

Understanding support needed for climate mitigation and adaptation in developing countries from the national reporting under the UNFCCC

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Key points

- Many developing countries consider that international support is vital for achieving their climate targets and accelerating actions, pledged in the so-called Nationally Determined Contributions (NDCs), under the Paris Agreement. Thus, understanding what kind of international support they need is crucial for ensuring the provision of adequate support.
- This paper presents the state of international support needed, as reported by 93 developing countries in their National Communications (NCs) and Biennial Update Reports (BURs). It assesses the specificity and comprehensiveness of reported needs, and identifies characteristics of reporting among the country groups with different anticipated needs.
- Our analysis shows that developing countries, in general, had limited experience with reporting on what support they needed. Only a handful of countries reported needs for all three categories (finance, technology and capacity building) in both areas (mitigation and adaptation). The majority reported support needed only for some of the areas and categories, and when they did, they specified needs for a few sectors (e.g. energy and forestry) with one or two specific contents (e.g. project activities and MRV) only at the most.
- In mitigation, the energy sector attracted the highest attention, with a total of 52 countries mentioning specific technology types as a specific need. Financial support was the most specified for project activities, and capacity building was specified for monitoring and MRV. In adaptation, countries most frequently reported that support was needed for the water and agriculture sectors and for conducting assessment and research. Compared to mitigation, many appeared to be eager to receive support for deepening their understanding of the potential areas for adaptation before taking any concrete actions.
- Our analysis shows, despite their higher existing needs, the least developed countries/small islands developing states (LDCs/SIDS) reported their needs the least specifically across areas and categories. This trend was particularly obvious in reporting of financial support needed for mitigation. In adaptation, it was too early to assess the difference of reporting among country groups, given that different country groups similarly had moderate reporting.
- We conclude that necessary support is unlikely to be forthcoming based on the way current national reporting is prepared, and this limited state of reporting must be reaffirmed for the implementation of the Paris Agreement. What is absolutely essential is that information collected through national reporting and other mechanisms should be beneficial and can connect with the necessary support, so that more countries will be able to choose to implement more ambitious NDCs.

1. Introduction

Many developing countries consider that international support is vital for achieving their national climate targets and driving actions, pledged in the so-called Nationally Determined Contributions (NDCs), under the Paris Agreement (UN, 2015). We refer to non-Annex I countries under the United Nations Framework Convention on Climate Change (UNFCCC) as developing countries in this study. In fact, almost all the developing countries have expressed support in the forms of finance, technology development and transfer (hereafter, technology), and capacity building as the necessary means of implementation in their NDCs (UNFCCC, 2021a). Some countries even claimed that with support from international sources, they can succeed in achieving more ambitious NDCs than otherwise. Thus, understanding what kind of support countries need is crucial for enhancing their climate actions. Also, clarity on support needed by developing countries influences the understanding of the aggregated effects of NDCs on a global scale (de Coninck et al., 2018). However, developing countries are limited in communicating the type and magnitude of support they need in NDCs. For example, some countries do not clarify the extent to which (full or partial) support is needed for NDCs or the methods and data used for cost estimates (Pauw et al., 2019). Others also did not include the sectors or action areas in which support can play a role (Khan et al., 2020). Such existing reporting practices need to be changed to be much clearer, and there also needs to be specific reporting of support needed. This is because revealing what developing countries require as support is fundamental for facilitating the provision of support and for driving their climate actions (Pauw et al., 2019).

Under the UNFCCC, prior to NDC communications in the Paris Agreement, developing countries reported what their needs were in terms of support through national climate reporting, namely National Communications (NCs) and Biennial Update Reports (BURs) (UNFCCC, 2002; UNFCCC, 2011). Both reports cover, among others, a section which includes information on support needed (see also section 2 for further details). While support needed for climate actions has also been considered through other mechanisms, such as the Standing Committee on Finance, the Technology Executive Committee (UNFCCC, 2010), and the Framework on Capacity Building (UNFCCC, 2001), NCs and BURs have provided country-driven and country-specific information on support needed. Developing countries have submitted NCs since the UNFCCC's inception in 1992 (UN, 1992), and BURs since 2011 (UNFCCC, 2011). BURs provide updates on the information reported in the latest NCs. Despite this decadal history of reporting on support needed by developing countries, little existing literature and synthesis reports can be found (Garrett and Moarif, 2018). As a result, we have hardly any knowledge on which needs developing countries have reported, and whether those needs were reported in a way which can facilitate the provision of adequate support. It should be highlighted that, with the effect of the implementation rules for the Enhanced Transparency Framework (ETF) under the Paris Agreement (UNFCCC, 2018a), the BURs and their analysis will be superseded by the reporting of the biennial transparency report (BTR), while for NCs, the Parties can opt either for submitting a single report of NC/BTR or continuing to submit a separate report from BTR. This reporting informs the other built-in mechanism of the Paris Agreement, called the Global Stocktake, which evaluates global progress on achieving long-term goals. The Global Stocktake will consider the support needed and provided as one of the key drivers for enhanced climate actions (UNFCCC, 2018b).

The objective of this paper is to present the state of reporting by developing countries on the support they need for climate actions by cataloguing information from the recently submitted NCs and BURs. Additionally, this study assesses whether there are any notable reporting characteristics among those NCs and BURs, depending on the levels of their anticipated needs. We classify developing countries into three categories: the least developed countries/small islands developing states (LDCs/SIDS); high-income countries; and other developing countries. Assuming that needs are identified and reported in order to call for international support, countries with higher existing needs (i.e. LDCs/SIDS) should have been able to express those needs in national climate reporting. This study catalogues developing countries' reports of support needed far more extensively than the existing literature (Garrett and Moarif, 2018). We catalogued information on support needed across mitigation and adaptation areas, and across the three main categories of support (namely finance, technology and capacity building), and up to the sub-category scales (e.g. sectors, contents and actors).

The paper is structured as follows. Section 2 provides an overview of reporting on countries' support needed under the UNFCCC. Section 3 explains the data collection method and analysis based on reviews of submitted NCs/BURs. Section 4 presents the results of reported needs and the trends of reporting across country groups. Finally, we highlight and discuss key findings in section 5 with some concluding remarks, along with a discussion on the implementation of the Paris Agreement.

2. Overview of national reporting on support needed under the UNFCCC

Developing countries are requested to prepare and submit information on support needed in their NCs and BURs in accordance with the respective UNFCCC guidelines (UNFCCC, 2002; UNFCCC, 2011). While it is mandatory for developing countries to report components such as national greenhouse gas (GHG) inventories in their NCs, reporting on support needed is optional. However, as we will see in subsequent sections, many developing countries have reported on the support they need in their submitted NCs and BURs. However, partly because this reporting is optional, the NC and BUR guidelines do not offer as detailed reporting instructions for reporting of support needed as for other components (e.g. GHG inventory) (see Table 1). In addition, there are no common methodologies or formal templates on how to report on the type of support needed. Rather, the guidelines exist to "facilitate the presentation of information" on finance, technology and capacity-building support needed (UNFCCC, 2011). In NCs and BURs, developing countries also report on the support they received, but this study does not focus on information on this aspect. BURs, once submitted, are subject to international consultation and analysis (ICA), which is the process of improving the transparency of BURs through a team of technical experts. ICA includes analysing reported information such as support needed.

These existing reporting arrangements of NCs and BURs will be evolved into BTRs under the Paris Agreement's ETF. All countries, except for LDCs and SIDS, are required to submit their first BTRs no later than the end of 2024. Compared with the guidelines for NCs and BURs, the new ETF rules

adopted in 2018 stipulate far more detailed reporting instructions, including specific elements for reporting on support needed (UNFCCC, 2018a) (Table 1). Common tabular formats for reporting information on support needed will also be developed for countries to use (UNFCCC, 2021b). BTRs will go through a technical expert review; however, the scope of technical expert reviews is limited to mandatory reporting components, thus excludes reporting on support needed.

Table 1 Summary of instructions provided in the UNFCCC guidelines for reporting on support needed in NCs, BURs and BTRs

Category	NC ¹⁾	BUR ²⁾	BTR ³⁾
Finance			".... should provide, in a common tabular format, information on financial support needed, including.... " (2018, p.42) - Title and description (of activity, programme or project) - Estimated amount - Expected time frame - Financial instrument - Sector/subsector - Expected use, impact, etc.
Technology	" should describe financial, technical and capacity needs" (2002, p.10)	".... should provide updated information financial, technical and capacity-building needs." (2011, p.41)	".... should provide, in a common tabular format, information on technology development and transfer support needed, including.... " (2018, p.43) - Title and description (of activity, programme or project) - Type of technology - Expected time frame - Sector - Expected use, impact, etc.
Capacity building			".... should provide, in a common tabular format, information on capacity-building support needed, including.... " (2018, p.44) - Title and description (of activity, programme or project) - Expected time frame - Expected use, impact, etc.

Source: 1) UNFCCC (2002); 2) UNFCCC (2011); 3) UNFCCC (2018)

3. Methodology

3.1 Data sources

The core data source of this paper are NCs and BURs of non-Annex I countries to the UNFCCC, which were available on the UNFCCC webpage, as of September 2019 (UNFCCC, 2019a; UNFCCC, 2019b). Out of a total of 154 developing countries, the latest NCs or BURs of 93 countries (about 60% of the total) were used in this study for two reasons. Firstly, they submitted at least one NC and/or BUR in and after 2014. This cut-off period comes from the deadline of first BURs submission by December 2014 (UNFCCC, 2011), and is made to capture the recent information reported on support

needed. Secondly, these NCs and BURs contained a section detailing what type of support is needed. We considered sections to be relevant to this paper when their heading included the terms “support” and/or “needs”. Examples of such sections were titled “constraints, gaps, and related financial and technical needs” and “support received and needs”. Conversely, other sections with titles such as “a national GHG inventory”, “mitigation actions and their effects” or “other information” were excluded, even though these sections may contain information related to support needed. When countries submitted both an NC and BUR in the same year, we referred to whichever report contained more information on support needed. Overall, NCs (first to fourth NCs) were data sources for 69 countries, and BURs (first to third BURs) for 24 countries.

3.2 Data collection and compilation

Data were collected from NCs and BURs of sample countries. As noted above, the UNFCCC guidelines for NCs and BURs do not offer detailed information elements, methodologies or reporting formats. The extent and quality of information reported on support needed was highly varied across countries. To overcome this, we developed a worksheet template (inspired from Lesnikowski et al. (2013)) for four researchers to commonly use in this study. Within the template, each worksheet contained six core information items and associated options (**Table 2**). Information items were structured on three levels. The first level was to classify support needed between the two areas: mitigation and adaptation. The second level was to select one of the three support categories: finance, technology or capacity building, within the first level. The third level was to utilise the sub-categories of the second level; sectors, contents, targeted non-governmental actors and estimated amount needed in monetary value. Since there were two areas and three categories for each area where data were collected, the total of six worksheets were filled for each NC and BUR. Whenever we encountered a section which detailed support needed, we associated it with a relevant information item. Relevant options were scored with 1 as reported; and if no information was provided, scored with 0 as not reported. All the scored worksheets were then combined into one single database.

Despite data collection using the common worksheet template, we recognise the challenge of varying degrees of extent and quality of information provided by countries. We took two additional measures to minimise this challenge. One approach was for the four researchers to cross-check with each other’s scoring results of a few samples of NCs and BURs at the outset. The second approach was to consult within the team in order to reach consensus, in those cases where the information provided was vague. That consensus was applied to subsequent similar cases as much as possible.

Table 2 List of information items and options applied in data collection

Items	Level	Options
1. Area	Area	Mitigation, adaptation, other
2. Category	Category	Finance, technology, capacity building, other
3. Sectors		For mitigation: energy, transport, industry, agriculture, forestry, waste, cross-cutting (cc)/other
		For adaptation: health, education, natural resources/biodiversity, agriculture, infrastructure, disaster management, coastal management, energy, tourism, insurance, other
4. Contents	Sub-category	Assessment / research, stakeholder networking / coordination, information platform / knowledge hub, formal education, public awareness / campaign, monitoring / reporting/ verification (MRV), policy / program / plan formation, training for technical expertise, technology type, infrastructure, project activities, salary for staff, other
5. Targeted non-governmental actors		Sub-national agency, private sector, university / research group, farmers, general public, Indigenous groups, NGOs, children / the elderly, women, specific Ethnic group, other
6. Estimated amount		For finance category: estimated, not estimated, other

3.3 Data analysis

We characterised the results of data for each information item across the three country groups: LDCs/SIDS (n=41); other developing countries (n=43); and high-income developing countries (n=9) (see Table 3). We identified the LDCs/SIDS group based on the UNFCCC country list of non-Annex I countries of the Convention (UNFCCC, 2018; UN, 2020). We further identified the high-income developing countries from the World Bank's World Development Indicators among the non-Annex I countries (The World Bank Group, 2020). Lastly, we grouped the remaining sample countries which are middle- and low- income countries, excluding LDCs/SIDS, as other developing countries. Furthermore, a Support Needs Specific Index was calculated for each support category, based on the number of options reported at the sub-category levels of sectors, contents and targeted non-governmental actors. We developed and used this index to compare the comprehensiveness and specificity of reported needs across a large number of sample reports, based on Lesnikowski et al. (2015). We interpreted that the higher the index score, the more specifically and extensively a developing country reported its support needs for a particular category, relative to other countries with less of an index score. The following equation was applied to calculate the index score:

$$\text{Index score} = (\text{no. of sectors} * 1) + (\text{no. of contents} * 2) + (\text{no. of actors} * 2)$$

In this equation, the number of identified sectors receives one (1) point, while the number of identified contents and targeted non-governmental actors are given two (2) points each. This is because we consider the latter as being more specific than the former for understanding support needed by a country within its NC and BUR. Since seven sectors, 12 contents and 10 non-national governmental actors were listed for a particular category in mitigation, the highest possible score was 51 and the lowest 0, whereas for adaptation the highest possible score was 55 (11 sectors covered in adaptation). We created an index for each of the three support categories in mitigation and adaptation areas

separately, and compared across the three country groups. We then identified the countries with top 10 index scores of all three categories combined.

Table 3 Country classifications

Category	Sample countries	Total no. of developing countries	Share
LDCs/SIDS	41	69	59%
Others	43	63	68%
High income	9	22	41%
Total	93	154	60%

4. Results and key findings

4.1 Overall status of reported needs at the area and category levels

A limited number of countries reported their needs comprehensively even at the area and category levels. Out of 93 countries reviewed, 53 countries reported needs for both mitigation and adaptation areas (**Figure 1**). The remainder reported either mitigation (n=19), adaptation (n=7) or did not clearly mention to which area their reported needs belonged (n=14). Combining the two, a total of 72 countries reported needs for mitigation and 60 for adaptation. Further at the category level, only 16 and 9 countries reported needs for all three of the categories (finance, technology and capacity building) for mitigation and adaptation areas, respectively. Out of these, only five countries reported needs for all three categories in both mitigation and adaptation. These were Afghanistan, Chile, China, Malaysia and Palau. A more prevailing reporting style was to report one category out of the three, in both areas. Our analysis shows that overall, the majority of countries reported needs for only some areas and categories in the NCs and BURs.

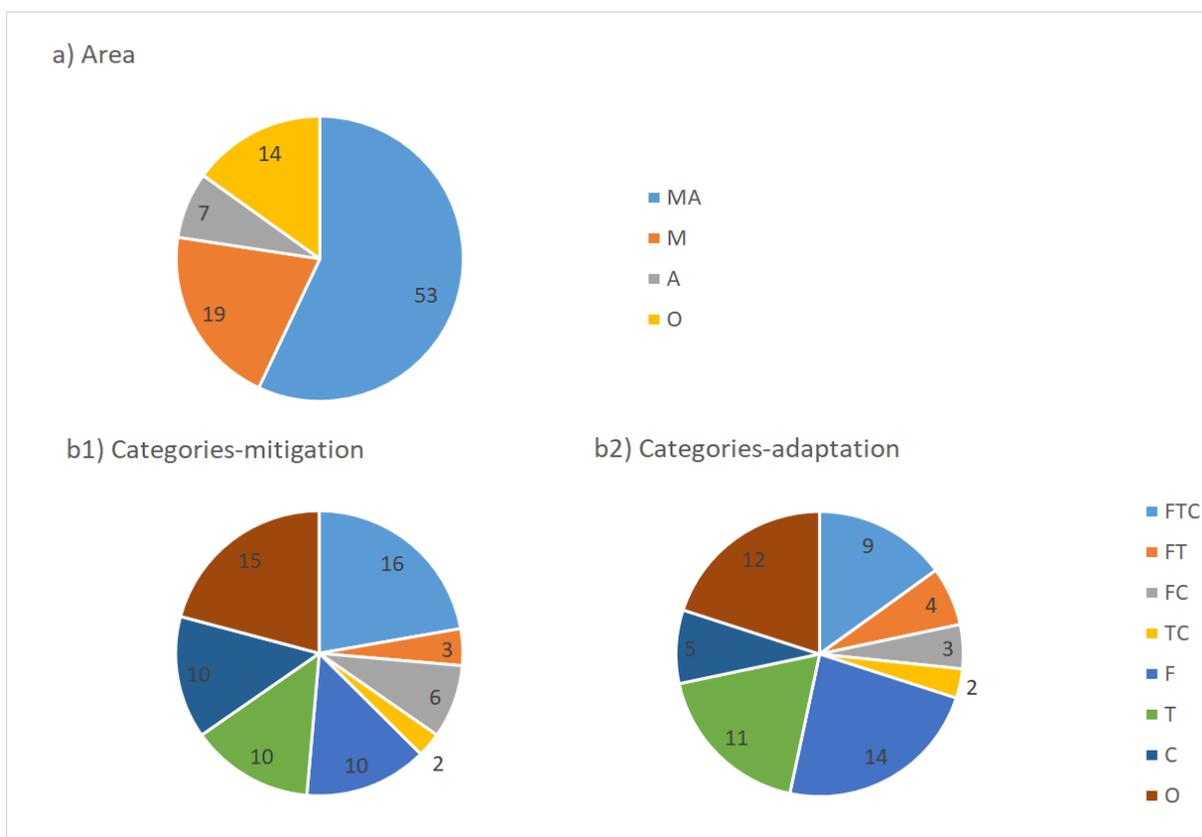


Figure 1 The number of developing countries reporting support needs in areas (a) and categories (b) (n=93), with the areas of mitigation (M), adaptation (A), both (MA) or others (O) and the categories of finance (F), technology (T), capacity building (C), others (O) or the combinations of F, T, and/or C.

4.2 Extent of countries specifying support needed

The group average scores of needs-specific index are presented in **Figure 2**. This average score for each country group can be treated as a baseline for the extent to which sub-category level countries specified their needs in NCs and BURs for each category in each area. The combined values represent the total scores of the three categories for mitigation and adaptation. As noted earlier, the possible index score per category was between 0 and around 50, and this high end means all of the sectors, contents and targeted actors were mentioned as relevant for support needed. This full range of reporting is unlikely to be realistic, as a country does not usually demand support for every action and actor. However, compared with the possible highest scores, we see that countries reported support needed at a modest level in their NCs and BURs. For instance, the group average score of the other developing country group for mitigation financial support is only 6, and this represents a country specifying needs for a few sectors (e.g., energy and forestry) with one or two specific contents (e.g., project activities and MRV) only. The same group reported the same type of needs for adaptation with a needs index score of 3 (half the score for mitigation financial support). This seems to be implying that a country specified its needs roughly for one sector with one of the contents only. Amongst the three groups, on average, the other developing country group conducted the most specific reporting on needs for mitigation, except for the category of technology. For adaptation, the high income group

carried out the most specific reporting for all three categories.

Countries in the LDCs/SIDS group reported needs the least specifically at the sub-category level for all three categories in both mitigation and adaptation areas. This is despite the anticipated high needs of LDCs/SIDS for climate actions. However, the average scores between the LDCs/SIDS group and the other developing country group for adaptation showed only a small difference, i.e. by 1 score. The difference in scores (4) for mitigation is more cause for concern, especially for finance. The average score (2) shows that a LDCs/SIDS country typically specified only one content as one of its mitigation financial needs. This largely limited reporting implies the majority of other potential needs are not visible from their NCs and BURs.

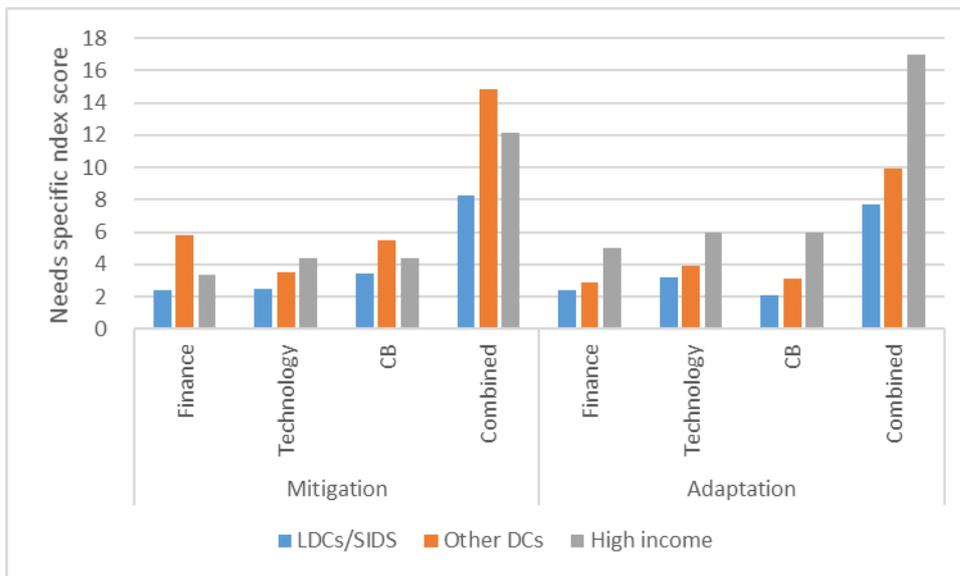


Figure 2 Needs-Specific Index scores for the three categories in mitigation and adaptation, summarised by country groups

The countries with the top 10 highest index scores for the combined three categories are shown in **Table 4**. Countries categorised as other developing countries dominated the top 10, except for Chile and Palau (both are high income countries). Chile marked the highest scores for both mitigation and adaptation areas. Chile, for example, specified needs for capacity building support in adaptation, containing four sectors, seven contents and five targeted actors. This level of needs specification is outstanding, compared with the average reporting in each group (**Figure 2**). Similarly, countries such as China, Indonesia and Malaysia were among the countries with the highest scores for both mitigation and adaptation. It is likely that these top reporting countries have established reporting systems on support needed in a specific and comprehensive manner. The top 10 countries also included LDCs/SIDS: Afghanistan and Cambodia for mitigation; Niger, Guinea-Bissau and Mauritania for adaptation. However, these countries appeared in the top 10 either for mitigation or for adaptation, which might imply a lack of systematic reporting on their specific needs for climate actions in both areas.

Table 4 Top 10 countries with higher Needs Specific Index scores for the three categories combined in mitigation and adaptation

Mitigation			Adaptation		
Country	Group	Total	Country	Group	Total
Chile	High income	49	Chile	High income	59
Cote D'ivoire	Other DCs	48	China	Other DCs	46
Ghana	Other DCs	44	Mongolia	Other DCs	44
Malaysia	Other DCs	44	Indonesia	Other DCs	29
China	Other DCs	39	Niger	LDCs/SIDs	27
Brazil	Other DCs	36	Malaysia	Other DCs	23
Afghanistan	LDCs/SIDs	29	Palau	High income	22
Pakistan	Other DCs	28	Egypt	Other DCs	21
Indonesia	Other DCs	27	Guinea-Bissau	LDCs/SIDs	21
Cambodia	LDCs/SIDs	23	Mauritania	LDCs/SIDs	19

4.3 Details of mitigation needs reported

In the mitigation area, the energy sector attracted the highest attention for needing support (**Figure 3**). Out of 72 countries which reported support needs for mitigation, 65 specified needs in the energy sector. Around 30 countries (half of the countries which specified needs for energy) specified needs for other sectors, namely forestry, agriculture, transport, cross-cutting and waste respectively. The industry sector received the least attention among all the sectors; only 19 countries mentioned needs for this sector.

Countries most frequently referred to specific technology types as the content of support needed, when the three categories were combined (**Figure 3**). A total of 52 countries mentioned this need, and many of them did so in relation to the three categories (not only for technology). Monitoring and MRV, project activities, policy and programmes, and training for technical expertise were other frequently mentioned needs. Around 30 to 40 countries expressed these as their needs for mitigation. Out of those needs, financial support was the most specified for project activities; while capacity building was specified for monitoring and MRV. On the other hand, needs required for an information platform, stakeholder networking, infrastructure and public awareness were less frequently mentioned, with 20 countries or less reporting these content items as their needs. Needs related to formal education were rarely counted in national reporting for mitigation.

A small number of countries (around 10 or less) referred to non-state actors as the target for support needed mainly for capacity building and some for financial support (i.e. the private sector. Common actors included sub-national agencies, the private sector and university and research groups in order of frequency. Other actors, such as NGOs, children or the elderly were not specifically mentioned.

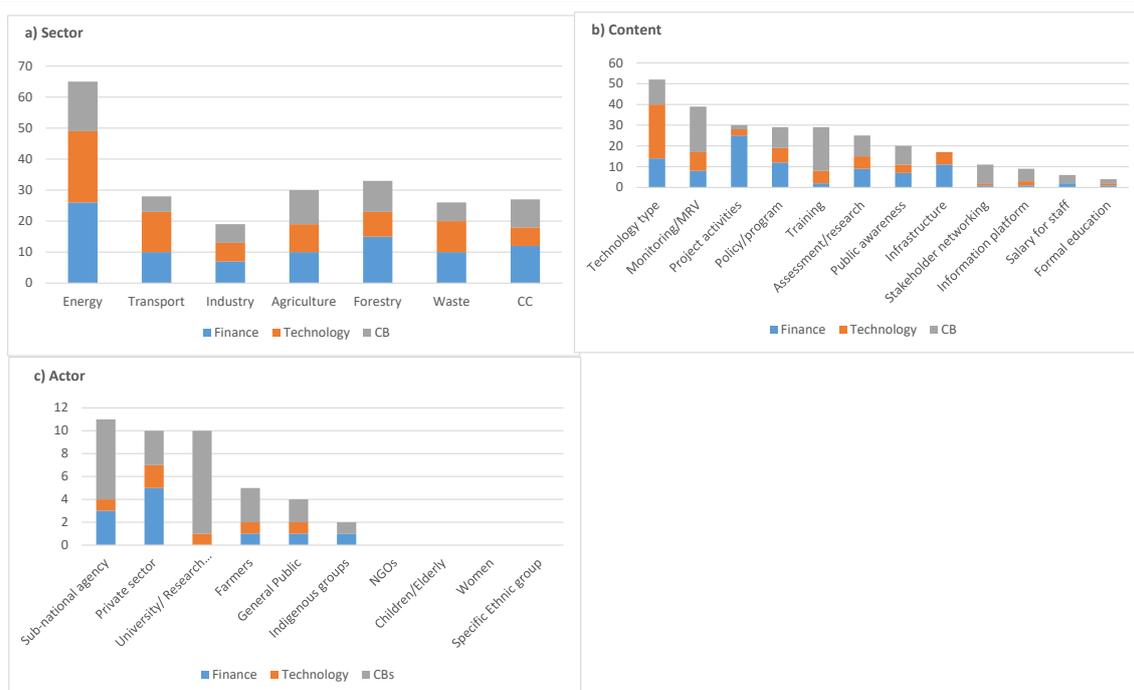


Figure 3 Number of developing countries reporting support needed for mitigation at the sub-category level, summarised by sector (a), content (b) and actor (c)

We observed a trend whereby countries in the LDCs/SIDS group reported less specified needs for mitigation finance applied to all the contents examined (**Figure 4**). Out of these, it is worth highlighting that while 46% of the other developing country group ($n=16$) expressed that financial support was needed for project activities, only 24% of the LDCs/SIDS group included this need ($n=7$). This can also be related to the finding that while 43% of the other developing country group reported their financial needs with exact cost estimates, only a few of the LDCs/SIDS group did so in their NCs and BURs (**Table 5**). Description of support needed for project activities tended to contain more specific information, such as cost estimates or time schedules, as those activities are usually closer to implementation. The LDCs/SIDS group tended to lag behind reporting on project activities including cost estimates, falling behind the other developing country group.

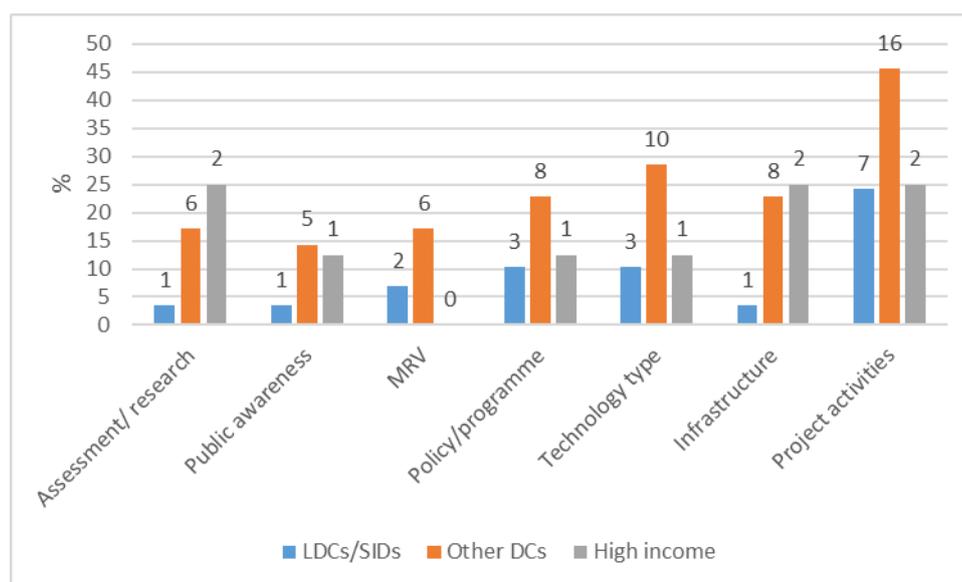


Figure 4 Distribution of developing countries reporting support needs for finance in mitigation, summarised by contents and country groups (n=72). Numbers within the graph indicate the actual number of countries that reported needs for each of the contents. Contents with the total number of countries indicating needs lower than 5 are not included.

Table 5 Number of countries with cost estimates for financial support in mitigation

Groups	n	%
LDCs/SIDS	2	7
Others	15	43
High income	2	25

4.4 Details of adaptation needs reported

In the adaptation area, countries most frequently reported that support was needed for the water and agriculture sectors, when the three categories were combined (**Figure 5**). However, the frequency of these sectors mentioned (n=28) is less than half of that for the energy sector in mitigation (**Figure 3**). Other sectors like coastal management, disaster management, natural resources and biodiversity, and health were less prevalent but also mentioned. The remaining sectors, such as infrastructure, energy, tourism, education and insurance, were rarely included.

The largest number of countries (n=31) reported that they needed support on assessment and research for adaptation. Compared to the support needed for mitigation, this indicates that many countries are eager to deepen or test their understanding of the potential areas for adaptation before taking any concrete actions. The trend of reporting on other types of contents was similar in adaptation as it was in mitigation. For instance, technology types, monitoring and MRV, training for technical expertise, project activities, and policy and programmes were relatively often highlighted as needs. A few countries mentioned information platforms and formal education as their needs.

Similar to mitigation, not many countries referred to non-state actors as the target of support needed for adaptation. The general public was more frequently mentioned than the private sector in adaptation. Clearly, those who are the most vulnerable to climate change are not particularly emphasised as the target of support needed in adaptation (e.g. farmers, Indigenous peoples and women).

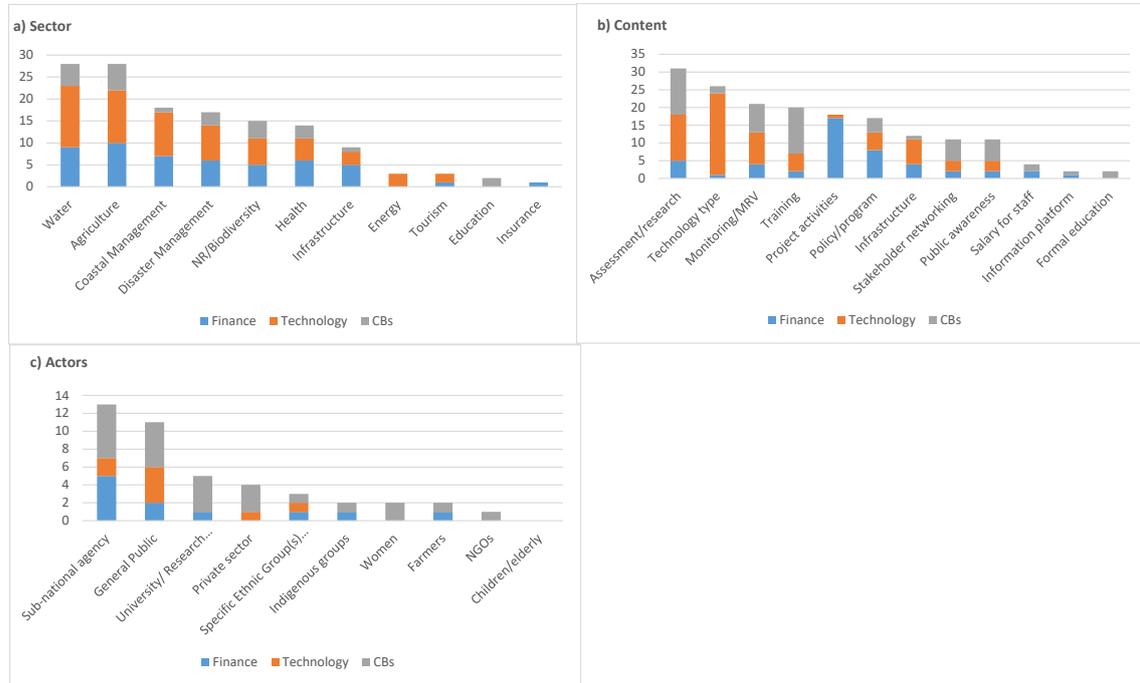


Figure 5 Number of developing countries reporting support needed for adaptation at the sub-category level, summarised by sector (a), content (b) and actor (c)

Unlike with mitigation, we did not observe particularly outstanding reports of support needed by the LDCs/SIDS group or the other DCs group. Since both groups have less specified needs for adaptation than for mitigation, the observable difference is naturally small for adaptation (Figure 2). One possible exception could be financial support needs for policy and programmes. None of the LDCs/SIDS group specified that support was needed for this particular content (Figure 6). This might mean that some LDCs/SIDS do not yet prioritise developing or improving policy and programmes for adaptation, thus no support is needed. Alternatively, this might mean that those needs are not captured well in national reporting.

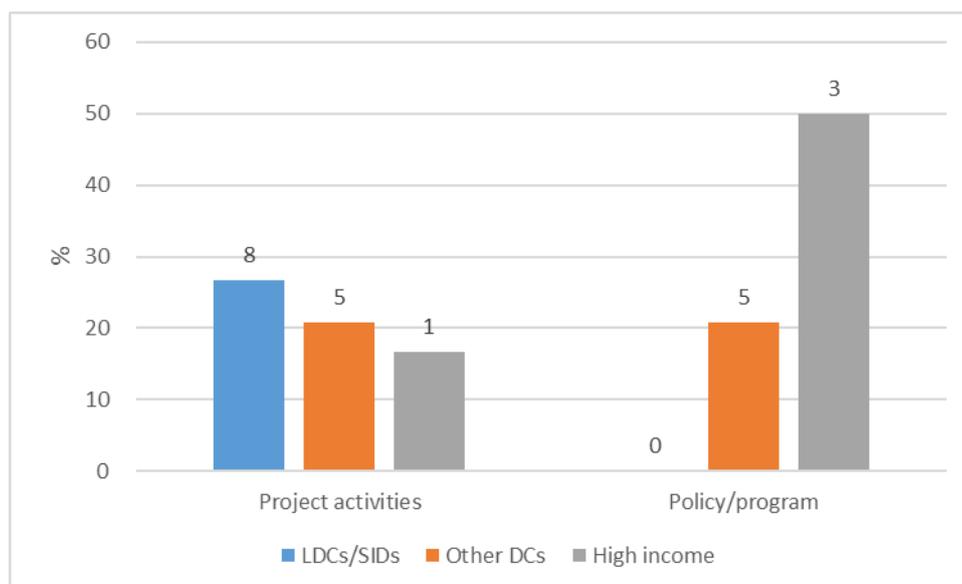


Figure 6 Distribution of developing countries reporting support needs for finance in adaptation, summarised by contents and country groups (n=60). Numbers within the graph indicate the actual number of countries that reported needs for each of the contents. Contents with the total number of countries indicating needs lower than 5 are excluded.

5. Discussion and conclusions

International support for developing countries is indispensable for accelerating climate actions to tackle climate change. Assessing the reported needs in NCs and BURs showed that most developing countries had limited experience with reporting support needed in a comprehensive and specific manner. Only a handful of countries reported needs for the three categories of support in both mitigation and adaptation areas. The majority of countries reported support needed for only some of those areas and categories, and when they did, they specified needs for a few sectors with one or two specific contents at the most. This state of largely incomplete reporting on support needed must be recognised or reaffirmed before entering into the PA's ETF reporting on support needed and the Global Stocktake.

While there were certainly exceptions to this trend, these were only limited. Some middle- to high-income countries managed to report support needed in a comprehensive and specific manner. These developing countries with advanced reporting should be further investigated and could be good examples for others to follow in the near future, including how they implemented systematic national reporting on support needed. What is important to highlight here is that countries in the LDCs/SIDS group were the least specific in reporting their needs, despite having higher existing needs. This trend was particularly obvious in reporting of financial support needed for mitigation and less obvious for adaptation. In adaptation, it was too early to assess differences in reporting among country groups, given that both country groups similarly had moderate reporting in adaptation rather than mitigation. This also confirms that the most vulnerable countries did not necessarily forcefully report their essential needs. If we presume that identifying and reporting on the support needed are ways to attract

necessary support, current NCs and BURs alone do not provide information to fulfil this purpose. Necessary support is unlikely to be forthcoming based on the way current national reporting is prepared.

One of the ways to move forward and improve how new ETF rules are implemented is to call for more capacity building activities (Pauw et al., 2019; Khan et al., 2020). However, we argue such activities are not the only way to ensure that necessary support is correctly directed. First, as highlighted above, only a small number of countries to date have reported relatively well on what support they needed. That means there are many countries which would require additional capacity building activities, and implementing these will take time (Umemiya et al., 2017). Non-existence of established methodologies for identification of support needed is likely to make this more complex (Garrett and Moarif, 2018). Second, since reporting on support needed is not mandatory and not subject to international review in the ETF, it would be no surprise if some or many developing countries were not particularly eager to commit to additional capacity building activities. Third, unless reported needs can actually connect developing countries with the support they require, it is not reasonable to expect developing countries to do more for reporting. Their additional efforts should be balanced with the benefits of reporting (Weikmans et al., 2020), which have yet to become clear.

To conclude, we found that national reporting on support needed for mitigation and adaptation can be improved in terms of comprehensiveness and specificity. Aside from a few developing countries with advanced reporting, many still lag behind with their national reporting systems. Changing this through additional capacity building activities alone would not be feasible for some countries in the near term. Therefore, we believe there should be other approaches to cover the information on support needed at the country level, including the use of other existing mechanisms dealing with information on support under the UNFCCC (Garrett and Moarif, 2018). What is absolutely essential is that information collected through national reporting and other mechanisms should be beneficial and can connect with the necessary support, so that more countries will be able to choose to implement more ambitious NDCs.

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