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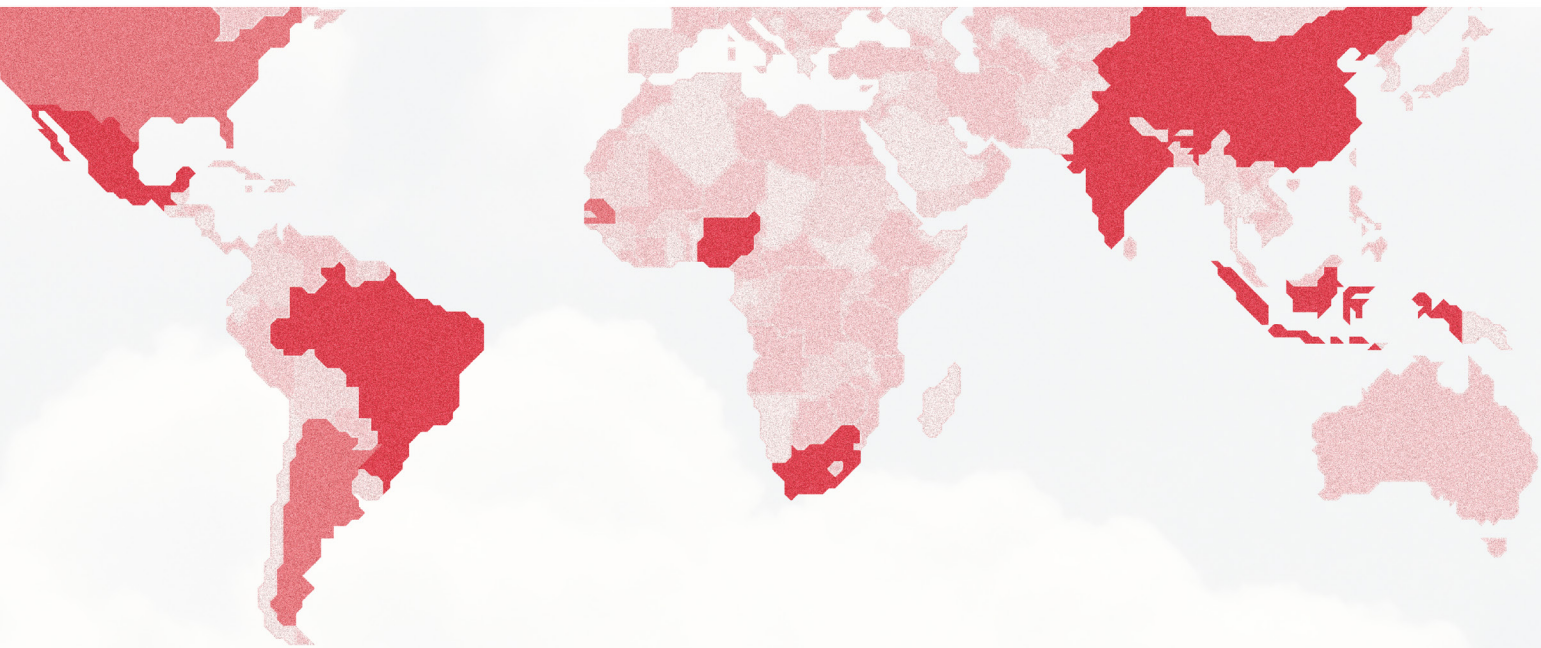
LESSONS FROM GST1 AND LATEST NDCs

STRENGTHENING THE LINK BETWEEN THE GLOBAL STOCKTAKE AND NATIONAL CLIMATE ACTION

Insights for GST2 and future NDC cycles



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Disclaimer

EXECUTIVE SUMMARY

The first Global Stocktake (GST1), concluded at COP28, was intended to inform the next round of Nationally Determined Contributions (NDCs) and enhance international cooperation under the Paris Agreement. As a key element of the Agreement's ambition mechanism, much expectation was generated to the question of the uptake of the GST outcome in the subsequent NDCs. The starting point was the lack of specific requirements for how Parties may consider the GST outcome and an appreciation on how challenging it is to translate global signals into national targets and policies in practice, including considerations of domestic priorities, capacities, fairness and development realities.

The GST1 outcome was judged to have sent important signals and fostered knowledge and learning on key aspects of low-emission transitions (Obergassel *et al.*, 2025) and to have helped frame non-party stakeholder action and investment narratives, specifically on the energy signals (OECD-IEA, 2026). Now that the cycle is finalised, with most updated NDCs on the table, an important policy question is raised: how did countries interpret GST1, and which factors determined whether its outcomes were reflected in NDCs? And most importantly, how GST1 influenced broader national policymaking?

This paper addresses this question through a political analysis of the operative language of the GST mitigation outcome, a review of the literature on possible indicators for operationalising GST1 targets, an assessment of recent NDCs, and a bottom-up analysis of the evolution of fossil fuel transition policies in ten countries illustrating how GST1 and national policy developments may interact and influence each other.

First, the analysis demonstrates that not all GST mitigation provisions carry the same political weight. Paragraphs using stronger operative language such as "calls on", "requests", and "should" are considered more likely to be addressed in NDCs than softer formulations such as "encourages" or "notes". Stronger mandates suggest readiness to advance in that specific area, including the energy package of GST1.

Second, the analysis finds that policy measures and indicators proposed in the literature for translating the GST outcomes into national contexts have mostly not been used in NDCs. While countries are reflecting many GST1 themes in their NDCs, they often do so implicitly rather than through direct reference to GST1 paragraphs. Most analysed NDCs include measures relating to renewable energy, transport, methane reduction, or ecosystem protection, even where explicit GST references remain limited.

Third, the consideration of GST outcomes is strongly mediated by national political economy realities. Energy security, industrial development, affordability, fiscal pressures, and just transition concerns significantly shape how countries interpret and operationalise GST1 signals. Public debate and domestic policy discussions on transition pathways are reported to be framed less as compliance with global mandates and more as nationally contextualised development strategies, which represents a positive step compared to previous NDCs in terms of country ownership and relevance, recognised as key preconditions for triggering action. Nevertheless a few countries refer to positive GST effects in national policymaking, i.e. creating conditions for more ambitious or robust decision-making.

Fourth, in the context of fossil fuel transitions, GST1 has so far been more effective at influencing national policies and targets with regards to the phase-in of clean technologies than at driving explicit fossil fuel phase-out commitments. Expert interviews highlight that many countries have strengthened renewable energy deployment, electrification, methane reduction, and efficiency measures following GST1 signals. Some countries also signal a pragmatic 'phase-down' of fossil fuels and only a few have policies in place to reduce production or phase out fossil fuel subsidies.

Overall, the findings show that **GST1 has influenced national policymaking in different ways beyond NDCs**. While it remains important to reflect on how to improve the GST-to-NDC link, a key conclusion is

that GST uptake holds significant potential to inform national policymaking, and particularly the implementation agenda, and this has implications for the design of GST2. Through the analysis conducted of GST1 and its link to national policy making, this report provides insights and lessons for GST2:

- **Use of both top down and bottom up approaches.** Global approaches are important to send signals and foster accountability, but country-level evidence is also needed to identify actionable measures that will close the implementation gap. Therefore, the GST **Information Collection,** should better consider country-level evidence, implementation experiences, and national planning instruments. The key challenge and future research question for GST2 design is to unpack which country-level information is key and how it should be synthesised into outcomes that can speak to a diversity of countries.
- **Enhance inclusiveness and participation in the Technical Dialogue.** GST1 provided a good basis for engagement and inclusiveness, producing good results. This could be strengthened through targeted knowledge and capacity support, and expanded regional engagement to improve the legitimacy, representativeness, and practical relevance of GST outcomes. This should include mobilising actors that can take action on the ground, to drive implementation.
- **Improve the transition from technical findings to political outcomes**. One of the main limitations of GST1 was that technical findings were not systematically reflected in political outcomes. GST2 should allow sufficient time and clear planning on how the technical findings will be considered in the political phase to translate insights into actionable guidance for NDC enhancement.
- **Incorporate development priorities**. Embedding GST signals within development narratives such as energy sovereignty, green industrialisation and, economic resilience could strengthen country ownership and political feasibility while still maintaining convergence toward collective global transition goals.
- **Enhance reporting and transparency through the ICTU template** by harmonising reporting approaches to ICTU section 4c (how the country's preparation of the NDC has been informed by the outcomes of the GST). Combined with further requirements and guidance, would facilitate the inclusion of GST outcomes in the respective NDCs
- **Strengthen the implementation focus of GST outcomes** by complementing "GST to NDCs" with "GST to implementation," including stronger links to implementation tools such as the Action Agenda. A structured assessment of progress made in responding to the signals from GST1 will also be key to derive learnings on progress and gaps.

INTRODUCTION

The conclusion of the first Global Stocktake (GST) at COP28 in 2023 marked a milestone in the implementation of the Paris Agreement (PA). Conducted every five years, as outlined in Article 14 of the PA, the GST is designed to assess collective progress towards the Agreement's long-term goals. Its dual functions are both backward-looking—taking stock of action taken thus far—and forward-looking—encouraging enhanced ambition and cooperation for the future (Northrop *et al.*, 2018). Article 14.3 makes this forward-looking role explicit, stating that the GST shall inform Parties in updating and enhancing their actions and support in a nationally determined manner, as well as in strengthening international cooperation (UNFCCC, 2015). In particular, the outcomes of the GST are intended to guide the next round of nationally determined contributions (NDCs) (UNFCCC, 2015, Article 4.9).

The first GST delivered a comprehensive assessment of global progress on a range of issues, including, but not limited to, mitigation, adaptation, and means of implementation. This evaluation emphasised both achievements and shortfalls. The outcome decision included a broad range of mitigation-related signals, including calls relating to renewable energy, energy efficiency, fossil fuels, and transport. As the first full test of the Paris Agreement's "ambition mechanism", GST1 was expected to play a central role in shaping the next round of NDCs and broader national climate strategies.

While the GST process has been analyzed in terms of its design, legitimacy, and role in the Paris Agreement's ambition cycle (Herrera *et al.*, 2025; Moosmann *et al.*, 2024; Obergassel *et al.*, 2025; Winkler *et al.*, 2024), an important next question arises: how could its outcomes be reflected in the next generation of NDCs? How has this translation to the national level actually taken place? The effectiveness of the GST is ultimately dependent on the translation of its global-level findings into domestic action and international cooperation efforts, making these questions central to the credibility and success of the PA, and of climate action more broadly.

This research paper aims to assess how the outcomes of the first GST are being translated into national climate commitments and policies, particularly through NDCs. It analyses the legal strength of mitigation-related GST provisions, reviews literature recommendations for incorporating GST outcomes into NDCs, and evaluates whether countries are operationalising these recommendations by analyzing submitted NDCs and through a questionnaire to in-country experts to see how GST outcomes on transition away from fossil fuels have impacted national policy. Through the analysis conducted, this report provides insights and lessons for GST2, without providing a blueprint of its design, which will require further research.

1 ANALYSIS OF THE OPERATIVE VERBS IN THE GST1 MITIGATION SECTION

As the decision resulting from the first GST is not legally binding in itself, it is important to examine which elements of the decision use stronger language and therefore carry greater pressure to perform (Legal Response International, 2024). This chapter conducts an examination of the operative verbs of the GST decision, with the objective of determining the relative importance of its different elements. The guiding question is: which aspects of the GST decision are of particular importance and should therefore be reflected in more detail in the NDCs?

To address this, the present study focuses on the mitigation section of the decision, with particular attention to the operative verbs, which are italicized in the text and used in the operative part of COP decisions to convey actions or directives (Duvic-Paoli *et al.*, 2024). The verbs "decides" and "agrees", for example, are the strongest verbs used in United Nations negotiations and decisions. In contrast, the verb "invites" leaves the Parties with complete discretion over whether to accept or comply with the solicitation.

For the purposes of this study, the operative verbs used in the mitigation part of the GST decision have been categorized into four distinct groups, arranged in order of descending constraint, with the interpretation of their weight informed by relevant guidelines (Duvic-Paoli *et al.*, 2024; Legal Response International, 2010). The table below provides an overview of these classifications.

Based on the analysis of the decision's operative verbs, we propose to group the mitigation section paragraphs in two groups: Paragraphs exhibiting a stronger political weight are considered more likely to be addressed substantivelyin NDCs (see table below). By contrast, the remaining paragraphs seem less likely to require

Table 1. Classification of the operative verbs of the GST decision

Operative verbs	Legal strength	Interpretation
Decides /resolves/shall/obliges	Strongest form of obligation	To be reflected in NDCs
Requests/ urges / calls on / calls for/should	Strong encouragement/directive (no obligation)	To be reflected in NDCs
Encourages / Invites	Voluntary suggestion (soft guidance)	Could be reflected in NDCs
Welcomes / Notes / Recognizes / Acknowledges/ Commends/ Emphasizes	No directive – declaratory only	Could be reflected in NDCs

Table 2. Classification of the GST mandates[1]

18-42	Mitigation Section	Operative Verb	Interpretation
28a	Renewable energy	*calls on Parties*	
28a	Energy efficiency	*calls on Parties*	
28b	Coal power phase-down	*calls on Parties*	
28c	Net zero emission energy systems	*calls on Parties*	
28d	Transitioning away from fossil fuels	*calls on Parties*	
28e	Zero- and low-emission technologies	*calls on Parties*	Relatively strong mandates
28f	Non-CO_2 emissions	*calls on Parties*	
28g	Road transport	*calls on Parties*	
28h	Fossil fuel subsidies	*calls on Parties*	
37	2030 targets in NDCs	*requests Parties*	
38	Economy-wide absolute emission reduction targets	*Recalls that Parties should*	
35	Oceans and coastal ecosystems	*invites Parties*	
39	ambitious, economy-wide emission reduction targets, covering all greenhouse gases, sectors and categories; 1.5 °C alignment	*encourages Parties*	
40	LT-LEDS Alignment	*encourages Parties*	Weaker mandates
33	nature, ecosystems and deforestation, forest degradation	*emphasizes*	
34	support and investment on deforestation	*notes*	
36	Sustainable lifestyles, sustainable consumption and production and circular economy	*notes*	

1 The table above does not contain all paragraphs of the mitigation section as some paragraphs are mere statements. The analysis focuses on those paragraphs that either address Parties directly or that contain new elements (e.g. such as paragraph 33,34,36).

comparable engagement, given their comparatively less political weight.

Table 2 shows that stronger language is located in the so-called "energy package" of GST1, i.e. the goals for renewable energy, energy efficiency, transition away from fossil fuel, etc., and also in the emissions and NDC targets. This may show readiness to advance on those goals, compared to those with weaker mandates, as parties tend to use a softer language where they want flexibility to implement a decision.

2 LITERATURE REVIEW: TRANSLATING GST OUTCOMES INTO NDCs

Having determined the relative strengths of the different elements of the GST decision, the question is how specifically to operationalize these elements in NDCs. There already is a large body of existing literature that proposes domestic measures that directly relate to the global efforts agreed in the first GST on mitigation. The literature also suggests indicators that could be used to track progress.

Methodology

The selection of relevant literature followed a web-based search strategy using key terms such as *"Global Stocktake"*, *"NDC 3.0"* and *"implementation"*. In addition to general keyword searches, the NDC Navigator platform (https://ndcnavigator.org/) was systematically screened for relevant reports and analyses. Further sources were identified through references in the reviewed documents as well as through recommendations and exchanges within professional networks. Given that the GST decision is relatively recent, the review concentrated primarily on policy papers and reports, as there has not yet been sufficient time for a substantial body of peer-reviewed academic literature to emerge. In conducting the search, particular attention was paid to identifying literature that addresses the different themes and sectors covered in the mitigation section of the GST decision. The objective of this was to capture as comprehensive a picture as possible of the suggestions and measures proposed. As a starting point, the publications by Moosmann and Pischke (2024) and Jeudy-Hugo *et al.* (2024) were especially valuable, as they provided an initial overview of how the GST could inform national action. Building on this foundation, the present review sought to examine the broader body of literature to determine whether additional policy measures and indicators have been proposed that could guide Parties in reflecting the GST outcomes in their NDCs.

The entire body of literature identified through this process was then systematically analyzed for references to policy measures at the national level and to indicators. This was done through a combination of manual screening and the use of the AI research tool NotebookLM to support the identification of relevant passages. In this way, the review was able to extract concrete proposals and practical suggestions from the literature, which were subsequently organized and consolidated into the results table presented in the annex.

Translating the calls of the GST decision to domestic action

The literature review identified a broad range of proposals on how Parties could translate the outcomes of the GST into national contexts. In order to present these findings in a systematic and accessible way, the identified policy measures and indicators have been compiled into a consolidated table (see annex).

The table presented in the annex provides an overview of the wide range of policy measures and indicators proposed in the literature for translating the GST outcomes into national contexts. The categorization of the suggested measures and indicators makes it possible to identify areas where multiple sources

converge on similar approaches, as well as areas where only a few contributions exist.

Some GST provisions are supported by a wide range of proposals, while others are less well covered. For instance, paragraph 28(c) on net-zero energy systems and paragraph 28(e) on zero- and low-emission technologies are addressed in relatively few publications. Some of the proposed measures for 28(c) and 28(e) - renewable energy deployment or vehicle fleet electrification - overlap with measures that are discussed in connection with other provisions.

With regard to paragraph 33, which relates to the environment, including ecosystems and deforestation, many measures have been suggested in the literature given the broad scope of the paragraph.

These observations point to a number of underlying issues that make it difficult for Parties to implement the GST calls and to reflect them consistently in their NDCs. Against this backdrop, several challenges emerge for Parties seeking to implement the GST calls and reflect them in their NDCs:

1. From global to national

A first challenge stems from the fact that the mitigation calls of the GST decision are, by design, formulated at the global level. This reflects the architecture of the PA, which is built on the principle of bottom-up nationally determined climate action. However, as Jeudy-Hugo *et al.* (2024) emphasize, this global framing creates the need for Parties to develop national and regional roadmaps that define how the collective ambition can be translated into the pace and scale of action required in their national contexts. This raises the question of what the 'fair share' of these mitigation efforts should be for different countries. Grant *et al.* (2024) argue that there is a need for national and regional roadmaps to translate global calls into specific local actions.

2. Ambiguity

A second challenge relates to the degree of ambiguity within the GST. Some provisions are framed in quantitative terms—such as tripling global renewable energy capacity or doubling energy efficiency—while others are expressed in more qualitative language like the calls to "transition away from fossil fuels" or to "phase out inefficient subsidies." The ambiguity of the formulations is a result of difficult negotiations and the necessity to find a middle ground. Nevertheless, these qualitative formulations leave considerable room for interpretation, particularly regarding the speed and scale of reductions expected (Jeudy-Hugo *et al.*, 2024). This ambiguity can complicate efforts to design clear and measurable national targets, and may also make it harder to assess whether collective progress is on track.

3. Interlinkages

Finally, the analysis shows a strong interdependence of measures across different GST provisions. For instance, the expansion of renewable energy is identified in several policy measures as a solution to the various GST calls. The same can be said of the decarbonisation of transport. Transport decarbonisation is not only important for the GST call regarding the road sector, but also crucial for achieving the broader goals of the GST to transition away from fossil fuels in energy systems, increase renewable energy capacity, and double energy efficiency by 2030 (International Transport Forum, 2024). One beneficial aspect is that synergies between certain measures are evident. However, this complicates the process of clearly allocating specific measures to individual calls.

3 ASSESSMENT OF NDCs

Following the conclusion of GST1 at COP28 in Dubai, Parties were mandated to demonstrate in their 2025 NDC submissions how the GST outcomes informed their updated climate targets and policies. This section illustrates how the GST is reflected in the seven NDCs of the countries which are represented in the JustPath project consortium (Brazil, China, India, Indonesia, Mexico, Nigeria and South Africa; omitting only the USA because the Trump administration has disowned the NDC submitted by the Biden administration). The analysis evaluates the extent to which eleven mitigation-related paragraphs of GST1 have been integrated into the 2025 NDCs.

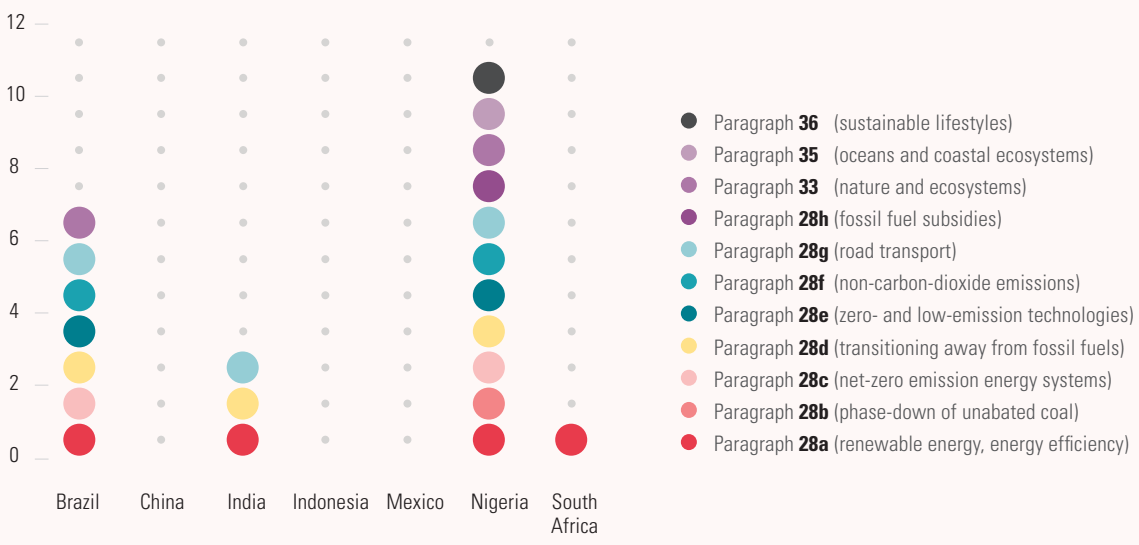
Methodology

The references to the paragraphs were identified in the NDC documents through means of keyword searches. It was observed that a significant proportion of NDCs make reference to the GST throughout their entire NDC. Therefore, the analysis encompasses not only Section 4, 'Planning Processes', subsection 4c of the Information to Facilitate Clarity, Transparency, and Understanding (ICTU) guidance, where Parties are required to explain how GST results informed the NDC, but also the remainder of the NDC document. The first step of the analysis was to determine whether the GST was mentioned in the NDCs. The second step was to find out if there were any references to the paragraphs of the GST mitigation outcomes that had been selected. A paragraph is explicitly mentioned when the NDC cites the paragraph number, the wording of the GST decision or makes an explicit reference to the GST decision. The other category, 'topic mentioned', means that the NDC includes a topic (e.g. transport) that could possibly refer to one of the chosen paragraphs, but does not link it to the GST.

Analysis

All of the analysed country NDCs mention the GST. However, there is significant variation between countries in terms of the extent to which they address specific elements of the GST mitigation outcome. The assessment of the seven NDCs has shown that only four refer to some of the analysed GST paragraphs explicitly (see **Figure 1**).

Figure 1. GST paragraphs explicitly mentioned in analysed NDCs



However, it is noteworthy that the subjects addressed in the eleven selected GST paragraphs are mostly reflected in the analysed NDCs.The figure below shows that most NDCs include a majority of the topics without a GST reference (see **Figure 2**).

This figure shows that most policy measures could be found relating to coastal ecosystems (paragraph 35), sustainable lifestyles (paragraph 36), renewable energy and energy efficiency (28a) and transport (28g). Most quantified targets could be found in the NDC regarding renewables and energy efficiency (28a) and coastal ecosystems (paragraph 35). [F3]

Based on the analysis of the operative verbs in the GST paragraphs, findings could have shown whether the paragraphs containing stronger language (e.g. paragraphs 28 "calls on the Parties") are more more likely to be substantively addressed in NDCsin the analysed NDCs than those paragraphs with weaker language. However, this hypothesis could not be confirmed. Further research with a bigger number of NDCs could provide more conclusive results.

The subsequent section presents further results by country. Further information is provided on whether the NDCs refer to policies or targets, or whether it merely contains general statements regarding the GST mitigation paragraphs. In addition, it emphasises the manner and extent to which nations document the phase-down of unabated coal power (28b) and the transition away from fossil fuels in energy systems (28d) within their NDCs.

Figure 2. Policies and targets in selected NDCs

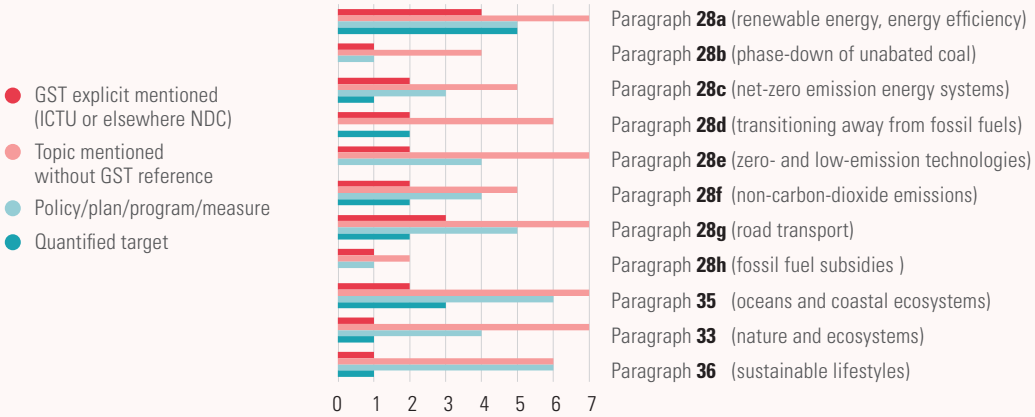
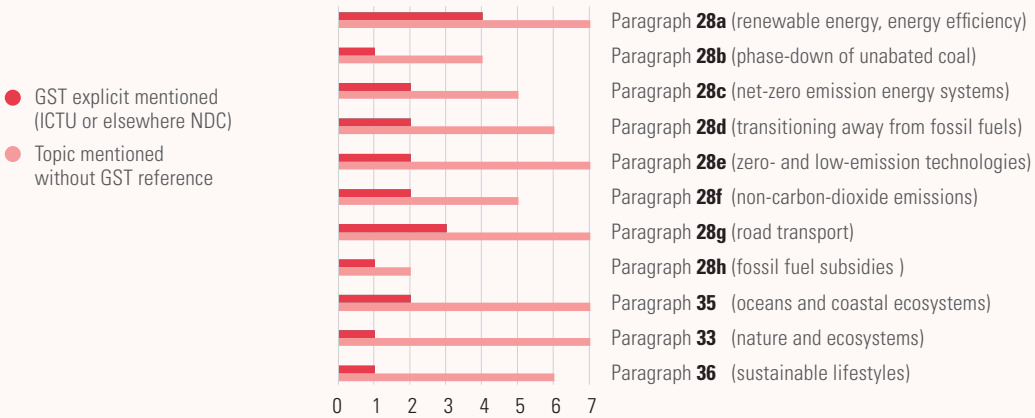
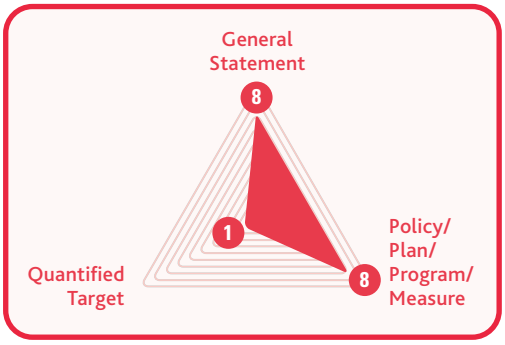


Figure 3. Correlation between stronger language and NDC uptake



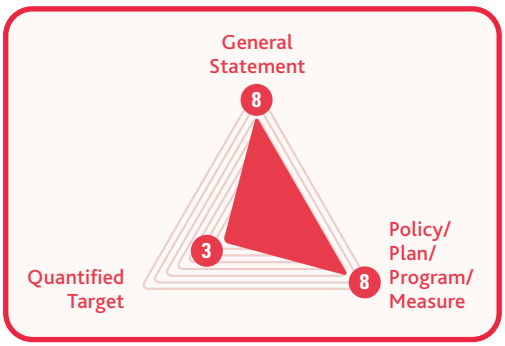
Brazil



The Brazilian NDC takes up the GST decision extensively. It uses the ICTU template and contains an extensive subsection (4c), in which the country explains how the NDC is informed by the outcomes of the GST. The Brazilian NDC refers to the majority of the analysed paragraphs explicitly, except for 28b (coal phase-down) and 28h (phasing out inefficient fossil fuel subsidies). The NDC refers to large number of concrete policies and measures such as references to Funds and the Pact for Ecological Transformation, in particular in relation to renewable energy and energy efficiency (GST para 28a), cleaner fuels (28c), accelerating technologies such as Carbon Capture and Storage and hydrogen (28e), non-CO_2 gases (28f), transport (28g), and deforestation (33). The paragraphs on oceans (para 35) and circulatory (para 36) are not explicitly referenced but the topics are mentioned in general statements. Furthermore, policies concerning these two matters can be found in the NDC. The NDC includes quantified targets to increase the share of biofuels in transport (28g).

On transitioning away from fossil fuels (28d), the NDC includes a general statement that "Brazil would welcome the launching of international work for the definition of schedules for transitioning away from fossil fuels in energy systems (...)" (Brazilian Government, 2024, p. 30) and other general statements but no specific policies or targets.

China

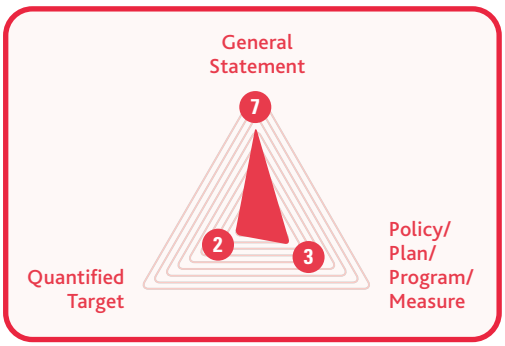


China only adopts the signals from the GST decision to a very limited extent. The Chinese NDC does not use the ICTU template. It refers to the term 'global stocktake' twice. According to the NDC, it was developed in light of the resolution on the first GST (People's Republic of China, 2025). Compared to other NDCs, however, China's does not explicitly refer to any of the paragraphs in the GST mitigation section. Nevertheless, China refers to almost all of the topics of the analysed GST paragraphs. The only topics not mentioned in the NDC are transitioning away from fossil fuels in energy systems (GSTdecision para 28d) and phasing out inefficient fossil fuel subsidies (para 28h).

The NDC refers to a substantial number of concrete policies and measures, such as the Renewable Energy Law, Industrial Energy Efficiency Enhancement Action Plan, Hong Kong Hydrogen Energy Development Strategy, Methane Emission Control Action Plan', Hong Kong Electric Vehicle Roadmap and the Circular Economy Promotion Law. It was only with regard to paragraphs 28c, 28d and 28h that no policies could be found. The Chinese NDC contains several targets with regard to paragraph 28a, 28g and 35.

Regarding fossil fuels, China's NDC mentions the goal of driving a comprehensive shift towards low-carbon energy consumption, but also aims to enhance the clean and efficient utilisation of fossil energy, including new generation coal power (People's Republic of China, 2025). Therefore, no passage covers paragraph 28d.

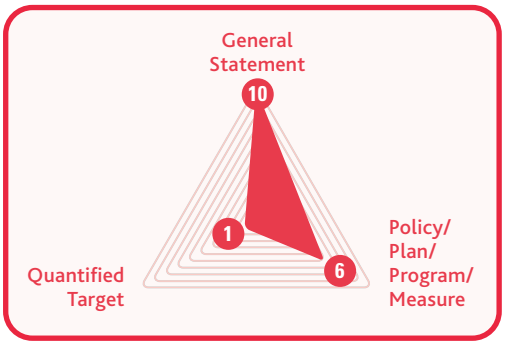
India



The NDC of India reflects the GST mitigation outcomes only to a limited extent. The country states that it "has considered the outcomes of the first Global Stocktake" (Government of India, 2026, p. 7). Apart from this statement, the GST is only mentioned under ICTU 4c, where four of the paragraphs considered by this analysis are explicitly referenced: renewable energy (28a), road transport (28g) and India's interpretation of paragraph 28d (fossil fuel phase-out). A reference is made to the "increasing share of non-fossil fuel-based electric power installed capacity" (Government of India, 2026, p.24).

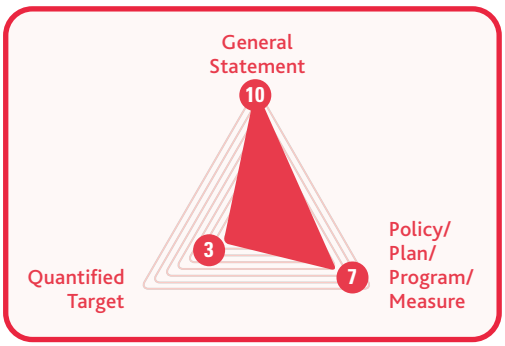
The Indian NDC addresses the topics of seven of the eleven analysed paragraphs. It does not mention coal (28b), zero- and low-carbon fuels (28c), non-carbon-dioxide emissions (28f), or fossil fuel subsidies (28h).
In most cases, when the topic of a GST paragraph is mentioned, the NDC provides only general statements. There are, however, two targets stated: one target concerning carbon sinks can be attributed to paragraph 33 (nature and ecosystems). The other target is connected to paragraph 28d. The goal here is "to achieve about 60 percent cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2035, with the help of transfer of technology and low-cost international finance" (Government of India, 2026, p. 9). A total of three policies relating to the analysed paragraphs of the GST outcome were identified. The relevant policy initiatives mentioned in the NDC are the Green Hydrogen Mission, the Carbon Capture, Utilization and Storage framework, the National Action Plan on Climate Change, and Mission LiFE.
As mentioned above, the NDC of India barely mentions fossil fuels (GST paragraphs 28b/28d). The term "coal" is completely absent from the NDC.

Indonesia



The NDC of Indonesia reflects the GST decision to a very limited extent. The NDC uses elements of the ICTU template, but this does not include subsection 4c. The NDC states that it "has considered the outcomes of the First GST" (Republic of Indonesia, 2025, p. 4), but no explicit reference to any of the analysed paragraphs could be found. Nevertheless, the topics of most of the analysed paragraphs can be found in the NDC. The NDC of Indonesia comprises general statements regarding these topics, as well as a number of policies. One quantified target that could be identified relates to the primary energy supply mix, with shares of new and renewable energy in 2060.
Fossil fuels are barely mentioned in the NDC. Indonesia presents itself as one of the pioneer countries for fossil fuel subsidy reform policy. The only reference to paragraph 28d found is as follows: "With regard to reduce its dependency towards oil and gas imports, Indonesia is developing new refineries to upscale production as well as green refineries to produce various drop-in green fuels from bio-resources and partly mixed with existing fuels in order to increase biofuel content and reduce fossil fuel consumption" (Republic of Indonesia, 2025, p. 11).

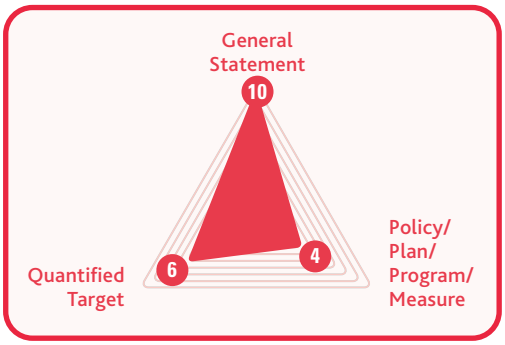
Mexico



The Mexican NDC does not explicitly mention the signals derived from the GST decision either. It uses the ICTU template and contains a brief subsection stating that its latest NDC addresses the results of the GST (SEMARNAT, 2025). No other explicit references to the GST could be found. All the topics covered in the analysed GST paragraphs are mentioned in the NDC, except for the phase-out of inefficient fossil fuel subsidies. Policies could be found relating to seven of the analysed paragraphs. The Mexican NDC comprises three quantified targets (relating to paragraphs 28a, 28f and 33).

In the context of the transition away from fossil fuels, the Mexican NDC sets out a series of sectoral objectives aimed at phasing out the use of fossil fuels in favour of cleaner energy sources and accelerating the process of electrification.

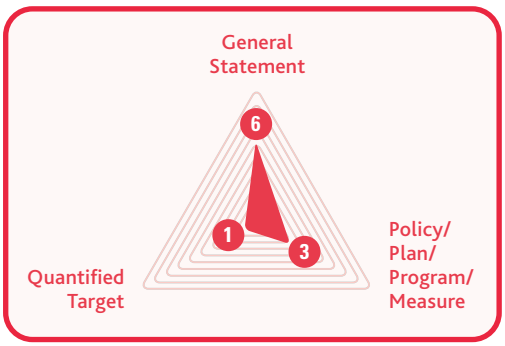
Nigeria



The Nigerian NDC significantly reflects the GST decision. The Nigerian NDC uses the ICTU template and contains a very short subsection (4c), in which the country declares that it is "fully dedicated towards fulfilling its commitments" (Federal Republic of Nigeria, 2025, p. 41). Nigeria is an example of a country that refers to the GST more frequently throughout the rest of its NDC rather than in the dedicated section (ICTU 4c). Most information regarding the GST can be found in table 9 "Mapping of latest NDC measures with the GST lines of action" on page 26 of the NDC. Overall, the Nigerian NDC refers to all analysed paragraphs explicitly. It mentions quantified targets for renewable energy (GST para 28a), methane (GST paragraph 28e, transport (GST para 28g), deforestation (para 33), circularity (para 36). It mentions specific policies for green hydrogen (GST paragraph 28e), oceans (GST para 35) and circularity (GST paragraph 36).

In terms of fossil fuels, the country aspires to "Replace coal and other fossil fuels with cleaner alternatives under Manufacturing and Construction Industries" (Federal Republic of Nigeria, 2025, p. 26) (in relation to GST para 28b) and two general goals in terms of overall transition away from fossil fuels (GST para 28d), namely to "reduce emissions in the Commercial, Institutional, and Residential categories" and "Modal shift for mass transit" (Federal Republic of Nigeria, 2025, p. 26). Furthermore, the topic of replacing fossil fuels is mentioned several times elsewhere in the NDC, which cites eight actions that Nigeria is planning to take to reduce emissions in the commercial, institutional and residential categories. Some of these actions have measurable targets, such as: "Reduction in use of generators by 30%" (Federal Republic of Nigeria, 2025, p. 17). In terms of fossil subsidies (GST para 28h), the NDC refers to "recently implemented removal of fuel subsidies" (Federal Republic of Nigeria, 2025, p. 49).

South Africa



The NDC of South Africa only reflects GST signals to a limited extent. In subsection 4c of the ICTU template, the NDC outlines several general implications of GST1. The term "GST1" appears multiple times throughout the NDC (not only in ICTU subsection 4c). The NDC states that the outcome of GST1, decision 1/CMA.5, paragraphs 18-42 on mitigation has been taken into account when preparing this NDC. However, these paragraphs are not mentioned again, except in relation to renewable energy. The NDC mentions an electricity plan as a policy instrument and the goal of installing 44 GW of new renewable energy capacity by 2035. Other policies could be found relating to paragraphs 28g and 33.

Fossil fuels (GST paragraphs 28b/28d) are barely mentioned throughout the NDC. The term appears only once: "A structural transformation requires diversifying our economy away from a dependence on fossil fuels, in a just, orderly and equitable manner, and informed by best available science and sustainable development priorities" (Republic of South Africa, 2025, p. 20). Overall, the NDC focuses more on the Just Transition Framework, which aims to bring South Africa's climate ambitions together with its development goals (such as low unemployment and social protection of vulnerable workers and communities). The country has started implementing a just transition to net zero CO_2 emission by 2050. The details of how this objective will be achieved are currently being prepared as part of the next Long-Term Low Emission Development Strategy (LT-LEDS).

In light of the presented results, several conclusions can be derived:

1. Superficial Alignment

The analysis of the seven NDCs demonstrates that they are all informed by the first GST, albeit to highly varying degrees. The fact that all examined NDCs include mention of the GST shows that the GST is acknowledged as a procedure and essential component of the Paris Agreement's ambition cycle.

Despite extensive references to the GST process, a significant gap remains regarding how countries address individual GST mitigation calls. Brazil and Nigeria stand out as the only countries to explicitly anchor their plans within specific GST paragraphs. In the remaining countries where GST themes (and even policies and some targets) are present but not explicitly attributed, the GST appears to have exerted only limited policy leverage. These topics may have been covered in previous NDCs and would thus have been addressed in any case.

2. Cherry-picking

In contrast to the extensive range of potential policy measures and indicators that were identified in the literature review, the NDCs contain only a limited number of specific policies and targets. Most of the policy measures in this analysis relate to low-friction paragraphs. These include renewables (28a), transport (28g), coastal ecosystems (35) and sustainable lifestyles (36). In contrast, no policy measure could be found that relates to the transitioning away from fossil fuels (28 d). Regarding the phase-down of unabated coal power (28b) only one policy measure was found, in the NDC of China. This analysis suggests that certain countries, including India, South Africa and Indonesia, appear to omit the theme of fossil fuels in their NDCs. This finding reinforces earlier research which found that phase-in targets and policies are politically easier to pursue than phase-out targets and policies (Obergassel *et al.* 2025).

3. Uneven use of the ICTU guidance

The analysis of the selected NDCs has shown that the ICTU template, mandatory for this round of NDCs, was used in different ways by the countries. While most refer to the GST in section 4c, China and Indonesia's NDCs do not contain this section. As mentioned previously, Brazil has an extensive subsection (4c), whereas Nigeria provides additional GST-related information elsewhere in the NDC.

4 NATIONAL REALITIES SHAPING GST1 CONSIDERATION

The primary objective of this in-country analysis is to curate a detailed and policy relevant assessment of whether and how countries are planning for changes in fossil fuel consumption and production across sectors, following up the signals sent by GST1, and what data, strategies, and institutional arrangements exist at the national level. The assessment tries to unveil how countries are integrating selected mitigation signals emerging from GST1 into national policy frameworks, while also examining how these signals are interpreted, adapted, or constrained by domestic political, economic and institutional realities. This concrete example based on the energy package will help understand the concrete role GST1 signals can play in shaping implementation pathways, policy design, and national transition strategies across different country contexts.

Methodology

A questionnaire requested qualitative insights from in-country experts from the Deep Decarbonisation Pathways initiative1, who participate in the research project JustPath. The countries in consideration are Nigeria, Senegal, India, Brazil, United States, Mexico, Argentina, Indonesia and South Africa.

The questionnaire systematically assessed how countries are integrating a selection of the mitigation signals given by the GST1, in national policies as well as the needs this brings for enhanced international cooperation:

- It began by inquiring the role perception of individual countries i.e. to analyze how countries project themselves in the global transition away from fossil fuels.
- Following this, it examined the national policies to scale up renewables and energy efficiency (GST1, paragraph 28a).
- It then focused on fossil fuel phase-down across sectors (paragraph 28b), including coal (28b), oil, and gas (28d), while identifying policies that may expand their use.
- It also covered the social and equity dimensions of the transition (paragraph 28d) and fossil fuel subsidy reform (paragraph 28h).
- Finally, it addressed national just transition mechanisms (paragraphs 9 and 10) and gaps in finance, technology, and capacity-building (paragraphs 90, 91, 8, and 103).

The final qualitative analysis of the country experts responses was structured around 5 key pillars:

1. **Strategic positioning-** focusing on how countries politically position and frame their approach towards the transition away from fossil fuels, examining the extent to which national transition narratives align with global climate objectives versus domestic priorities.
2. **Renewable energy & efficiency-** focusing on quantitative renewable targets, the 3x renewable and the 2x efficiency targets and post-GST1 effects.
3. **Fossil fuel transition-** focusing on coal (power and non-power), oil and gas, expansion of fossil fuel extraction/production/consumption and post-GST1 effects.
4. **Fossil fuel subsidies-** focusing on existing subsidies, phase out policies and post-GST1 effects.
5. **Enabling conditions for transition-** focusing on Just Transition policies, economic diversification strategies and constraints/bottlenecks.

1 https://ddpinitiative.org/

Questionnaire results: Operationalising the energy package of GST1

Countries' strategic positioning towards the transition away from fossil fuels

Based on the responses by in-country experts, countries can be positioned along a spectrum of alignment with the transition away from fossil fuels, reflecting differing levels of ambition, policy coherence, and implementation. According to the analysis, this ranges from strong divergence (e.g. Argentina), to a passive stance (e.g. Mexico), pragmatic alignment (e.g. India, Indonesia and Nigeria), and progressive positioning (e.g. Senegal), through to strong leadership signals (e.g. Brazil). This typology captures both the direction and credibility of national transition pathways, highlighting variations in commitment, policy design, and enabling conditions.

With respect to transition away from fossil fuels considerations in national policy frameworks, most country responses signal. moderate convergence. In practice, this means they acknowledge the importance of transitioning away from fossil fuels and have adopted relevant transition-oriented measures but lack explicit transition commitments or systematic policy integration. These efforts are often further constrained by continued structural and policy support for fossil fuels.

Exceptional responses emerge at both ends of the spectrum. Argentina reflects clear divergence, with policy signals that continue to endorse fossil fuel expansion while largely disregarding transition considerations. At the other end, Brazil demonstrates strong convergence, with more integrated approaches to transition away from fossil fuels within its policy framework. The position of the United States reflects its sharp political shifts. The shift from Biden to Trump 2.0 created a significant reversal in federal-level commitment to TAFF, underscoring the influence of domestic political cycles on transition trajectories.

At a more granular level, existing national fossil fuel transition considerations remain largely implicit i.e. reflected through indirect or adjacent policy measures rather than explicit, high-signal commitments. While elements of transition are present, they are typically embedded within broader transition priorities. From a policy perspective, country justifications for fossil fuel transition being unstated are particularly instructive:

1. **Energy security and sovereignty-** An increased emphasis on domestic energy security and sovereignty emerges as a key underlying driver of implicit alignment with the transition away from fossil fuels. In several cases, alignment is less the result of explicit climate ambition and more a response to vulnerabilities in energy supply, price volatility, and geopolitical exposure. For instance, Mexico's response highlights its structural dependence on natural gas imports from the United States, compounded by recent supply chain disruptions, broader energy market instability, and geopolitical tensions. In response, it has faced growing pressure to expand domestic shale gas production, reflecting a security-driven rationale that can run counter to the transition objectives. This opens a broader debate on how energy security imperatives can both enable and constrain transition pathways, depending on how governments balance short-term resilience with long-term decarbonisation goals.
2. **Economic development & transition enablers-** Across country team responses, just transition narratives are strongly development-centred, favouring a gradual phase-down of fossil fuels rather than an abrupt phase-out. This reflects the need to balance decarbonisation with economic growth, fiscal stability, and energy access. In this context, several countries frame continued fossil fuel use as a strategic enabler of the transition. For example, Nigeria's answers emphasise 'responsible' oil and gas utilisation in domestic sectors as a means to generate revenues that can finance renewable energy deployment. Similarly, responses from Argentina and Indonesia position natural gas exports as a "transition fuel" i.e. supporting economic development while underpinning longer-term transition efforts.
3. **Pragmatic ambition-** Some country responses adopt a more explicitly pragmatic approach to the transition away from fossil fuels, anchoring transition pathways in national development priorities

and differentiated responsibilities. For instance, India and South Africa invoke the principle of Common But Differentiated Responsibilities and Respective Capabilities (CBDR-RC), signalling that fossil fuel will remain a critical component of their energy mix in the near term, given development and energy access imperatives. Similarly, Mexico prioritises operational efficiency and production stability within its fossil fuel sector, rather than committing to explicit reduction or phase-out pathways.

The analysis reflects a broader trend: **the transition away from fossil fuels is often being interpreted through the lens of national circumstance, where immediate economic and energy system constraints shape the pace and form of transition commitments**.

Renewable Energy and Efficiency

The response analysis indicates that most countries have adopted quantitative renewable energy targets that are nationally determined and politically salient. However, with respect to the "tripling renewable energy capacity" objective under GST1 paragraph 28(a), countries interpret and operationalise the target in markedly different ways. While there is broad acknowledgement of the global ambition, several country experts argue that a literal tripling target is either incompatible with their existing energy mix, politically unfeasible, or not directly applicable to their national circumstances.

- Brazil's experts argue that it is "arithmetically impossible" for the country to triple their renewable share because it is already very high (fossil fuels represent less than half of their total energy supply and only 12% of power generation). Instead, Brazil focuses on expanding liquid biofuels like ethanol and biodiesel.
- The US and Argentina both had previous policies built around the target, however the current administrations have reversed course, and the current administrations are not focused on climate change.
- Nigeria's experts interpret the country's policies as contributing to the global target rather than a "literal national commitment" to triple its own capacity.
- Countries like Senegal, India and Mexico all have progressive targets to increase renewable percentage in their national energy mix, but they don't have any explicit mandate on tripling its capacity under any timeline.
- South Africa frames the targets through nationally contextualised pathways, prioritising accelerated renewable procurement under The Integrated Resource Plan (IRP) 2025 and regulatory reforms to expand private-sector participation, while its updated energy efficiency strategy targets a 30% reduction in final energy consumption by 2030, broadly aligning with the global 2x efficiency objective.

Overall, the findings suggest that countries tend to align more readily with the broader directionality of renewable expansion than with uniform quantitative interpretations of the GST 28(a) target.

Energy efficiency is a weaker link across the country responses. Unlike renewables, efficiency policies are not politically prioritised, difficult to measure and only a few have strong implementation. Consequently, the "doubling the global average annual rate of energy efficiency" objective of paragraph 28(a) is not a primary consideration for any national TAFF trajectory. Country perspectives on energy efficiency vary considerably in terms of ambition and policy integration.

Indonesia's experts explicitly state the presence of policies for the doubling target. India maintains relatively robust frameworks, including industrial efficiency schemes and mandatory appliance standards, while Senegal has recently adopted a strategic energy management plan but lacks a clear baseline to assess progress against the global "doubling" objective.

In contrast, Brazil and Argentina's experts report limited national-level momentum, with the latter relying primarily on voluntary and subnational initiatives despite recent financing support for efficient technologies. The United States previously advanced strong federal incentives and standards through the Inflation Reduction Act, although recent political shifts have weakened this trajectory. Meanwhile, Nigeria supports efficiency improvements through building codes and appliance standards, but frames these measures as contributions to the collective global target rather than as a direct national commitment to doubling its own rate of energy efficiency improvement.

GST1 Impact

The analysis above shows that the impact GST1 had on renewable energy and energy efficiency policies varies considerably across countries, ranging from direct policy integration to minimal influence. India and Nigeria represent the strongest cases of explicit alignment, with both incorporating GST1 signals into updated NDCs, renewable energy targets, and energy efficiency frameworks. India expanded renewable and efficiency initiatives through new solar, wind repowering, and building code measures, while Nigeria used GST1 to frame their latest NDC and strengthen implementation and climate finance alignment. The United States also saw significant federal action under the previous administration through grid modernisation and stricter efficiency standards, although recent political shifts have reversed much of this momentum.

In other cases, GST1 has functioned more as a strategic reference point than a direct legislative driver. Senegal is integrating GST1 recommendations into its long-term strategy and latest NDC, particularly through energy and transport sobriety measures, while Brazil has pursued ecological transition planning largely through domestic economic priorities rather than explicit GST compliance. Conversely, Mexico and Argentina's experts report little to no discernible GST1 impact. Mexico continues to frame energy policy primarily around sovereignty and prosperity narratives, whereas Argentina has prioritised fossil fuel expansion and reduced support for renewables and efficiency.

A similar pattern emerges across the renewable energy and energy efficiency pillar. **While there is broad political acceptance of the overall directionality of GST1 countries interpret and operationalize the targets through highly differentiated national contexts rather than as uniform global obligations.** Renewable energy expansion and efficiency improvements are generally pursued where they align with domestic priorities. As a result, countries tend to support the broader ambition of scaling renewables and improving efficiency, instead of focusing on an absolute global target

Fossil Fuel Transition

Transition Away from Coal

Broadly, the analysis finds that there are no explicit national policies directly mandating the transition away from unabated coal across the countries assessed. However, at a more granular level, country expert responses suggest that coal transition strategies are shaped primarily by the fuel's situational role within national energy systems and development trajectories.

For countries such as Brazil and Argentina, experts argue that coal constitutes only a marginal share of the overall energy mix and is therefore downplayed as a relatively insignificant component of national transition planning. Senegal, meanwhile, uses coal in a more limited and sector-specific manner, particularly within industrial applications such as cement production. In contrast, India and Indonesia adopt a more pragmatic and strategic "phase-down" framing, reflecting coal's continued importance for energy security, industrial development, and economic stability, rather than pursuing immediate phase-out pathways. South Africa's Integrated Resource Plan (IRP) 2025 extended coal plant lifetimes due to energy security concerns, although future electricity market reforms and renewable energy expansion could indirectly increase pressure on coal generation through market competition. Nigeria on the other hand focuses on avoiding a coal 'lock in' by prioritizing low-emission expansion, but still lacks any official moratorium.

Transition Away from Oil and Gas

The analysis also shows that most countries do not currently pursue strong policies aimed at phasing out oil and gas production. Instead, many continue to expand or sustain fossil fuel production while framing transition efforts around managing consumption patterns, reducing operational emissions, or using fossil fuel revenues to enable longer-term transition pathways.

A dominant framing across countries is that oil and gas remain essential for energy sovereignty and security. Mexico's responses, for instance, justify expanding conventional and shale gas production to reduce dependence on imports from the United States, while India and Indonesia continue to support domestic

exploration to strengthen long-term energy independence. Similar narratives are visible in the responses of the United States and Senegal, where fossil fuel expansion is closely tied to energy security and rising domestic demand. At the same time, several country responses position fossil fuels as necessary to finance the transition and support economic stability. Brazil argues that oil revenues are critical both for funding the energy transition and maintaining the national trade balance, while Argentina frames natural gas exports as a means of financing development during the transition process.

For Nigeria and Senegal's experts, oil and gas are further linked to broader objectives of industrialisation, employment, foreign-exchange earnings, and energy access. Natural gas, in particular, is repeatedly framed as a "bridge fuel" capable of enabling a gradual shift away from more carbon-intensive fuels while supporting industrial competitiveness and clean cooking access. Rather than reducing production volumes outright, several countries instead prioritise a managed transition focused on lowering the emissions intensity of fossil fuel systems. South Africa supports new gas infrastructure and transport electrification measures while relying on emissions reduction and modal shifts rather than direct abatement policies. Nigeria emphasises methane reduction, carbon capture and storage (CCS), and ending gas flaring, while Mexico focuses on operational efficiencies and methane leak reduction while maintaining production stability through 2035.

The findings suggest that oil and gas policies remain deeply embedded within national development, security, and macroeconomic priorities. **As with coal and broader fossil fuel transition considerations, transition pathways are largely being interpreted through domestic political economy realities rather than through explicit fossil fuel phase-down commitments.**

GST1 Impact

The impact of GST1 on fossil fuel pathways has been uneven and, in most cases, limited with respect to production phase-down. While some countries have used GST1 signals to strengthen emissions reduction measures or consumption-side transition policies, few have translated these signals into explicit constraints on fossil expansion.

Nigeria and India represent cases where GST1 informed stronger sectoral transition measures. Nigeria's latest NDC introduced more explicit commitments around methane abatement and ending gas flaring by 2030, although it remains weak on production phase-down. India, meanwhile, according to experts, has focused less on directly phasing down oil and gas and more on increasing demand for cleaner alternatives through initiatives such as the Green Steel Initiative and electric mobility programmes, thereby indirectly reducing long-term fossil fuel dependence. The Indian government however explicitly considered GST1 outcomes when approving its updated 2035 NDC targets in 2026. According to experts, In Indonesia, GST1 had a moderate impact in terms of policy expansion and strengthening.

In the United States, GST1 initially coincided with a temporary pause on new LNG export permits under the Biden administration, reflecting growing scrutiny of climate impacts. However, subsequent political shifts have reversed this trajectory, with the current administration supporting renewed fossil fuel expansion. For several major fossil fuel producing countries, GST1 has had little to no discernible impact on oil and gas production strategies. Through the responses, Mexico continues to prioritise operational efficiency and methane reduction while maintaining production stability through 2035. Argentina accelerated hydrocarbon expansion post GST1 period through the *Régimen de Incentivo para Grandes Inversiones* (RIGI) framework, while Brazil extended fossil fuel production subsidies through 2040, arguing that oil revenues are necessary to finance the transition. Similarly, Senegal's experts report that GST1 has had minimal influence on hydrocarbon policy, with transition efforts remaining focused primarily on renewable electricity expansion rather than fossil fuel replacement.

Overall, **GST1 has been more effective in shaping discourse around emissions management and consumption-side transition than in driving explicit fossil fuel phase out commitments.**

Fossil Fuel Subsidies

Across country responses, fossil fuel subsidy policies remain primarily shaped by domestic economic, political, and energy security considerations rather than explicit climate-driven phase-out objectives. Most countries lack a formal definition of "efficient" and "inefficient" subsidies, instead framing them as strategic instruments for managing affordability, industrial competitiveness, social stability, or domestic production.

Several country experts detail how governments continue to justify subsidies on social or political grounds. Mexico describes fuel subsidies as an entrenched instrument of political popularity and social stability, while Senegal uses them to stabilise electricity and butane prices. The United States frames many subsidies around domestic production, competitiveness, and energy security objectives, while Nigeria considers certain subsidies necessary to address energy poverty and avoid social hardship. Argentina, meanwhile, continues to provide strong supply-side incentives for gas extraction. Indonesia has released policies targeted towards 'wasteful' subsidies, but they have a pragmatic phase out approach quoting affordability and security concerns.

Concerns around energy poverty and social vulnerability also emerge strongly within subsidy reform debates. In both Nigeria and Argentina, there is significant concern that removing fossil fuel subsidies or rapidly reforming electricity tariffs without first ensuring affordable alternatives could disproportionately affect lower-income households and exacerbate existing inequalities.

While some progress has been made on consumer-side subsidy reform, support for fossil fuel production remains deeply embedded across several national policy frameworks, revealing a significant disconnect between consumption-side reforms and upstream production incentives. On the consumer side, Nigeria removed its long-standing petrol subsidy in 2023 and shifted toward market-based fuel pricing despite substantial inflationary and social pressures. Senegal committed to phasing out subsidies for electricity and butane by 2025 in order to redirect public expenditure toward social protection and renewable energy investment. Argentina sharply reduced energy subsidies from roughly 2% of GDP in 2022 to 0.8% in 2024 as part of broader fiscal consolidation efforts linked to macroeconomic restructuring. Meanwhile, India has focused less on outright subsidy removal and more on improving efficiency and targeting through national schemes, while simultaneously expanding incentives for cleaner alternatives including solar pumps and electric mobility.

In contrast, production-side incentives for fossil fuels continue to be maintained or expanded in several countries, according to the questionnaires. Brazil extended subsidies and fiscal incentives for oil and gas production through 2040 under legislation approved in 2017, while also prolonging support for coal-fired power generation until 2050 to protect regional employment and economic activity. Argentina accelerated hydrocarbon expansion through mechanisms such as the Plan Gas programme for Vaca Muerta and the 2024 RIGI regime, which offers long-term fiscal stability and incentives for large-scale fossil fuel investments. In the United States, fossil fuel producers continue to benefit from extensive tax advantages, infrastructure support, and expedited permitting for pipelines and LNG export terminals. Mexico continues to support domestic oil and gas production through energy sovereignty-oriented policies, even while attempting to improve operational efficiency and reduce methane leakage. Similarly, South Africa maintains significant fossil fuel subsidies through Eskom bailouts and consumer fuel support mechanisms, although the government signals that major support measures are expected to decline over time as part of broader fiscal and energy sector reforms.

Overall, **GST1 appears to have had limited direct influence on fossil fuel subsidy reform.** Country experts including in Brazil, US, Mexico, and Senegal explicitly report little or no GST-related impact on subsidy policies, while reforms in Argentina and Nigeria were driven primarily by fiscal pressures, inflation management, or broader economic restructuring rather than climate alignment. India's experts reported that policies to provide subsidies for alternatives were strengthened and expanded in the years following GST1. In some cases, GST1 has instead served as a framework for reframing existing reforms within the broader "just transition" or climate finance narratives, rather than catalysing new subsidy phase-out commitments.

Just Transition Policies

Across countries, there is broad recognition of the need for a just, orderly, and equitable transition, although the depth of institutionalisation varies significantly. As the questionnaires show, while some countries have established formal governance structures, legislation, and dedicated financing mechanisms, others continue to frame just transition primarily as a high-level developmental aspiration without substantial policy operationalisation.

Nigeria represents one of the more developed institutional approaches, with the Climate Change Act 2021 establishing a National Council on Climate Change and a Climate Change Fund. Its latest NDC explicitly anchors climate mitigation within a broader Just Transition Plan focused on economic development, employment generation, and energy access. South Africa has developed one of the more structured just transition frameworks through the National Just Transition Framework (2022) and the Just Energy Transition Investment Plan (JET-IP 2023-2027), combining labour protections, industrial transition policies for electric vehicle manufacturing, worker retrenchment support, and sectoral resilience planning to manage the social impacts of decarbonisation. Senegal has also strengthened institutional arrangements following its 2023 Just Energy Transition Partnership (JETP), including the establishment of a dedicated Energy Transition Department within the Ministry of Energy to oversee implementation and coordination. In the United States, the previous administration embedded equity considerations through initiatives such as Justice40, which directed federal climate investment toward disadvantaged communities, alongside labour-linked incentives under the Inflation Reduction Act (IRA), though this has been ruled out with the change of Government.

In contrast, the analysis reveals that a few countries maintain relatively weaker or more normative institutional just transition frameworks. For example, Brazil and Mexico identify just transition and climate justice as cross-cutting strategic priorities, but currently lack concrete standalone policies or implementation mechanisms. Similarly, Mexico includes just energy transition objectives within its National Development Plan 2025–2030, though without clearly defined policy instruments to operationalise them. Argentina references just transition principles within its climate legislation framework, yet lacks dedicated programmes, institutional mechanisms, or funding structures, while broader institutional capacity has been weakened through the downgrading of the Environment Ministry.

Economic diversification emerges across country responses as a central, though unevenly operationalised, component of just transition strategies. For several emerging economies, diversification is framed not merely as a complementary policy objective but as a necessary mechanism for maintaining economic stability, employment, and industrial competitiveness during the transition away from fossil fuels.

According to the experts , Nigeria places economic diversification at the core of its transition strategy, explicitly linking the responsible use of oil and gas revenues to industrial development, job creation, and broader economic restructuring. Similarly, Indonesia incorporates diversification into its people-centred just transition framework through the promotion of low-carbon economic activities and local employment generation. India on the other hand adopts a development-led approach that seeks to build new industrial capabilities in sectors such as green hydrogen, bioenergy, and critical minerals, effectively positioning the energy transition as an opportunity for industrial diversification and strategic economic upgrading.

In other contexts, diversification strategies remain more fragmented or indirectly embedded within broader development agendas. For example, the analysis shows that Brazil is pursuing diversification through initiatives such as the Bioeconomy National Plan of Development (PNDBio), which aims to expand biodiversity-based industries and biofuel production, despite the absence of a dedicated just transition framework. Argentina references productive transition and diversification within national planning documents, although implementation remains limited and highly uneven across regions, particularly in major hydrocarbon-producing provinces.

At the same time, important institutional and policy gaps persist. According to experts, Mexico continues to frame just transition as a strategic objective without developing concrete diversification mechanisms, while the United States has focused more narrowly

on labour standards and community benefits within clean energy deployment rather than comprehensive regional economic restructuring. Across many emerging economies, diversification efforts are further constrained by persistent gaps in finance, technology transfer, technical capacity, and infrastructure, limiting the ability to replace fossil fuel-dependent industries with new economic drivers at scale.

Enabling conditions for the transition

Through the questionnaire, we asked in-country experts what gaps their countries had on finance, capacity building and technology transfer that were constraining the consideration of GST1 signals, or climate action plans in general.

Finance Gaps

Finance emerges as the most frequently cited in the surveys, with experts highlighting it as a severe constraint across nearly all emerging economies, arguing there is a mismatch between climate ambition and available financial resources.

- **High cost of capital and debt:** Brazil, Argentina, and Nigeria's experts all note that high borrowing costs and debt burdens significantly limit the pace of decarbonisation and transition investment. Argentina's questionnaire specifically highlights that international debt servicing obligations, particularly linked to the International Monetary Fund, substantially exceed national budgets allocated for renewable energy deployment.
- **Loan-heavy international assistance:** India and Nigeria's experts emphasise that a large share of international climate finance continues to be offered in the form of loans rather than grants, increasing debt vulnerabilities instead of easing fiscal pressure.
- **Insufficiency of domestic resources:** Senegal and Mexico' questionnaires stress that the scale of investment required for mitigation, adaptation, and resilience far exceeds domestic financial capabilities, often resulting in additional indebtedness. Indonesia estimates climate-related investment needs at approximately USD 472.6 billion, while also acknowledging that current estimates may understate actual requirements due to data limitations.
- **Investment imbalance:** South Africa's experts identify an imbalance between significant funding directed toward capacity-building and research versus insufficient investment in tangible infrastructure expansion, maintenance, and local-level implementation capacity.
- **Lack of long-term predictability:** The United States questionnaire highlights that many clean energy investments remain dependent on temporary tax incentives and short-term policy instruments, creating uncertainty around long-term financing and investment planning.

Capacity-Building Gaps

Institutional and technical capacity constraints continue to limit countries' ability to effectively design, implement, and scale transition policies, even where financing or political ambition exists.

- **Institutional and technical weakness:** Argentina and Mexico's experts report weakened institutional capacity resulting from budget reductions, loss of technical expertise, and a broader prioritisation of short-term economic management over long-term transition planning.
- **Subnational implementation and coordination:** Nigeria, South Africa, Indonesia, and the United States responses highlight persistent shortages of staff, technical expertise, and coordination mechanisms at state, provincial, and local levels, limiting the ability to access and effectively deploy climate finance.
- **Specialised technical skills:** Several country experts identify growing demand for expertise in emerging transition sectors, including methane management, green hydrogen, and Carbon Capture and Storage (CCS), particularly in Nigeria, Senegal, and Indonesia.

Technology Development and Transfer Gaps

Technology-related challenges are primarily linked to affordability, intellectual property barriers, infrastructure limitations, and dependence on imported technologies.

- **Intellectual property and cost barriers:** India's responses identify intellectual property restrictions and the high cost of advanced technologies as major obstacles slowing the deployment of renewable energy systems and climate-resilient agricultural technologies.

- **Infrastructure bottlenecks:** Argentina's experts note that its transmission grid currently lacks the capacity to integrate large-scale renewable energy, requiring substantial infrastructure expansion. Similarly, Nigeria and the United States's questionnaire identify urgent needs for grid modernisation, energy storage systems, and EV charging infrastructure.
- **Reliance on imports:** Responses from both Argentina and the United States r highlight vulnerabilities associated with dependence on imported clean energy technologies and equipment, including wind turbines, batteries, and other components, due to limited domestic manufacturing capabilities and fragile supply chains.

5 LESSONS FOR GST2

As this report has shown, translating the outcomes of the GST into NDCs and other domestic climate policies is not a straightforward process, as it is shaped by a range of factors. These include the challenge of converting collective global goals into nationally appropriate targets and policies, institutional capacities, the dynamics of international climate negotiations under the United Nations Framework Convention on Climate Change (UNFCCC), the limited enforcement capacity of international law, or the limitations of transparency frameworks, amongst others. And, above all, the unavoidable influence of domestic political and economic priorities.

The question of how GST outcomes should be reflected in NDCs has also been contested. By some countries, the GST outcomes are viewed as a menu of policy options rather than as a set of expectations to be systematically operationalized in national commitments. They also demand for the GST to be seen as a package, where progress on i.e. mitigation issues, should come jointly with progress on means of implementation, highlighting the importance of the - much overlooked- international cooperation component of the GST. Others have argued for a stronger role of the GST in driving ambition and strengthening accountability. These different understandings make it clear that there is not a uniform way to interpret and use the GST to inform national policy making and action. As we will argue in the conclusions, stronger country-led inputs would make the GST signals more relevant for countries to include in future NDCs, and a strong accountability framework would ensure transparency of choices.

This is not to diminish the importance of the GST as a central part of the ratchet up mechanism of the Paris Agreement. GST1 was able to drive ambition and actions in many ways. It provided the political space for coordination and course correction towards the goals of the Paris Agreement, and a framework for countries to understand where they could enhance ambition. It also shaped political signals — for example through momentum generated around the call to transition away from fossil fuels, built in-country institutional capacity, and became a key space where international cooperation priorities are identified and brought to the table (Pérez Català *et al.*, 2022). It also triggered development of an evidence base to inform robust decision-making, contributing to building research and institutional capacities. But it has not fundamentally reshaped NDCs, as domestic political processes, driven by national agendas and political economy and anchored in the national timeline for policy development, remain much more decisive in determining national climate commitments. Therefore, this link between GST and NDCs should not be approached as mechanical and immediate, but rather as part of a systemic and long-lasting process. Building on this research, and recognisant of the growing implementation gap, this report provides insights and lessons for GST2, without providing a blueprint of its design, which will require further research.

1. Use both top down and bottom up approaches

While the GST process provided many opportunities for Parties and stakeholders to provide inputs, the GST1 decision relied heavily on global scenarios and pathways derived from the IPCC 6th Assessment Report, resulting in a synthesis and signals primarily oriented toward global-level benchmarks and aggregated pathways. Global approaches are important for sending signals and for fostering accountability, but

country-driven evidence is also needed, to identify actionable measures that will close the implementation gap.

To support this, the **GST2 Information Collection phase** should build more systematically on national-level information and experiences, including the first two Biennial Transparency Reports (BTRs), Long-Term Low Emission Development Strategies (LT-LEDS), national transition roadmaps, adaptation plans, and other domestic planning instruments.

A stronger bottom-up approach would help ensure that GST signals are grounded in national circumstances, capacities, and priorities, thereby making them more relevant and actionable for NDC development and implementation. The key challenge and future research question for GST2 design is to unpack which country-level information is key, in line with global benchmarks identified, to correct course for the Paris Agreement long-term goals, and how these detailed country inputs should be synthesised into outcomes that can speak to a diversity of countries. For instance, for the transition away from fossil fuels, what do we need to know at country-level to be in a position to coordinate an orderly decline and just transitions globally.

2. Enhance inclusiveness and participation in the Technical Dialogue

GST1 Technical Dialogue (TD) was an inclusive and rich process, which gathered inputs in different formats and from both party and non-party stakeholders, and which led to a very detailed and comprehensive synthesis report. However, participation sessions was often challenging for smaller delegations with limited capacity, reducing the diversity of perspectives reflected in discussions (Ngwadla, 2023). GST2 should strengthen support for broader and more equitable participation, particularly for developing countries and smaller delegations. This could include targetde knowledge and capacity support for the negotiators, and expanded opportunities for regional engagement (i.e. regional climate weeks). Broader participation would improve the legitimacy, representativeness, and practical relevance of GST outcomes. From implementation lenses, this should lead to mobilising actors that can take action on the ground, with an emphasis on whole-government approaches and valorising the role of the private sector.

3. Improve the transition from technical findings to political outcomes

One of the main limitations of GST1 was that the findings in the Technical Dialogue were not systematically and consistently reflected in the political "Consideration of Outputs" phase (Herrera *et al*, 2025), which reduced the ability to translate technical insights into actionable political guidance. GST2 should establish sufficient time and clear planning on how the technical findings will be considered in the political phase (OECD-IEA, 2026). This would allow Parties to refine priorities, build dialogue and ownership within their domestic constituencies, and co-develop more operational outcomes that can directly inform the preparation and enhancement of NDCs.

4. Incorporate development priorities

This paper reaffirms that for many Parties socio-economic development is of prime importance and climate action thus needs to be reconciled with these priorities, this goes in line with Article 2.1 of the PA, where the long-term goals are in the content of "sustainable development and efforts to eradicate poverty". GST2 discussions and outcomes should thus seek to maximise sustainable development benefits (e.g. around energy access and security, food security, affordability, health, employment) and minimise potential adverse distributional and transition-related impacts, including on vulnerable households, affected workers and regions, and short-term affordability challenges(OECD-IEA, 2026; Hermwille *et al.*, 2023). In practice, this means embedding GST signals within development narratives such as energy sovereignty, green industrialisation, economic resilience, and affordability, and developmental justice. Such an approach could strengthen ownership and political feasibility while still maintaining convergence toward collective global transition goals. Finally, the dominance of country realities in the interpretation and valorisation of GST1 means political economy plays a central role, hence further reflection should be invited on how GST signals question specific stakeholders and build critical political support.

5. Enhance reporting and transparency through the ICTU template

The analysis has shown that the ICTU template has been used in different ways by the countries. A more harmonised approach to ICTU section 4c, combined

with further requirements and guidance, would facilitate the inclusion of GST outcomes in the respective NDCs. The ICTU template could also ask countries to describe how national efforts contribute to collective global goals. Overall, strengthening transparency and reporting requirements around these elements could further help embed GST signals into broader domestic policy processes, for instance, informing economic actors on trends.

6. Strengthen the implementation focus of GST outcomes

Climate policy has entered a phase focused on implementation. NDCs are central to the global climate architecture and remain a key driver of action, in addition to the critical accountability function. At the same time, implementation depends on a wide range of largely national political, economic and institutional factors (Kauffmann *et al.*, 2025). Given the broad influence of the COP and the GST, an implementation-oriented GST should therefore seek to engage all the main levers that can support action.

One channel that can be used is the Action Agenda, which is drawing attention, has a new structure around the GST1 signals and allows countries to go further with the implementation approach. GST2 will have to understand how to provide signals that speak to this and other implementation tools, which may be different from what is required for NDCs.

Pursuing accountability of GST1 will be another obvious driver for action. GST2 should include a structured assessment of progress made in responding to the signals from GST1. This could help identify where progress has been achieved, where important gaps remain, and to what extent GST1 has influenced national policies, and international cooperation. However, such an assessment should be understood as one workstream within GST2, rather than its sole starting point or organising principle.

Overall, GST2 will have to send signals that can be captured beyond NDCs. In a way, complementing "GST to NDCs" with "GST to implementation".

BIBLIOGRAPHY

- Adolphsen, O., Könneke, J., & Thielges, S. (2024). *Third Generation of Nationally Determined Contributions* (No. 33). Stiftung Wissenschaft und Politik. https://www.swp-berlin.org/publikation/third-generation-of-nationally-determined-contributions
- Anderson, L., Tigchelaar, M., Arthur, R., Bahri, T., Sampaio, F. G., Ma, X., Peñarubia, O. R., Kelso, K., Mason, J., Jonell, M., Troell, M., Chaudhury, M., & Wong, A. (2024). *Integrating blue foods into national climate strategies: Enhancing nationally determined contributions and strengthening climate action*. Stanford Center for Ocean Solutions. https://oceansolutions.stanford.edu/sites/g/files/sbiybj25061/files/media/file/ndc-guidelines_final.pdf
- Black, S., Liu, A. A., Parry, I. W. H., & Vernon, N. (2023). IMF Fossil Fuel Subsidies Data: 2023 Update. *IMF Working Papers*, *2023*(169). https://doi.org/10.5089/9798400249006.001.A001
- Brazilian Government. (2024, November 13). *BRAZIL'S NDC National determination to contribute and transform*. https://unfccc.int/sites/default/files/2024-11/Brazil_Second%20Nationally%20Determined%20Contribution%20%28NDC%29_November2024.pdf
- Chennamaneni, L., & Lydén, P. (2024). *Life after the Global Stocktake*. Germanwatch e.V. https://www.germanwatch.org/en/91893
- Climate Action Network. (n.d.). *Strengthening NDCs to Deliver Just and Equitable 100% Renewable Energy Systems*.
- Climate Action Network. (2024). *Guidelines for NDCs 3.0: Delivering on the GST outcome and beyond*. https://climatenetwork.org/wp-content/uploads/2024/05/CAN-Guidelines-NDCs.pdf
- Climate Action Tracker. (2024). *Guide to a good 2035 climate target*. https://climateactiontracker.org/documents/1220/CAT_2024-06-10_Briefing_GuideToGoodNDCs.pdf
- Climate Advisers. (2023). *Key Coastal Countries' Inclusion of Fisheries in Their Nationally Determined Contributions*. https://8ce82b94a8c4fdc3ea6d-b1d233e3bc3cb10858bea65ff05e18f2.ssl.cf2.rackcdn.com/bb/55/d01e844449fdba599dd2e5548b86/key-coastal-countries-inclusion-of-fisheries-in-their-nationally-determined-contributions.pdf
- Commonwealth Secretariat. (2023). *'Blueing' the NDCs: An Updated Review of Ocean-based Nationally Determined Contributions of Commonwealth Countries*. https://production-new-commonwealth-files.s3.eu-west-2.amazonaws.com/s3fs-public/2024-01/D19484%20V5%20TONR%20Blueing%20The%20NDCs%20C%20Lawson%20no%20crops.pdf
- COP28 Presidency, IRENA, & GRA. (2023). *Tripling renewable power and doubling energy efficiency by 2030: Crucial steps towards 1.5°C*. International Renewable Energy Agency. https://www.irena.org/Publications/2023/Oct/Tripling-renewable-power-and-doubling-energy-efficiency-by-2030
- Duvic-Paoli, L.-A., Madariaga, M., Cox, H., & Saghir, N. (2024). *Guide to climate negotiations terminology* (No. Second edition). IIED. https://www.iied.org/sites/default/files/pdfs/2024-11/22589iied.pdf
- EU. (2023). *Directive—2023/1791—EN - EUR-Lex*. https://eur-lex.europa.eu/eli/dir/2023/1791/oj/eng
- Federal Republic of Nigeria. (2025, September). *NIGERIA'S Third Nationally Determined Contribution (NDC 3.0)*. https://unfccc.int/sites/default/files/2025-09/Nigeria%20NDC%203.0%20-%20Transimission%20Version%202.pdf
- GIZ. (2024a). *Enhancing Ambition and Transparency in the Next Round of NDCs: Good Practice from the Transport Sector*. https://changing-transport.org/wp-content/uploads/2024_Enhancing_ambition_transparency_next_round_NDCs.pdf
- GIZ. (2024b). *Guidance on Increasing NDC Ambitions through Circular Action*. https://www.giz.de/de/downloads/giz2024-en-study-circular-action-ndc-ambitions.pdf
- Government of India. (2026, April). *India's Nationally Determined Contribution (2031-2035)*. Retrieved 11 May 2026, from https://unfccc.int/sites/default/files/2026-04/INDIA%20NDC%202031-35.pdf
- Grant, N., Aboumahboub, T., Welder, L., & Fyson, C. (2024). *Tripling renewables by 2030: Interpreting the global goal at the regional level*. Climate Analytics. https://ca1-clm.edcdn.com/assets/Tripling-renewables-by-2030.pdf?v=1707761112&utm_source=cbnewsletter&utm_medium=email&utm_term=2024-02-20&utm_campaign=DeBriefed+Atlantic+and+Amazon+tipping+points+New+troika+for+1+5C
- Hermwille, L., Dzebo, A., Iacobuță, G.I, Obergassel, W. (2023) Global stocktake and the SDG midterm review as opportunities for integration. *Nat. Clim. Chang.* **13**, 1002–1004. https://doi.org/10.1038/s41558-023-01813-2
- Herrera, O., Alcaraz, O., Sureda, B., & Lazzarini, B. (2025). Cherry-picking climate science: How is the GST technical dialogue reflected in the final GST outcome? *Climate Policy*. https://doi.org/10.1080/14693062.2025.2539135
- International Fund for Animal Welfare. (2024). *Wildlife guidelines for NDCs: Integrating wildlife conservation into national climate action plans*. International Fund for Animal Welfare. https://d1jyxxz9imt9yb.cloudfront.net/resource/1713/attachment/original/IFAW_NDC_GUIDELINE_RGB_FINAL_LR.pdf
- International Transport Forum. (2024). *A Guide to Integrating Transport into NDCs*. https://www.itf-oecd.org/sites/default/files/docs/transport-ndc-guide.pdf
- Jeudy-Hugo, S., Re, L. L., Hyun, H., & Pouille, C. (2024). *Considerations for informing, implementing, and investing in the next nationally determined contributions (NDCs)* (OECD/IEA Climate Change Expert Group Papers No. 2024/03). OECD Publishing. https://www.oecd.org/en/publications/considerations-for-informing-implementing-and-investing-in-the-next-nationally-determined-contributions-ndcs_4f014ce6-en.html
- Kauffmann, C., Torres Gunfaus, M., Folly, M., Sharpe, S., Watkinson, P. (2025). COP30: Addressing implementation. IDDRI, Policy Brief N°04/25.
- Keramidas, K., Fosse, F., Diaz, R. A., Dowling, P., Garaffa, R., Ordonez, J., Russ, P., Schade, B., Schmitz, A., Soria, R. A., Van, D. V. C., & Weitzel, M. (2023). *Global Energy and Climate Outlook 2023* [JRC Science for Policy Report]. Joint Research Centre (JRC). https://doi.org/10.2760/836798
- Land Gap Project. (2024). *Land Use in NDCs—A Guide to High Ambition*. https://landgap.org/downloads/2024/[EN]%20Land%20Use%20in%20NDCs.pdf

- Legal Response International. (2010, November 28). *Legal interpretation of verbs*. https://legalresponse.org/legaladvice/legal-interpretation-of-verbs/
- Legal Response International. (2024, May 30). *Possible outcomes from a COP*. https://legalresponse.org/legaladvice/possible-outcomes-from-a-cop/
- Lo Re, L., Jeudy-Hugo, S., & Chan, L. (2025). *Early insights from biennial transparency reports (BTRs) to enhance the next nationally determined contributions (NDCs): Focus on energy outcomes from the first global stocktake and finance* (No. 2025/02; OECD/IEA Climate Change Expert Group Papers). OECD Publishing. https://doi.org/10.1787/d1f0986a-en
- Moosmann, L., Jeffery, L., Nascimento, L., Beuermann, C., Elsner, C., Hermwille, L., Obergassel, W., Schulze-Steinen, M., & Textor, C. (2024). *Support to the technical and political phase of the first Global Stocktake under the Paris Agreement* (No. 19/2024; CLIMATE CHANGE). Umweltbundesamt. https://www.umweltbundesamt.de/publikationen/reflecting-the-global-stocktake-mitigation-efforts
- Moosmann, L., & Pischke, F. (2024). *Reflecting the Global Stocktake mitigation efforts in NDCs*. Umweltbundesamt. https://www.umweltbundesamt.de/publikationen/reflecting-the-global-stocktake-mitigation-efforts
- Nature4Climate Coalition. (2024). *A Guide for Including Nature in Nationally Determined Contributions: 2nd Edition.* https://nature4climate.org/guide-for- including-nature-in-ndcs
- Ngwadla, X. (2023) Status quo analysis on African engagement and perspectives on the United Nations Framework Convention on Climate Change Global Stocktake. IDDRI
- Northrop, E., Dagnet, Y., Höhne, N., Thwaites, J., & Mogelgaard, K. (2018). *Achieving the Ambition of Paris: Designing the Global Stocktake* [Working Paper]. World Resources Institute.
- Obergassel, W., Beuermann, C., Elsner, C., & de Coninck, H. (2025). The potential of international institutions to foster transitions. The example of the Global Stocktake under the Paris Agreement. *Environmental Innovation and Societal Transitions*, *57*, 101005. https://doi.org/10.1016/j.eist.2025.101005
- OECD-IEA (2026) Key Takeaways from the CCXG Global Forum on the Environment and Climate Change. https://www.oecd.org/content/dam/oecd/en/events/2026/03/CCXG%20Global%20Forum%20on%20the%20Environment/Key-takeaways-GFE-March-2026.pdf
- People's Republic of China. (2025, November 3). *2035 年中国国家自主贡献报告*. https://unfccc.int/sites/default/files/2025-11/2035%E5%B9%B4%E4%B8%AD%E5%9B%BD%E5%9B%BD%E5%AE%B6%E8%87%AA%E4%B8%BB%E8%B4%A1%E7%8C%AE%E6%8A%A5%E5%91%8A.pdf
- Pérez Català, A., Svensson, J., Briand Y. (2022). How to organise a Global Stocktake that enhances national climate action and international cooperation. IDDRI, Policy Brief N°08/22.
- Republic of Indonesia. (2025, October 27). *SECOND NATIONALLY DETERMINED CONTRIBUTION*. https://unfccc.int/sites/default/files/2025-10/Indonesia_Second%20NDC_2025.10.24.pdf
- Republic of South Africa. (2025, October). *SOUTH AFRICA'S SECOND NATIONALLY DETERMINED CONTRIBUTION UNDER THE PARIS AGREEMENT*. https://unfccc.int/sites/default/files/2025-10/South%20Africa%27s%20second%20Nationally%20Determined%20Contribution_2025.pdf
- SEMARNAT. (2025). *Actualización de la Contribución Determinada a nivel Nacional 3.0 de México*. Gobierno de México. https://unfccc.int/sites/default/files/2025-11/NDC%203.0%20Me%CC%81xico_spanish.pdf
- UITP. (2024). *Public Transport National Determined Contributions Template*. https://cms.uitp.org/wp/wp-content/uploads/2024/06/20240627_AnalysisReport-PT-NDC-template-JUN24-v4.pdf
- UN Climate Change High-Level Champions & Marrakech Partnership for Global Climate Action. (2023). *2030 Climate Solutions: Implementation roadmap*. https://www.climatechampions.net/media/vknpzpxo/2030-climate-solutions-publication-implementation-roadmap.pdf
- UN STAT. (2022). *SDG indicator 7.3.1 metadata*. https://unstats.un.org/sdgs/metadata/files/Metadata-07-03-01.pdf
- UNDP. (2025, February). *Quality Assurance Checklist for Nationally Determined Contributions (NDCs) 3.0*. https://www.undp.org/publications/quality-assurance-checklist-nationally-determined-contributions-ndcs-30
- UNEP. (2024, October 17). *Emissions Gap Report 2024*. https://www.unep.org/resources/emissions-gap-report-2024
- UNEP-Convened Climate and Clean Air Coalition. (2024a). *Guidance on Including Methane in NDCs*. https://www.ccacoalition.org/sites/default/files/resources/files/Guidance%20on%20Including%20Methane%20in%20NDC%203.0_17%20Oct.pdf
- UNEP-Convened Climate and Clean Air Coalition. (2024b). *Guidance on Including N_2O in Nationally Determined Contributions: Delivering near-term climate, development and economic benefits*. https://www.ccacoalition.org/sites/default/files/resources/files/Guidance%20on%20Including%20N%E2%82%82O%20in%20Nationally%20Determined%20Contributions%20_3_0.pdf
- UNFCCC. (2015). *Paris Agreement*. https://unfccc.int/files/meetings/paris_nov_2015/application/pdf/paris_agreement_english_.pdf
- UN-Water. (2024). *UN-Water Analytical Brief on Water for Climate Mitigation*. https://www.unwater.org/sites/default/files/2025-02/UN-Water_Analytical_Brief_on_Water_Feb1-2025.pdf
- Winkler, H., Watson, C., & Bhandari, P. (2024). *Connecting GST outcomes and COP28 workstreams*. Finance Working Group. https://media.odi.org/documents/Connecting_GST_Outcomes_and_COP28_Actions_FWG.pdf
- WWF. (2025). *Phasing Out Fossil Fuels through NDCs 3.0: Guidance for Policy-Makers*. https://wwfint.awsassets.panda.org/downloads/use-this-design-1-word--guidance-on-phasing-out-fossil-fuels-designed-v3_1.pdf?_gl=1*ngf147*_gcl_au*MjEwNTQyMzU1OS4xNzQzMDc2MTk5*_ga*MTU2MDMwNTAxNC4xNzQzMDc2MjA0*_ga_9594H828Q9*MTc0NTQ0Mzc5MS4yOTYuMS4xNzQ1NDQ1NzQxLjUwLjAuMA..
- WWF, Climate Focus, & Trillion Trees. (2024). *Raising the bar: Strengthening Forest Ambition in Nationally Determined Contributions (NCS): An Assesment of current NDCs*. WWF. https://climatefocus.com/wp-content/uploads/2024/11/wwf_ndcs-for-forests.

APPENDIX

Annex 1

Literature Review GST Decision in NDCs

The table is organized according to the articles of the mitigation section of the GST decision, and for each theme it lists the multitude of policy measures and indicators proposed in the literature. To provide a clearer overview and emphasize commonalities, the policy measures and indicators per article have been organized into categories.

Finally, a short explanation of the process that was followed to narrow down the paragraphs for the table. After a first review of the literature, it was decided not to include all paragraphs of the mitigation part in the table. The emphasis was placed on paragraphs that explicitly reference Parties (such as paragraph 28), along with those sections that are actionable through specific policy measures. Paragraph 33, which concerns nature, ecosystems and deforestation, was included as it represents a new element, despite the fact that it does not address Parties directly. It was decided that the paragraphs focusing on procedures would not be included in the table.

In addition, we would like to provide an explanation of the policy measures that were not included in the table. Across all paragraphs of the GST decision, the reviewed literature highlights a range of enabling measures that can support implementation. These include strengthening Monitoring, Reporting, and Verification (MRV) systems, ensuring social and environmental safeguards, securing adequate financial resources, and taking into account cross-cutting aspects such as gender equality, just transition, and the contributions of Indigenous Peoples and Local Communities (IPLCs). While these measures are highly relevant for effective implementation, they were not included in the consolidated table, as the focus of this analysis was on policy measures that directly translate the GST calls.

Table A1. Literature Review GST Decision in NDCs

GST Decision *Topic*	Category	Policy measure at national level	Indicators
28a *Renewable energy*	**Solar & Wind Deployment**	• Increase solar, wind and other renewables power generation capacity (Moosmann & Pischke, 2024)	• Installed renewable electricity generation capacity: X MW in 2030 and 2035 (Moosmann & Pischke, 2024); (Jeudy-Hugo *et al.*, 2024); (Lo Re *et al.*, 2025) • Share of renewable energy in final energy consumption: X% in 2030 and 2035 (Moosmann & Pischke, 2024); (Lo Re *et al.*, 2025) • Progress towards increasing the share of renewables in the national energy mix by 2030 (Jeudy-Hugo *et al.*, 2024) • Annual expansion of renewable energy (%) (Lo Re *et al.*, 2025) • Share of technical potential of renewable energy exploited (%) (Lo Re *et al.*, 2025)
	Policy Support & Incentives	• Supporting the development of renewable technologies through financial incentives and regulatory reforms (Jeudy-Hugo *et al.*, 2024) • Use fiscal systems to improve the economic competitiveness of renewable energy (COP28 Presidency *et al.*, 2023) • Guarantees of origin and direct clean energy Power Purchase Agreements (PPAs) (UN Climate Change High-Level Champions & Marrakech Partnership for Global Climate Action, 2023) • Streamline permitting procedures for new grid infrastructure and upgrades to existing transmission and distribution infrastructure (COP28 Presidency *et al.*, 2023) • Intensify co-operation with neighbouring governments and grid authorities on regional grid planning and opportunities for building interconnections, cross-border power trading, regional power pools and innovative approaches like meshed grids (COP28 Presidency *et al.*, 2023)	
	Grid Infrastructure	• Develop the electricity grid and storage infrastructure (Moosmann & Pischke, 2024); (COP28 Presidency *et al.*, 2023)	• Electricity grid expansion: X km in 2030 and 2035 (Moosmann & Pischke, 2024)
	Storage & Flexibility	• Expand storage infrastructure and flexibility options (Moosmann & Pischke, 2024) • Introduce economic incentives for smart electrification and demand-side response (such as tax credits and innovation grants) to encourage private investment in sector-coupling solutions (COP28 Presidency *et al.*, 2023)	• Energy storage capacity: X MWh in 2030 and 2035 (Moosmann & Pischke, 2024)
	Electrification Across Sectors	• Increase electrification rates across buildings, transport, agriculture, industry (Climate Action Network, n.d.)	
28a *Energy efficiency*	**Energy Efficiency Improvements**	• Support energy efficiency improvements in all sectors of the economy (Moosmann & Pischke, 2024)	• Annual energy intensity improvement (%) (COP28 Presidency *et al.*, 2023); (Jeudy-Hugo *et al.*, 2024); (Moosmann & Pischke, 2024) • Annual rate of change in total final energy supply divided by GDP X % in 2030 and 2035 (Moosmann & Pischke, 2024) • Energy intensity measured in terms of primary energy supply divided by GDP (SDG indicator 7.3.1) (Moosmann & Pischke, 2024); (UN STAT, 2022) • Primary and final energy consumption compared to a reference scenario (EU, 2023); (Moosmann & Pischke, 2024)
	Standards & Regulation	• Introduce national standards for energy efficiency at national, sectoral and product level (Lo Re *et al.*, 2025) • The Party has launched a national energy efficiency strategy encompassing sectors X, Y, Z (Jeudy-Hugo *et al.*, 2024)	
	Public Awareness & Sufficiency Accompanying economic measures	• Public information campaigns on energy efficiency and energy demand reduction (Jeudy-Hugo *et al.*, 2024); (Moosmann & Pischke, 2024)	
	Accompanying economic measures	• Reduce fossil fuel subsidies and introduce carbon pricing (Moosmann & Pischke, 2024)	• Primary and final energy consumption compared to a reference scenario (EU, 2023); (Moosmann & Pischke, 2024)

28b *Coal power phase-down*	**Phase-out**	• Develop and implement phase-out plans for fossil fuel power plants (Moosmann & Pischke, 2024)	• Primary energy consumption of unabated coal for power generation X gigajoules in 2030 and 2035 (Moosmann & Pischke, 2024) • Share of coal in energy supply (%) (Lo Re *et al.*, 2025) • Proportion of coal in domestic energy production (%) (Lo Re *et al.*, 2025) • Quantity of coal production (Mt) (Lo Re *et al.*, 2025) • Coal production capacity (MW) (Lo Re *et al.*, 2025)
	Halt New Infrastructure	• Stop new fossil fuel infrastructure projects (Moosmann & Pischke, 2024)	• Installed unabated coal power generation capacity X megawatts in 2030 and 2035 (Moosmann & Pischke, 2024)
	Carbon Capture & Abatement	• The Party has put in place a carbon capture, utilisation and storage (CCUS) strategy to reduce emissions from existing plants by 2030 (Jeudy-Hugo *et al.*, 2024)	• Electricity generation from unabated coal (TWh) (Jeudy-Hugo *et al.*, 2024)
	Just Transition	• The Party is designing a transition plan for coal workers (Jeudy-Hugo *et al.*, 2024)	
28c *Net zero energy systems*	**Renewable Power Generation Capacity**	• Increase renewable power generation capacity (Moosmann & Pischke, 2024) • The Party has established partnerships with private sector stakeholders to accelerate deployment (Jeudy-Hugo *et al.*, 2024)	• Share of zero-carbon fuels in final energy consumption (Moosmann & Pischke, 2024) • Share of low-carbon fuels in final energy consumption (Moosmann & Pischke, 2024)
	Develop Electricity Grids and Storage Infrastructure	• Develop the electricity grid and storage infrastructure (Moosmann & Pischke, 2024)	
	Sectoral Decarbonisation	• Foster renewable energy in the building sector (Moosmann & Pischke, 2024) • The Party has developed a decarbonisation strategy for its energy sector (Jeudy-Hugo *et al.*, 2024)	• Share of energy sector emissions in total emissions (%) (Jeudy-Hugo *et al.*, 2024); (Lo Re *et al.*, 2025)
	Electrification	• Electrify the vehicle fleet (Moosmann & Pischke, 2024) • Electrify industry (Moosmann & Pischke, 2024)	
28d *Transitioning away from fossil fuels*	**Fossil Fuel Exploration & Production**	• Stop permitting new fossil fuel exploration (Moosmann & Pischke, 2024); (Climate Action Tracker, 2024) • Decrease production of fossil fuels (Moosmann & Pischke, 2024) • Setting moratoriums on further approval of new oil fields (WWF, 2025)	• Fossil fuel consumption (Moosmann & Pischke, 2024) – X gigajoule in 2030 and 2035 • Primary energy supply by fuel type (Coal, Oil, Gas, Nuclear, Biomass, Hydro, Wind, Solar, Geothermal, Ocean) (Moosmann & Pischke, 2024) – X gigajoule by fuel type in 2030 and 2035
	Energy System Transformation	• Install renewable power generation capacity and develop the electricity grid and storage infrastructure (Moosmann & Pischke, 2024) • Foster renewable energy and retrofitting in the building sector (Moosmann & Pischke, 2024) • Electrify the vehicle fleet (Moosmann & Pischke, 2024)	• Power generation by fuel type (Coal, Oil, Gas, Nuclear, Biomass, Hydro, Wind, Solar, Geothermal, Ocean) (Climate Action Network, n.d.); (Keramidas *et al.*, 2023); (Moosmann & Pischke, 2024) • Final energy consumption by fuel type (Keramidas *et al.*, 2023) (Moosmann & Pischke, 2024)
	Investment Shifts	• Reducing investments into fossil fuel infrastructure by two thirds by 2030 (Climate Action Network, n.d.) • Contradictory policies must be addressed and reversed: fossil fuel production needs to phase out, while fossil fuel exploration and subsidies need to stop (Climate Action Tracker, 2024) • The Party plans to shift investments from fossil fuel infrastructure to clean energy projects (Jeudy-Hugo *et al.*, 2024)	• Fossil fuel demand (EJ) and investment in fossil fuels (USD billion) (Jeudy-Hugo *et al.*, 2024) • Reducing fossil fuel–related methane emissions by 75% by 2030 (Climate Action Network, n.d.)
	Just Transition & Social Measures	• Just transition framework to support workers and communities affected by the shift from fossil fuels (Jeudy-Hugo *et al.*, 2024)	
28e *Zero- and low- emission technologies*	**Low- and Zero-Emission Technologies**	• The Party is accelerating the deployment of zero- and low-emission technologies such as low-carbon hydrogen production, nuclear, CCUS, and biofuel production (Jeudy-Hugo *et al.*, 2024) • The Party has implemented policies to incentivise the adoption of these technologies (Jeudy-Hugo *et al.*, 2024)	• CO_2 emissions captured (Mt) (Jeudy-Hugo *et al.*, 2024) • Low-carbon hydrogen production (EJ) (Jeudy-Hugo *et al.*, 2024) • Nuclear power capacity (GW) (Jeudy-Hugo *et al.*, 2024) • Liquid biofuel production (EJ) (Jeudy-Hugo *et al.*, 2024) • Primary energy consumption from nuclear energy (Mtoe) (Lo Re *et al.*, 2025) • Share of nuclear in electricity generation (%) (Lo Re *et al.*, 2025)
	Renewables, Grid and Storage	• Install renewable power generation capacity and develop the electricity grid and storage infrastructure, including renewable hydrogen production, transport and storage (Moosmann & Pischke, 2024)	• Share of newly registered electric vehicles (Moosmann & Pischke, 2024) – X % in 2030 and 2035
	Buildings	• Foster renewable energy in the building sector (Moosmann & Pischke, 2024)	
	Transport	• Electrify the vehicle fleet (Moosmann & Pischke, 2024)	• Share of newly registered electric vehicles (Moosmann & Pischke, 2024) – X % in 2030 and 2035
	Industry	• Electrify and implement zero-emission technologies in industry (Moosmann & Pischke, 2024)	

28f *Non-CO_2 emissions*	**governance & targets**	• Governments should set absolute, economy-wide emission reduction target trajectories incl. all GHGs, specified per year (Climate Action Tracker, 2024) • Ensure that the NDC increases GHG coverage since previous NDC (adding CH_4, HFCs, SLCPs, etc.) (UNDP, 2025) • The Party aims to reduce methane emissions through enhanced regulations by 2030 (Jeudy-Hugo *et al.*, 2024) • Governments should establish monitoring frameworks and data collection for methane, N_2O, HFCs, and other SLCPs (UNEP-Convened Climate and Clean Air Coalition, 2024a, 2024b)	• Does the NDC cover all GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, SF_6, NF_3)? (UNDP, 2025) • Level of non-CO_2 GHG emissions (X kt CO_2-eq in 2030 & 2035) (Moosmann & Pischke, 2024)
	Energy (CH_4 & N_2O)	• Strengthen regulations for monitoring, leak detection and repair (Moosmann & Pischke, 2024) • The Party aims to reduce methane emissions through enhanced regulations by 2030 (Jeudy-Hugo *et al.*, 2024) • Implement stricter monitoring of methane emissions from oil and gas sector (Jeudy-Hugo *et al.*, 2024) • Minimise venting, flaring and fugitive emissions from oil and gas sector (UNEP-Convened Climate and Clean Air Coalition, 2024a) • Minimise methane emissions from coal mining through pre-mine degasification and thermal oxidation of ventilation air (UNEP-Convened Climate and Clean Air Coalition, 2024a) • Set time-bound goals to reduce N_2O from energy sector (UNEP-Convened Climate and Clean Air Coalition, 2024b)	• Energy sector non-CO_2 emissions, esp. CH_4 (Mt CO_2-eq) (Jeudy-Hugo *et al.*, 2024) • Share of methane emissions from energy sector in total national CH_4 emissions (%) (Lo Re *et al.*, 2025)
	Agriculture (CH_4 & N_2O)	• Provide incentives for low-methane agricultural practices (Moosmann & Pischke, 2024) • Provide incentives for low-nitrous oxide practices (Moosmann & Pischke, 2024) • Control of methane emissions from livestock production: research, R&D, behaviour change, capacity building, regulation, data collection (UNEP-Convened Climate and Clean Air Coalition, 2024a) • Control of methane emissions from rice paddy fields: research, R&D, behaviour change, capacity building, infrastructure investment, data collection (UNEP-Convened Climate and Clean Air Coalition, 2024a) • Set time-bound goals / implement measures to reduce N_2O emissions from agriculture: fertilizer management, land management, livestock (UNEP-Convened Climate and Clean Air Coalition, 2024b)	• Level of methane emissions from agriculture (X kt CO_2-eq in 2030/2035) (Moosmann & Pischke, 2024) • Level of nitrous oxide emissions from agriculture (X kt CO_2-eq in 2030/2035) (Moosmann & Pischke, 2024) • "[Country] will pursue N_2O abatement [by X% compared to 1990 levels] in support of our Economy Wide Target." (UNEP-Convened Climate and Clean Air Coalition, 2024b)
	Waste (CH_4 & N_2O)	• Replace landfilling by recycling or incineration with CCS and energy use (Moosmann & Pischke, 2024) • Capture methane emissions from landfills (Moosmann & Pischke, 2024) • Minimise methane emissions from solid waste: diversion, recovery, robust monitoring, infrastructure investment (UNEP-Convened Climate and Clean Air Coalition, 2024a) • Upgrade wastewater treatment plants with methane gas recovery (UNEP-Convened Climate and Clean Air Coalition, 2024a) • Set time-bound goals / implement measures to reduce N_2O from waste: nitrogen control in sewage, targets for reduction (UNEP-Convened Climate and Clean Air Coalition, 2024b)	• Level of methane emissions from waste (X kt CO_2-eq in 2030/2035) (Moosmann & Pischke, 2024)
	Industry (N_2O) Transportation (N_2O)	• Set time-bound goals and implement specific measures to reduce N_2O emissions from industry: abatement technologies in nitric/adipic acid production, thermal destruction, catalytic decomposition (UNEP-Convened Climate and Clean Air Coalition, 2024b)	• Level of N_2O emissions from industry (X kt CO_2-eq in 2030/2035) (Moosmann & Pischke, 2024) • Number of nitric acid production plants with abatement technology installed (UNEP-Convened Climate and Clean Air Coalition, 2024b)
	Transportation (N_2O)	• Set time-bound goals and implement specific measures to reduce N_2O emissions from transport: reduce fuel consumption, install pollution control technologies (UNEP-Convened Climate and Clean Air Coalition, 2024b)	• Level of N_2O emissions from transport (X kt CO_2-eq in 2030/2035) (Moosmann & Pischke, 2024)
	HFCs	• Phase-down of hydrofluorocarbons (HFCs) (Moosmann & Pischke, 2024)	• Ratification and implementation of the Kigali Amendment, % reduction compared to baseline year (Moosmann & Pischke, 2024)

28g *Road transport*	**Avoid**	• Reduce transport demand by reducing the number or length of trips needed to access essential opportunities (education, employment, health, social life) (International Transport Forum, 2024) • Urban planning to bring work, services, and goods closer to people's homes (UNEP, 2024)	
	Shift	• Expand public transport (Moosmann & Pischke, 2024); (Jeudy-Hugo *et al.*, 2024) • Provide environment for sustainable modes such as walking and cycling (Moosmann & Pischke, 2024); (UNEP, 2024) • Prioritize avoid/shift measures (International Transport Forum, 2024); (UNEP, 2024) • Decarbonization in freight: multimodal transport, shift to rail and waterways (GIZ, 2024a)	• Shares of transport modes (cars, public transport, cycling, walking) in total passenger transport (%) (Moosmann & Pischke, 2024) • Increase share of journeys completed by public transport (%) (International Transport Forum, 2024) • Increase share of journeys completed by active mobility (%) (International Transport Forum, 2024) • Increase share of passenger transport from X% at present to X% in 2040 (UITP, 2024) • Average travel times to nearest medium/major city by public transport (minutes, 2030; 2035) (Moosmann & Pischke, 2024)
	Improve (Zero and Low-Emission Vehicles (ZLEVs)	• Incentivize shift towards electric vehicles via regulations, pricing, or subsidies (International Transport Forum, 2024); (Jeudy-Hugo *et al.*, 2024); (Moosmann & Pischke, 2024); (UNEP, 2024) • Electrify vehicle fleet (cars, buses, trucks) (International Transport Forum, 2024) • Rapid deployment of ZLEVs and development of charging infrastructure (UITP, 2024); (UN Climate Change High-Level Champions & Marrakech Partnership for Global Climate Action, 2023) • Support mechanisms like lowering purchase prices, especially for low- and middle-income households (UNEP, 2024) • Provide charging infrastructure (Moosmann & Pischke, 2024); (Jeudy-Hugo *et al.*, 2024); (UNEP, 2024)	• Share of newly registered electric vehicles (%) (Moosmann & Pischke, 2024) • Number of electric vehicles, including buses (Lo Re *et al.*, 2025) • Number of new registrations of electric vehicles (Lo Re *et al.*, 2025) • Market share of electric vehicles (%) (Lo Re *et al.*, 2025) • Share of ZEV of total passenger vehicle sales by 2030 (UN Climate Change High-Level Champions & Marrakech Partnership for Global Climate Action, 2023) • Number of charging stations installed (Lo Re *et al.*, 2025) • Road transport CO_2 emissions (Gt) (Jeudy-Hugo *et al.*, 2024) • Electric car sales (million units) (Jeudy-Hugo *et al.*, 2024) •
	Improve (efficiency and fuels)	• Improve efficiency of transport system and vehicles (International Transport Forum, 2024) • Deployment of low-carbon fuels (International Transport Forum, 2024)	• Final energy consumption in passenger transport (GJ, % reduction) (Moosmann & Pischke, 2024) • Final energy consumption in goods transport (GJ, % reduction) (Moosmann & Pischke, 2024) • Transport CO_2 emission reduction targets relative to base year or BAU scenario (%) (International Transport Forum, 2024) • Amount of ethanol and biodiesel used in transport (m^3) (Lo Re *et al.*, 2025)
28h *Fossil fuel subsidies*	**Subsidy Phase-Out**	• Phase out fossil fuel subsidies (Climate Action Tracker, 2024); (Moosmann & Pischke, 2024) • Contradictory policies must be addressed and reversed: fossil fuel production needs to phase out, while fossil fuel exploration and fossil fuel subsidies need to stop (Climate Action Tracker, 2024)	• Total level of fossil fuel subsidies (Moosmann & Pischke, 2024) – X million USD in 2030 and 2035 (Moosmann & Pischke, 2024) • Total fossil fuel subsidies as a percentage of GDP (Black *et al.*, 2023); (Moosmann & Pischke, 2024)– X % in 2030 and 2035 (Moosmann & Pischke, 2024) • Decrease in subsidies for petroleum products (%) (Lo Re *et al.*, 2025) Fossil fuel consumption subsidies (USD billion) (Jeudy-Hugo *et al.*, 2024)
	Support for Alternative Fuels & Transport Modes	• Provide support for alternative fuels (Moosmann & Pischke, 2024) • Provide support for alternative transportation modes (Moosmann & Pischke, 2024)	
	Just Transition Measures	• The Party has reformed fossil fuel subsidies to eliminate inefficiencies while ensuring support for vulnerable populations (Jeudy-Hugo *et al.*, 2024)	

33 Nature, ecosystems and deforestation, forest degradation			
	Deforestation & Forest Degradation	• Prevent, halt and reverse deforestation and forest degradation (Moosmann & Pischke, 2024); (WWF *et al.*, 2024); (Climate Action Network, 2024) • Address main drivers of deforestation such as expansion of road infrastructure & hydrocarbon projects (Climate Action Network, 2024) • Increase total forest area under legal protection (Nature4Climate Coalition, 2024) • Secure land tenure for Indigenous peoples/local communities on forest land (Nature4Climate Coalition, 2024) • Expand conservation areas (Moosmann & Pischke, 2024)	• Deforested area (X hectares in 2030 & 2035) (Moosmann & Pischke, 2024) • Reduce X CO_2e by reducing deforestation & forest degradation by X year (Nature4Climate Coalition, 2024) • Reduce gross deforestation rate / total hectares lost by X% & hectares gained via reforestation (Nature4Climate Coalition, 2024)
	Reforestation & Sustainable Forest Management	• Implement policies for sustainable forest management: fire prevention, community brigades, selective logging, certification, market access (Nature4Climate Coalition, 2024) • Support reforestation and sustainable forest management with long-term perspective (Moosmann & Pischke, 2024) • Prioritize natural regeneration over large-scale monoculture afforestation (Land Gap Project, 2024) • Enhance technical capacity & support for forest restoration (Nature4Climate Coalition, 2024) • Develop forest restoration measures that prevent monoculture plantations (Nature4Climate Coalition, 2024) • Promote understory & herbaceous species establishment to restore ecological functionality (Nature4Climate Coalition, 2024) • Develop policies that address underlying causes of forest degradation (Nature4Climate Coalition, 2024) • Implement policies and measures to ensure "deforestation-free" and "conversion-free" supply chains, particularly for "forest risk" commodities like beef, soy, palm oil, and cocoa, and hold consumer countries responsible for embedded emissions from imported goods (Land Gap Project, 2024)	• Reforested area (X hectares in 2030 & 2035) (Moosmann & Pischke, 2024) • Forest area certified as sustainably managed (% of forest area certified in 2030 & 2035) (Moosmann & Pischke, 2024) • Increase area of forest under sustainable management by X% by X year (Nature4Climate Coalition, 2024) • Restore X hectares of degraded forest land by X year (Nature4Climate Coalition, 2024)
	Land Degradation & Sustainable Land Use	• Prevent, halt, and reverse land degradation (Moosmann & Pischke, 2024) • Implement sustainable land use and management plans (Moosmann & Pischke, 2024) • Implement policies to reduce anthropogenic nitrogen deposition (Nature4Climate Coalition, 2024) • Implement grazing management practices to maintain grassland health and prevent overgrazing (Nature4Climate Coalition, 2024) • Educate local communities to prevent livestock overgrazing (Nature4Climate Coalition, 2024) • Implement fire management strategies on grasslands to prevent woody encroachment & spread of invasives (Nature4Climate Coalition, 2024)	• Area of sustainably managed land (% of national territory in 2030 & 2035) (Moosmann & Pischke, 2024) • Change in area of degraded land (% in 2030 & 2035) (Moosmann & Pischke, 2024) • Reduce X CO_2e by reducing conversion of natural grasslands, shrublands, savannas by X% or X hectares/year (Nature4Climate Coalition, 2024) • By X year, identify & address drivers of grassland degradation via cross-sectoral planning (Nature4Climate Coalition, 2024)
	Wetlands & Peatlands	• Protection of intact peatlands/wetlands & rewetting (Moosmann & Pischke, 2024) • Develop incentives for landowners to conserve wetlands (Nature4Climate Coalition, 2024) • Develop/improve wetland monitoring systems & law enforcement programs (Nature4Climate Coalition, 2024) • Implement policy reforms to improve governance & community management of freshwater ecosystems (Nature4Climate Coalition, 2024) • Transition X hectares of drainage-based agriculture lands to paludiculture (Nature4Climate Coalition, 2024) • Establish & disseminate best practices for wetland restoration (Nature4Climate Coalition, 2024)	• Area of restored / rewetted peatlands (X hectares in 2030 & 2035) (Moosmann & Pischke, 2024) • Reduce X CO_2e via integrated water resource management & peat rewetting by 2030 (Nature4Climate Coalition, 2024) • Rewet X hectares of drained peatlands & restore X hectares of wetlands by X year (Nature4Climate Coalition, 2024) • Reduction in emissions by X CO_2e /yr due to peat rewetting on croplands (Nature4Climate Coalition, 2024) • By X year, map peatland & wetland areas under national inventory (Nature4Climate Coalition, 2024)
	Nature-based Solutions	• Integrate NbS in NDCs for mitigation & adaptation (UN Climate Change High-Level Champions & Marrakech Partnership for Global Climate Action, 2023) • Deliver climate & nature synergies through FOLU interventions (WWF *et al.*, 2024) • Increase ambition to protect and restore ecosystem carbon stocks, prioritizing primary ecosystems (Climate Action Network, 2024)	• X Gt CO_2e mitigated per year through NbS (UN Climate Change High-Level Champions & Marrakech Partnership for Global Climate Action, 2023) • X tCO_2eq of reductions through FOLU interventions (WWF *et al.*, 2024)
	Wildlife	• Establish wildlife's contribution to climate mitigation & adaptation (International Fund for Animal Welfare, 2024) • Commit to protecting & restoring specific wildlife species, habitats & protected areas (International Fund for Animal Welfare, 2024) • Implement restoration programs reintroducing keystone species to promote ecosystem balance & biodiversity (Nature4Climate Coalition, 2024)	• Amount (in million tonnes) of GHG emissions avoided or sequestered by wild animals & their habitats (International Fund for Animal Welfare, 2024)

34 *Support and investment deforestation*	**Support and investment deforestation**	• Develop fiscal and market mechanisms to allocate financial resources for protecting and enhancing forest ecosystem services, including payments for ecosystem services by X year. Explicitly include specific REDD+ targets and provide information about FREL/FRL, if applicable (Nature4Climate Coalition, 2024)	
		• Develop fiscal or market mechanisms to allocate financial resources to restoration (Nature4Climate Coalition, 2024)	
		• Develop fiscal or market mechanisms to allocate financial resources to protect/enhance water-related ecosystem services (Nature4Climate Coalition, 2024)	
35 *Oceans and coastal ecosystems*	**Protection & Conservation**	• Expand conservation areas (Moosmann & Pischke, 2024) • Establish Marine Protected Areas (MPAs) and/or improve their management (Nature4Climate Coalition, 2024) • Incorporate protected area designations into climate mitigation/adaptation (Nature4Climate Coalition, 2024)	• Area of ocean and coastal ecosystems preserved: X hectares in 2030 and 2035 (Moosmann & Pischke, 2024) • Increase the total marine and coastal area under protection to X% of national territory by X year (Nature4Climate Coalition, 2024) • Establishment of X% of EEZ as a marine protected area, fully managed by 2030 (Climate Advisers, 2023)
	Restoration & Sustainable Use	• Restore degraded coastal ecosystems (Moosmann & Pischke, 2024) • Implement restoration programs with community participation (Nature4Climate Coalition, 2024) • Establish science-based best practices for coastal restoration, e.g., assisted natural mangrove regeneration (Nature4Climate Coalition, 2024) • Implement policies to sustainably manage coastal and marine ecosystems, such as sustainable fisheries, coastal resilience strategies, and natural resource use plans (Nature4Climate Coalition, 2024) • Climate-adaptive fisheries management: eliminate harmful subsidies, promote sustainable fishing (Anderson *et al.*, 2024); (Commonwealth Secretariat, 2023) • Sustainable or climate-ready fisheries management (Climate Advisers, 2023)	• Conserve existing coastal wetlands via establishment of X hectares of marine protected areas (Anderson *et al.*, 2024) • Restore X hectares of degraded coastal habitat by X year (Nature4Climate Coalition, 2024) • Reduce X CO_2e from mangrove conversion by protecting X hectares (Nature4Climate Coalition, 2024) • Reduce energy-related GHG emissions by X CO_2e / X% from processing, storage, distribution of fish (Nature4Climate Coalition, 2024) • Restore X hectares of mangrove forests, generating X $TgCO_2$e (Anderson *et al.*, 2024) • Protect at least 50% of seagrass and mangrove ecosystems by 2025 (Anderson *et al.*, 2024)
	Nature-Based Solutions (NbS)	• Develop national blue carbon strategy to coordinate protection and management of coastal ecosystems (Nature4Climate Coalition, 2024) • Conserve and restore blue carbon habitats: mangroves, salt marshes, seagrasses as carbon sinks and buffers (Climate Advisers, 2023); (UN-Water, 2024) • Enhance carbon sequestration capacity of mangrove, salt marsh, and seagrass ecosystems (Nature4Climate Coalition, 2024) • Establish comprehensive management plans for blue carbon habitats (Anderson *et al.*, 2024)	• Map X% of coastal blue carbon ecosystems for carbon stocks incorporation into national GHG inventory (Nature4Climate Coalition, 2024) • Enhance carbon sequestration by X tons CO_2e annually by X year (Nature4Climate Coalition, 2024)
	Governance & Community Engagement	• Partner with local communities, private landowners, and other stakeholders to halt and reverse mangrove loss (Nature4Climate Coalition, 2024) • Improve governance and community management of coastal ecosystems through community-led committees and integration of traditional knowledge (Nature4Climate Coalition, 2024) • Implement coastal and marine ecosystem monitoring systems by X year (Nature4Climate Coalition, 2024) • Evaluate sources of ecosystem degradation such as pollution or coastal development and implement X policies to mitigate (Nature4Climate Coalition, 2024)	• Increase climate resilience of X% of coastline / X% of population through NbS by X year (Nature4Climate Coalition, 2024)
36 *Sustainable lifestyles, sustainable consumption and production and circular economy*	**Production**	• Facilitate re-use and recycling (Moosmann & Pischke, 2024) • Facilitate the transition towards a circular and climate-neutral construction (Moosmann & Pischke, 2024) • Increase material efficiency in production and other processes along the lifecycle (GIZ, 2024b) • Reduce service level to reduce size and mass (GIZ, 2024b) • Reduce the amount of materials used to perform a function at constant service level (GIZ, 2024b) • Reduce the share of non-renewable primary metals, materials or chemicals in products (GIZ, 2024b)	• Share of recycled waste in total waste: X % in 2030 and 2035 (Moosmann & Pischke, 2024) • Reduction of raw material consumed (Moosmann & Pischke, 2024) • Reduction of carbon emissions associated with raw material consumption: X kt of CO_2 equivalents in 2030 and 2035 (Moosmann & Pischke, 2024) • Reduction of carbon emissions associated with raw material consumption: X kt of material per capita in 2030 and 2035 (Moosmann & Pischke, 2024)
	Consumption	• Facilitate the transition towards low-emission transport modes (Moosmann & Pischke, 2024) • Facilitate lifestyle changes including towards lower meat consumption (Moosmann & Pischke, 2024) • Support initiatives to reduce food waste (Moosmann & Pischke, 2024) • Increase usage intensity (GIZ, 2024b) • Increase lifetime (GIZ, 2024b)	• Shares of transport modes (cars, public transport, cycling, walking) in overall transport volume: X % in 2030 and 2035 (Moosmann & Pischke, 2024) • Reduction of carbon emissions associated with consumer food waste / construction and demolition (Moosmann & Pischke, 2024) • X kt of waste produced by construction and demolition per capita in 2030 and 2035 (Moosmann & Pischke, 2024)
	Enabling Conditions	• Enabling CE measures: Behavioural measures and awareness campaigns, capacity building, finance and business support, research and development (GIZ, 2024b)	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