developing countries have reported this framework gap in their NDC submissions. For instance, Egypt (NDC., p. 28) reports that the “MRV [monitoring, reporting, and verification] system should be institutionalized.” A recent study notes that “Changes in capacity additions and capital investments, such as those presented in this study, could be further challenged by the need for rapid mobilization of capital, investments in infrastructure, setting up of the supporting institutional and regulatory frameworks . . . ” (Iyer et al., 2017). In our opinion, this gap can be filled by providing the developing party countries with a consistent reporting framework for charting their green financial needs in a categorical and quantifiable manner. Here, in Table 1, we propose a template for charting such needs. The developing party countries can use it for reporting their green financial needs in their future NDC submissions. It will improve the green financial reporting mechanism under Article 9 of the PA and work as a “progress tracker” function suggested as one of the most important components for the implementation of NDCs (Jernnäs, 2023). The upcoming Conference of the Parties (COP29) can potentially consider it for institutionalization. It can also help the next COP for charting cross-country financial needs in a consistent manner decided (Decision -/CP.28 -/CMA.5) in COP28 with these words: “Decide that arrangements with the Fund, consistent with the Governing Instrument of the Fund and to ensure that the Fund is accountable to and functions under the guidance of the Conference of the Parties and the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement, are to be approved by the Conference of the Parties at its twenty-ninth session (November 2024) and the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement at its sixth session (November 2024);” (UNFCCC, 2023a).

## 3 Discussion

A consistent reporting mechanism for green financial reporting under Article 9 is crucial for policymakers, practitioners, and academic researchers. Why most developing countries are unable to report their green financial needs might be because of their inability to estimate support needs. The estimation of green financial needs is challenging for some countries, which require financial and technical capacities for research and collecting data. For instance, Indonesia (NDC., p. 19) states that “Constraints has [have] also been faced in estimating support needs, in particular to the methodological approach used to assess finance needs for mitigation and adaptation, data availability and reliability, and diverse perceptions of stakeholders on NDC financing.” Egypt (NDC., p. 28) reports that “The national climate reporting relies mainly on donor-funded projects and contracting consultants on an *ad hoc* basis to prepare the reports required under the UNFCCC.” In addition, it states that “Building a strong foundation for the

TABLE 1 Proposed financial reporting framework under Article 9 of the PA.

Country	Total cost	Mitigation cost for		Adaptation cost for	
		Conditional targets	Unconditional targets	Conditional targets	Unconditional targets
1	---	---	---	---	---
2	---	---	---	---	---
3	---	---	---	---	---

planning, implementation, and reporting of national climate actions requires adequate institutional, technical, and financial arrangements.” Likewise, Zimbabwe (NDC., p. 34) mentions that “There is a need for an efficient system to assess financial support needs and for tracking financial support received.” It shows the nucleus of the reporting problem is neither from the developing country parties nor the developed one. It is a strategic issue. We noted that it is too early to ask developing countries to report their green financial needs as financial and technical assistance comes as a prerequisite for green financial reporting. On the other hand, the developed party countries might not be able to report transparent information on support under Article 9 paragraph 7 about the provision of green climate funds to the developing party countries due to the missing prerequisite information on green financial needs from the developing party countries. In our opinion, the financial reporting chart proposed in Table 1 can facilitate both sides for green financial reporting under the PA. The upcoming COP29 can potentially consider it as a policy frame for green financial reporting under Article 9 of the PA. The implementation can be facilitated by engaging the subsidiary bodies of UNFCCC’s financial mechanism with nationally designated entities (NDEs) of all party countries.

## Author contributions

US: conceptualization, formal analysis, investigation, methodology, supervision, validation, writing—original draft, and

writing—review and editing. RL: investigation, methodology, validation, and writing—review and editing. YW: data curation, investigation, project administration, and writing—review and editing. AS: data curation, investigation, validation, and writing—review and editing.

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## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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