

CLIMATE CHANGE

38/2026

Final report

# GST in NDCs

How the first Global Stocktake is reflected in the NDCs

by:

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Wuppertal Institute for Climate, Environment, Energy, Wuppertal

**publisher:**

German Environment Agency



CLIMATE CHANGE 38/2026

Project No. 202423

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On behalf of the German Environment Agency

## Imprint

### **Publisher**

Umweltbundesamt  
Wörlitzer Platz 1  
06844 Dessau-Roßlau  
Tel: +49 340-2103-0  
Fax: +49 340-2103-2285  
[buergerservice@uba.de](mailto:buergerservice@uba.de)  
Internet: [www.umweltbundesamt.de](http://www.umweltbundesamt.de)

### **Report performed by:**

Wuppertal Institut für Klima, Umwelt, Energie, gGmbH  
Döppersberg 19  
D-42103 Wuppertal  
Germany

### **Report completed in:**

May 2026

### **Edited by:**

Section V1.1 International Climate Action  
Frederik Pischke (Fachbegleitung)

### **DOI:**

<https://doi.org/10.60810/openumwelt-8462>

ISSN 1862-4359

Dessau-Roßlau, June 2026

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**Abstract: GST in NDCs - How the first Global Stocktake is reflected in the 2025 NDCs**

The 2015 Paris Agreement established a ‘ratchet mechanism’ designed to increase climate ambition over time through five-year cycles of pledge-making and review. A cornerstone of this mechanism is the Global Stocktake (GST), a process intended to assess collective progress and inform the subsequent round of Nationally Determined Contributions (NDCs). Following the conclusion of the first Global Stocktake (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 study evaluates the extent to which the mitigation-related outcomes of GST1 have been integrated into the 2025 NDCs. It specifically examines whether Parties are explicitly referencing the GST as a guiding framework or merely aligning with its thematic areas (e.g., renewable energy, fossil fuel transition) without formal attribution.

The research employs a multi-staged analytical framework focusing on 75 NDCs submitted by early 2026, representing 81.25% of total global greenhouse gas emissions. The analysis utilized an advanced Large Language Model for systematic data extraction across 14 key GST mitigation paragraphs, (Para 28a-h, 33, 36, 37, 39, 40, and 42). The qualitative data were validated through a triple internal review process to ensure contextual accuracy.

The analysis reveals that while 92% of the sample mentions the GST in some form, explicit alignment with specific mitigation outcomes remains inconsistent. Paragraph 28a (tripling renewable energy and doubling energy efficiency) emerged as the most widely referenced element, with 45 NDCs showing explicit alignment and a significant number including concrete targets or policies. Conversely, more controversial or complex signals, such as transitioning away from fossil fuels (Para 28d) or phasing out fossil fuel subsidies (Para 28h), show lower levels of explicit referencing despite high thematic relevance of the substance of a GST paragraphs in many countries. A significant gap of the visibility of how the GST paragraphs informed the NDCs was identified: many countries include topics of the GST decision (topic alignment) but do not credit the GST as the informing driver (explicit GST alignment).

The findings suggest that the first cycle of the ratchet mechanism has been partially successful in signaling priority areas, yet the integration of GST outcomes into national planning processes varies greatly. While quantified GST benchmarks (e.g., renewables) are more readily adopted, others are not. The study recommends the development of more prescriptive guidance for the second GST to encourage the submission of further relevant information in the technical phase of the GST. This could also include guidance how information could be organised in the consideration of outcomes component as well as the GST2 decision text. A more prescriptive guidance would contribute to the efforts to further increase transparency by more standardized information in the NDCs.

**Kurzbeschreibung: GST in NDCs - Wie werden die Ergebnisse der ersten Globalen Bestandsaufnahme in den NDCs reflektiert?**

Das Pariser Abkommen von 2015 führte den sogenannten ‘Ratchet-Mechanismus’ ein, der darauf abzielt, die Klimaschutzziele im Laufe der Zeit durch fünfjährige Zyklen der Zielsetzung und Überprüfung zu verschärfen. Ein Eckpfeiler dieses Mechanismus ist die globale Bestandsaufnahme (Global Stocktake, GST), ein Prozess, der dazu dient, die kollektiven Fortschritte zu erfassen und zu bewerten und die jeweils nachfolgende Runde der national festgelegten Beiträge (Nationally Determined Contributions, NDCs) zu informieren. Nach Abschluss der ersten globalen Bestandsaufnahme (GST1) auf der COP28 in Dubai wurden die

Vertragsparteien beauftragt, in ihren für 2025 eingereichten NDCs darzulegen, wie die Ergebnisse der GST ihre aktualisierten Klimaziele und -politiken beeinflusst haben.

Diese Studie erhebt, inwieweit die auf eine Vermeidung des Klimawandels bezogenen Entscheidungen des GST1 in die NDCs für 2025 integriert wurden. Insbesondere wird untersucht, ob die Vertragsparteien ausdrücklich auf den GST als Leitrahmen verweisen oder sich deren Themenbereiche (z. B. erneuerbare Energien, Ökosystemschutz) orientieren, ohne den GST formell zu erwähnen.

Die Untersuchung betrachtet 75 bis Anfang 2026 eingereichte NDCs, die etwa 81,25 % der weltweiten Treibhausgasemissionen repräsentieren. Die Analyse nutzte ein Large Language Model zur qualitativen Datenerhebung aus 14 zentralen GST-Paragrafen zur Emissionsminderung (Paragrafen 28a–h, 33, 36, 37, 39, 40 und 42). Die qualitativen Daten wurden durch eine dreistufige Qualitätssicherung validiert, bevor quantitative Daten daraus abgeleitet wurden.

Die Analyse zeigt, dass zwar 92 % der NDCs den GST erwähnen, eine explizite Ausrichtung auf spezifische Minderungsbereiche jedoch uneinheitlich bleibt. Absatz 28a (Verdreifachung der erneuerbaren Energien und Verdopplung der Energieeffizienz) ist der am Häufigsten genannte Paragraph, 45 NDCs beziehen sich explizit darauf. Umgekehrt wird auf GST Paragraphen, wie den Ausstieg aus fossilen Brennstoffen (Absatz 28d) oder den Abbau von Subventionen für fossile Brennstoffe (Absatz 28h), deutlich weniger Bezug genommen. Viele Vertragsstaaten berichten in ihren NDCs zu einer Vielzahl der Themen des GST-Beschlusses (thematische Ausrichtung) ohne den GST jedoch als Informationsquelle zu benennen (keine explizite GST-Ausrichtung).

Die Ergebnisse deuten darauf hin, dass der erste Zyklus des Ratchet-Mechanismus bei der Signalisierung von Schwerpunktbereichen teilweise erfolgreich war, die bewußte und sichtbare Integration der GST-Ergebnisse in nationale Planungsprozesse jedoch stark variiert. Während quantifizierte GST-Benchmarks (z. B. erneuerbare Energien) leichter angesprochen und übernommen werden, ist dies bei anderen nicht der Fall. Die Studie empfiehlt in mehrfacher Hinsicht verbindlichere Leitlinien für die zweite globale Bestandsaufnahme (GST2): Leitlinien dazu, welche Informationen in der technischen Phase der GST eingereicht werden könnten (Submissions), und wie die Informationen im Rahmen der ‚Consideration of Outcomes‘-Komponente strukturiert sowie im Entscheidungstext des GST 2 gegliedert werden können. Standardisiertere Informationen in den NDCs würden zu den Bemühungen um mehr Transparenz beitragen.

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## List of abbreviations

| Abbreviation    | Explanation  |
|-----------------|--|
| AI              | Artificial Intelligence  |
| BIP             | Integrated Project Bank  |
| CCXG            | Climate Change Expert Group  |
| C2ES            | Center for Climate and Energy Solutions  |
| CMA             | Conference of the Parties serving as Meeting of the Parties to the Paris Agreement |
| CO <sub>2</sub> | Carbon dioxide   |
| COP             | Conference of the Parties  |
| EA              | Explicit GST Alignment   |
| EC              | European Commission  |
| EPI             | Environmental Performance Indicator  |
| EU              | European Union   |
| EU-ETS          | EU Emissions Trading Scheme  |
| GDP             | Gross Domestic Product   |
| GHG             | Greenhouse gas   |
| GST             | Global Stocktake   |
| ICTU            | Information to facilitate Clarity, Transparency and Understanding                  |
| LLM             | Large Language Model   |
| LT-LEDS         | Long-Term Low Emission Development Strategy  |
| n.d.            | no data  |
| NDC             | Nationally Determined Contribution   |
| NFERP           | National Forest Extension and Rehabilitation Program                               |
| PA              | Paris Agreement  |
| PPCA            | Powering Past Coal Alliance  |
| RE              | Renewable Energy   |
| SB              | Subsidiary Body  |
| SIDS            | Small Island Developing States   |
| TA              | Topic Alignment  |
| UAE             | United Arab Emirates   |
| UK              | United Kingdom   |
| UNFCCC          | United Nations Framework Convention on Climate Change                              |

| Abbreviation | Explanation   |
|--------------|---------------|
| US           | United States |

## Summary

### 1. Introduction and Policy Context

The Paris Agreement (PA) represents a structural evolution in global climate governance, transitioning from the rigid, top-down emissions targets of the Kyoto Protocol to a dynamic, bottom-up framework. Central to this architecture are Nationally Determined Contributions (NDCs). Under Articles 4.3 and 4.9 of the PA, Parties are legally mandated to communicate new or updated NDCs every five years, with each successive pledge representing a progression beyond the previous one and reflecting the Party's 'highest possible ambition'. To maintain the integrity of this 'ratchet mechanism,' Article 14 establishes the Global Stocktake (GST). The GST serves a dual purpose: a retrospective assessment of collective progress toward the PA's long-term goals and a forward-looking catalyst to stimulate enhanced national action. Following the conclusion of the first Global Stocktake (GST1) at CMA5 in Dubai (2023), Article 14.3 requires that the outcomes of the GST serve as the primary basis for Parties to update and enhance their actions. Specifically, the Dubai decision mandates that Parties communicate how their 2025 NDCs have been informed by the GST1 outcomes, marking a critical juncture for evaluating the treaty's efficacy.

### 2. Methodological Framework

This analysis employs a multi-staged technical approach to evaluate the integration of GST1 mitigation outcomes—specifically paragraphs 28(a-h), 33, 36, 37, 39, 40, and 42—within the 2025 NDC cycle.

#### Sample Selection and Emission Coverage

The study analyzes a sample of 75 NDCs submitted to the UNFCCC secretariat by January 31, 2026. While the sample consists of 75 documents, it represents 101 countries and the EU (due to the European Union's collective submission) and accounts for 81.25% of global greenhouse gas (GHG) emissions. The sample includes 25 of the top 30 global emitters, the other five have by the study cut-off date not submitted a NDC. Selection was governed by a number of criteria.

#### Analytical Lenses: Explicit GST vs. topic alignment

To discern the actual influence of the GST, the analysis utilizes two lenses:

**Explicit GST alignment:** Instances where the NDC specifically credits the GST, cites paragraph numbers, or uses GST outcome terminology i) within the formal 'Information to facilitate Clarity, Transparency and Understanding' (ICTU) framework or ii) in the general NDC text.

**Topic alignment:** Instances where the NDC covers a thematic area (e.g., renewable energy) but does not credit the GST as the informing framework, suggesting implicit alignment or pre-existing national priorities.

#### Action Categorization

For mitigation actions related to paragraphs 28 (a-h), 33, and 36, findings are categorized by depth of commitment: Category 1 comprises general statements with broader intent or announcement lacking specific implementation parameters. Category 2 comprises policy and measures and refers to action-oriented references to specific domestic policies or legislative

instruments. Finally, Category 3 relates to targets as quantified, time-bound commitments (e.g., ‘80% renewables by 2030’). |

#### Data Quality Assurance

The study utilized AI-tooling (NotebookLM) for document analysis. To ensure quality of the results, all findings underwent a ‘triple internal review’ process, manually verifying AI outputs against original source texts.

### 3. Overarching Results of the Analysis

The data indicates a high level of formal recognition of the GST framework, though the depth of substantive integration is non-uniform.

- ▶ 92% of the sample (69 NDCs) mention the GST in some form, demonstrating near-universal awareness of the procedural requirement.
- ▶ 71% of NDCs (53 NDCs) draw on at least one specific mitigation-related paragraph from the GST1 outcome.
- ▶ Coverage Variance: The number of referenced mitigation paragraphs varies significantly, from zero to 12 (Switzerland and the UK referenced the highest number).
- ▶ Non-Mentions: Eight percent of NDCs (6 NDCs) did not draw on the GST outcomes entirely: Burkina Faso, Côte d’Ivoire, Ethiopia, Sierra Leone, Venezuela, and Zimbabwe.

### 4. Detailed Paragraph-Specific Analysis (Mitigation Outcomes)

#### Energy Transition (Paras 28a, 28b, 28c, 28d):

- ▶ Renewables and Efficiency (28a): This is the highest-referenced paragraph with 60% (45 NDCs), with a strong emphasis on Category 2 (34 NDCs) and Category 3 (28 NDCs). Notable examples include Chile’s 80% renewable generation target (Category 3) and the EU’s 42.5% renewable share target.
- ▶ Coal Phase-down (28b): Only 27% of NDCs (20 NDCs) show explicit alignment. While countries like Singapore (Category 3 target for 2040) and Morocco (Category 2 policy via PPCA) show progress, explicit uptake remains lower than expected given the global emission profile of coal.
- ▶ Net zero emission energy systems (28c): With only 21% of NDCs (16) explicitly informed by paragraph 28c, it is among the paragraphs that are mentioned the least in the 75 analysed NDCs. Seven NDCs included targets (Category 1), four include policies (Category 2) and seven provided general statements (Category 3).
- ▶ Transitioning Away from Fossil Fuels (28d): While 43% of NDCs (32 NDCs) are explicitly informed by this, commitments are frequently vague. 14 NDCs provide only Category 1 General Statements; for example, Kazakhstan highlights the ‘socio-economic consequences’ of the transition rather than specific phase-out pathways.

#### Technology and Non-CO2 Emissions (Paras 28e, 28f, 28g)

- ▶ Zero-Emission Technologies (28e): 40% of NDCs (30 NDCs) are explicitly informed by this paragraph. The data shows 16 NDCs with Policies (Category 2) and 19 with General Statements (Category 1), but only 3 NDCs (including the EU) set quantified Targets (Category 3).

- ▶ Methane and Non-CO2 (28f): 40 % of NDCs (30 NDCs) are informed by paragraph 28f , showing high-quality integration with 17 Policies and 15 Targets. Mauritius provides a precise Category 3 target (10% methane reduction from animal waste by 2035).
- ▶ Road Transport (28g): 35% of NDCs (26 NDCs) show explicit alignment. This section features 18 Policies and 12 Targets, such as Colombia’s Category 3 target of 600,000 electric vehicles by 2030.

#### Cross-Cutting Themes (Paras 28h, 33, 36)

- ▶ Nature and Ecosystems (33): This paragraph exhibits one of the most significant ‘Visibility Gaps’. While 96% of NDCs (72 NDCs) show Topic Alignment, only 41% of NDCs (31 NDCs) explicitly credit the GST. 27 NDCs include Policies and 20 include Targets (e.g., Pakistan’s mangrove reforestation).
- ▶ Fossil Fuel Subsidies (28h): This is one of the ‘least-covered’ mitigation outcomes, with only 19% of NDCs (14 NDCs) explicitly addressing the phase-out of inefficient subsidies, largely concentrated in developed nations and specific Small Island Developing States (SIDS) like Vanuatu.
- ▶ Circular Economy (36): This paragraph also exhibits a significant ‘Visibility Gap’. While 81% of NDCs (61 NDCs) show Topic Alignment, only 21% of NDCs (16 NDCs) explicitly credit the GST. 10 NDCs include Policies and six NDCs include Targets 11 NDCs provide general statements on circular economy.

#### Procedural Alignment and Implementation (Paras 37, 39, 40, 42)

- ▶ Revisiting 2030 Targets (Para 37): With 9% of NDCs (7 NDCs) this is the by far least referenced paragraph. Topic Alignment is also low with 17% of NDCs (13 NDCs).
- ▶ Economy-wide Targets (Para 39): While 88% of the sample (66 NDCs) show topical alignment with economy-wide coverage, the ‘GST Credit’ lags at 41% (31 NDCs). This suggests that the transition to economy-wide targets is being treated as a pre-existing national evolution rather than a direct response to the GST1 mandate.
- ▶ LT-LEDS Alignment (Paras 40, 42): The GST marked a pivot from ‘striving’ to formulate Long-Term Low Emission Development Strategies (LT-LEDS) to a requirement for alignment. While 55 NDCs mention LT-LEDS (Topic Alignment), only 19 explicitly credit Paragraph 40. For Paragraph 42 (revising LT-LEDS), explicit alignment is nearly non-existent; only one. NDC explicitly links its LT-LEDS implementation to the GST paragraph.

## 6. Discussion

The use of the ICTU template is mandatory for this cycle, yet 16% of the sample (12 NDCs) did not include ICTU information. Notably, significant global emitters— China, Brazil, and Indonesia did not include Section 4c, the specific subsection designed to detail GST information. The lack of paragraph-specific guidance in the current ICTU framework appears to be a primary driver of the vague reporting observed.

The findings for Paragraph 39 reveal another ‘Information Gap’ in reporting: the issue of paragraph 39 is being actively implemented by the majority of Parties, but is not being officially credited to the GST outcomes. The GST influences the agenda, but in many cases appears not to be anchored as the basis for the action in NDC.

Regarding Paragraph 37, many NDCs compare their 2035 target with their previous 2030 target and report on increased ambition. There are only few mentions of strengthened 2030 targets and some NDCs do not contain the information even where the 2030 target had been strengthened. This could only be detected by an additional assessment comparing the 'old' with the 'new' NDCs.

## 7. Conclusions and Recommendations

The first cycle of the ratchet mechanism has concluded; it has 'seeded' a global thematic agenda into national reporting on national contributions. However, the formal anchoring appears incomplete.

### Recommendations for the 2027 ICTU review

- ▶ Standardization of Section 4c: Harmonize the ICTU templates to require a mandatory, standardized response to each GST mitigation paragraph.
- ▶ Paragraph-Specific Reporting: Move beyond 'general info' to require Parties to report specifically on the relevance of each GST mitigation outcome (28a-h) to their national context.
- ▶ Mandatory 'Indicative Relevance' Assessments: Parties should be required to perform an 'Indicative Relevance' assessment using agreed indicators (e.g., share of coal in electricity mix). If a GST outcome is indicatively relevant (e.g., high coal use) but not addressed in the NDC, the Party must provide a technical justification for its omission.

### Recommendations for the second Global Stocktake (GST2)

- ▶ Quantified Benchmarks: GST2 must move toward quantified global benchmarks similar to those in Paragraphs 28a (Renewables) and 33 (Nature), as these clearly defined targets show significantly higher uptake and Category 3 integration than qualitative calls.

### Identified Research Needs

- ▶ Causal Impact: Investigate whether the GST actually adjusted national ambition or merely provided a new vocabulary for existing domestic plans.
- ▶ Capacity Analysis: Specifically investigate the technical and political barriers in the six countries that omitted the GST entirely to ensure more inclusive integration in GST2.

## Zusammenfassung

### 1. Einleitung und politischer Kontext

Das Pariser Abkommen (PA) stellt eine strukturelle Weiterentwicklung der globalen Klimapolitik dar und markiert den Übergang von den starren, von oben vorgegebenen Emissionszielen des Kyoto-Protokolls zu einem dynamischen, von unten nach oben gerichteten Rahmenwerk. Im Mittelpunkt dieser Architektur stehen die national festgelegten Klimaschutzbeiträge (Nationally Determined Contributions, NDCs). Gemäß Artikel 4.3 und 4.9 des PA sind die Vertragsparteien gesetzlich verpflichtet, alle fünf Jahre neue oder aktualisierte NDCs zu übermitteln, wobei jede nachfolgende Verpflichtung einen Fortschritt gegenüber der vorherigen darstellen und die 'größtmögliche Ambition' der Vertragspartei widerspiegeln muss. Um die Integrität dieses 'Ratchet-Mechanismus' zu wahren, wird in Artikel 14 die Globale Bestandsaufnahme (Global Stocktake, GST) festgelegt. Der GST dient einem doppelten Zweck: Einer rückblickenden Bewertung der kollektiven Fortschritte bei der Erreichung der langfristigen Ziele des Pariser Abkommens und einem zukunftsorientierten Katalysator zur Förderung verstärkter nationaler Maßnahmen. Nach Abschluss des ersten Global Stocktake (GST1) auf der CMA5 in Dubai (2023) ist in Artikel 14.3 festgelegt, dass die Ergebnisse des GST1 als primäre Grundlage für die Vertragsparteien dienen, um ihre Maßnahmen zu aktualisieren und zu verstärken. Insbesondere müssen die Vertragsparteien darlegen, inwiefern ihre NDCs für 2025 von den Ergebnissen der GST1 beeinflusst wurden, was einen entscheidenden Schritt für die Bewertung der Wirksamkeit des 'Ratchet-Mechanismus' darstellt.

### 2. Methodischer Rahmen

In dieser Studie wurde analysiert, ob und wie die GST1-Minderungsergebnisse – insbesondere der Absätze 28(a-h), 33, 36, 37, 39, 40 und 42 – in den neuen NDC-Zyklus 2025 berücksichtigt wurden.

#### Auswahl der NDCs

Die Studie analysiert eine Stichprobe von 75 NDCs, die bis zum 31. Januar 2026 beim UNFCCC-Sekretariat eingereicht wurden. Die Stichprobe umfasst zwar 75 Dokumente, repräsentiert jedoch 101 Länder (aufgrund der gemeinsamen Einreichung der Europäischen Union) und die EU. Die Auswahl erfolgte anhand einer Reihe von Kriterien, von denen der Anteil an den globalen Emissionen ein Kriterium war. Mit der Stichprobe werden 81,25 % der weltweiten Treibhausgasemissionen abgedeckt. Die Stichprobe umfasst 25 der 30 weltweit größten Emittenten; die nicht berücksichtigten fünf hatten bis zum Stichtag der Studie noch kein NDC eingereicht.

#### Analytische Blickwinkel: Explizite GST Ausrichtung versus thematische Ausrichtung

Um den tatsächlichen Einfluss der GST zu ermitteln, nutzt die Analyse zwei Blickwinkel:

Explizite GST-Ausrichtung: Fälle, in denen das NDC ausdrücklich auf den GST verweist, die untersuchten Paragraphen zitiert oder die Terminologie der GST-Paragraphen verwendet, i) innerhalb des formellen Textabschnittes „Informationen zur Förderung von Klarheit, Transparenz und Verständnis“ (ICTU) im NDC oder ii) an anderen Stellen des NDC-Textes.

Thematische Ausrichtung: Fälle, in denen das NDC einen Themenbereich (z. B. erneuerbare Energien) abdeckt, die GST jedoch nicht als informativen Rahmen würdigt, was auf eine implizite Ausrichtung oder bereits bestehende nationale Prioritäten hindeutet.

#### Kategorisierung der Maßnahmen

Im Zusammenhang mit den Paragraphen 28 (a–h), 33 und 36 werden die Ergebnisse nach der Tiefe der Verpflichtung kategorisiert, wenn ein Einfluss des GST gefunden wurde: Kategorie 1 umfasst allgemeine Aussagen im Sinne von Absichtserklärungen oder Ankündigungen ohne konkrete Umsetzungsdetails zu benennen. Kategorie 2 umfasst Politiken und Maßnahmen und ist handlungsorientiert: Werden konkrete Maßnahmen genannt? Kategorie 3 bezieht sich auf quantifizierte, Zielsetzungen, die einen konkreten Zeithorizont aufweisen (z. B. '80 % erneuerbare Energien bis 2030').

#### Sicherung der Datenqualität

Die Studie nutzte ein KI-Tools (NotebookLM) zur Dokumentenanalyse. Um die Qualität der Ergebnisse sicherzustellen, durchliefen alle Ergebnisse einen „dreifachen internen Überprüfungsprozess“, bei dem die KI-Ergebnisse manuell anhand der Originaltexte (NDCs) überprüft wurden.

### 3. Übergeordnete Ergebnisse der Analyse

Die Daten deuten auf ein hohes Maß an formaler Anerkennung des GST-Rahmens hin, auch wenn die Tiefe der inhaltlichen Integration uneinheitlich ist.

- ▶ 92 % der Stichprobe (69 NDCs) erwähnen den GST als Einflussfaktor für die Erarbeitung des NDC, was ein nahezu universelles Bewusstsein für die Anforderung aus der GST-Entscheidung zeigt.
- ▶ 71 % der NDCs (53 NDCs) greifen auf mindestens einen der hier betrachteten spezifischen Paragraphen zum Thema 'Minderung' aus der GST1-Entscheidung zurück.
- ▶ Abweichungen in der Abdeckung: Die Anzahl der zitierten Paragraphen variiert erheblich, von null bis 12 (die Schweiz und das Vereinigte Königreich beziehen sich auf die höchste Anzahl).
- ▶ Keine Erwähnung: Acht Prozent der NDCs (6 NDCs) stützten sich überhaupt nicht auf die GST1-Entscheidung: Burkina Faso, Côte d'Ivoire, Äthiopien, Sierra Leone, Venezuela und Zimbabwe.

### 4. Detaillierte paragraph-spezifische Analyse

Energiewende (Absätze 28a, 28b, 28c, 28d):

- ▶ Erneuerbare Energien und Energieeffizienz (28a): Dies ist mit 60 % (45 NDCs) der am Häufigsten erwähnte Paragraph, wobei der Schwerpunkt stark auf Kategorie 2 (34 NDCs) und Kategorie 3 (28 NDCs) liegt. Bemerkenswerte Beispiele sind Chiles Ziel von 80 % erneuerbarer Energieerzeugung (Kategorie 3) und das Ziel der EU von 42,5 % Anteil erneuerbarer Energien.
- ▶ Kohleausstieg (28b): Nur 27 % der NDCs (20 NDCs) weisen eine explizite Ausrichtung auf. Während Länder wie Singapur (Zielsetzung der Kategorie 3 für 2040) und Marokko (Maßnahme der Kategorie 2) konkrete Handlungsansätze benennen, gehen angesichts der Relevanz der Kohle die meisten NDCs nicht näher auf das Thema ein.
- ▶ Emissionsneutrale Energiesysteme (28c): Da nur 21 % der NDCs (16) ausdrücklich auf Absatz 28c Bezug nehmen, gehört dieser zu den Absätzen, die in den 75 analysierten NDCs

am seltensten erwähnt werden. Sieben NDCs enthielten Ziele (Kategorie 1), vier enthielten politische Maßnahmen (Kategorie 2) und sieben lieferten allgemeine Aussagen (Kategorie 3).

- ▶ Abkehr von fossilen Brennstoffen (28d): Zwar betonen 43 % der NDCs (32 NDCs) ausdrücklich diesen Paragraphen, doch sind die Aussagen häufig vage formuliert. 14 NDCs enthalten lediglich allgemeine Aussagen der Kategorie 1; Kasachstan beispielsweise hebt die „sozioökonomischen Folgen“ des Übergangs hervor, behandelt aber keine konkreteren Wege.

Technologie und Nicht-CO<sub>2</sub>-Emissionen (Absätze 28e, 28f, 28g)

- ▶ Emissionsfreie Technologien (28e): 40 % der NDCs (30 NDCs) orientieren sich ausdrücklich an diesem Paragraphen. 16 NDCs benennen politischen Maßnahmen (Kategorie 2) und 19 enthalten allgemeinen Aussagen (Kategorie 1), und nur 3 NDCs (einschließlich der EU) haben quantifizierte Ziele festgelegt (Kategorie 3).
- ▶ Methan und Nicht-CO<sub>2</sub> (28f): 40 % der NDCs (30 NDCs) benennen Paragraph 28f. 17 NDCs verweisen auf Maßnahmen (Kategorie 2) und 15 NDCs auf Zielsetzungen (Kategorie 3). Mauritius beispielsweise gibt als Zielsetzung 10% Reduzierung von Methan aus tierischen Abfällen bis 2035 an.
- ▶ Straßenverkehr (28g): 35 % der NDCs (26 NDCs) benennen diesen Paragraphen. Davon nennen 18 NDCs Maßnahmen (Kategorie 2) und 12 NDCs enthalten Ziele (Kategorie 3), wie beispielsweise das Ziel von Kolumbien, 600.000 Elektrofahrzeuge bis zum Jahr bis 2030 einzusetzen.

Querschnittsthemen (Absätze 28h, 33, 36)

- ▶ Subventionen für fossile Brennstoffe (28h): Dies ist einer der 'am Wenigsten behandelten' GST-Paragraphen, wobei nur 19 % der NDCs (14 NDCs) ausdrücklich den Ausstieg aus fossilen Subventionen thematisieren. Dies umfasst weitgehend Industrienationen und bestimmte 'Kleine Inselstaaten' (Small Island Developing States, SIDS) wie z.B. Vanuatu.
- ▶ Natur und Ökosysteme (33): Dieser Paragraph weist eine der größten 'Sichtbarkeitslücken' auf. Während 96 % der NDCs (72 NDCs) eine thematische Ausrichtung aufweisen, führen nur 41 % der NDCs (31 NDCs) den GST ausdrücklich als Informationsquelle an. 27 NDCs enthalten Maßnahmen und 20 NDCs enthalten Ziele (z. B. Mangrovenaufforstung in Pakistan).
- ▶ Kreislaufwirtschaft (36): Auch dieser Paragraph weist eine erhebliche 'Sichtbarkeitslücke' auf. Während 81 % der NDCs (61 NDCs) eine thematische Ausrichtung aufweisen, beziehen sich nur 21 % der NDCs (16 NDCs) diesbezüglich ausdrücklich auf den GST. Davon enthalten 10 NDCs Maßnahmen und sechs NDCs enthalten Ziele; 11 NDCs enthalten allgemeine Aussagen zur Kreislaufwirtschaft ohne genauere Angaben.

Verfahrensmäßige Übereinstimmungen und Umsetzung (Absätze 37, 39, 40, 42)

- ▶ Überprüfung und Anpassung der Ziele für 2030 (Absatz 37): Mit 9 % der NDCs (7 NDCs) ist dies der mit Abstand am Wenigsten erwähnte Paragraph der GST1-Entscheidung. Auch die thematische Ausrichtung ist mit 17 % der NDCs (13 NDCs) gering.
- ▶ Wirtschaftsweite Ziele (Absatz 39): Während 88 % der Stichprobe (66 NDCs) eine thematische Ausrichtung aufweisen, beziehen sich nur 41 % (31 NDCs) explizit auf den GST-

Paragrafen. Dies deutet darauf hin, dass der Übergang zu wirtschaftsweiten Zielen eher als bereits bestehende nationale Entwicklung denn als direkte Reaktion auf den GST1 betrachtet wird.

- ▶ Übereinstimmung mit LT-LEDS (Paragrafen 40, 42): Die GST markierte einen Wendepunkt vom 'Bestreben', langfristige Strategien für eine emissionsarme Entwicklung (LT-LEDS) zu formulieren, hin zu einer Verpflichtung, dies zu tun. Während 55 NDCs LT-LEDS erwähnen (thematische Ausrichtung), verweisen nur 19 ausdrücklich auf Paragraph 40. In Bezug auf Paragraph 42 (Überarbeitung der LT-LEDS) ist eine explizite Ausrichtung auf den GST so gut wie nicht vorhanden; nur ein NDC verknüpft die Umsetzung seiner LT-LEDS ausdrücklich mit dem GST-Paragrafen.

## 6. Diskussion

Die Verwendung der ICTU-Vorlage ist für diesen NDC-Zyklus obligatorisch, dennoch enthielten 16 % der Stichprobe (12 NDCs) keine ICTU-Informationen. Bemerkenswert ist, dass bedeutende globale Emittenten – China, Brasilien und Indonesien – Abschnitt 4c, den spezifischen Unterabschnitt zur detaillierten Darstellung wie der GST das NDC informiert hat, nicht einbezogen haben. Trotz des aktuellen ICTU-Rahmens verbleiben Unklarheiten in der Berichterstattung. Daher könnten überarbeitete Leitlinien oder Vorlagen den Einfluss des GST auf die NDCs transparenter machen.

Die Ergebnisse zu Absatz 39 zeigen eine weitere 'Informationslücke' in der Berichterstattung auf: Die in Absatz 39 behandelte Thematik wird von der Mehrheit der Vertragsparteien umgesetzt, jedoch nicht mit dem Ergebnis des Global Stocktake (GST) in Beziehung gesetzt. Der GST könnte die Agenden für die Weiterentwicklung der NDCs beeinflusst haben, wird aber oftmals nicht als Einfluss genannt.

In Bezug auf Absatz 37 wird in vielen NDCs das Ziel für 2035 eher mit dem vorherigen Ziel für 2030 verglichen und eine höhere Ambition berichtet. Es gibt nur wenige Erwähnungen von verschärften Zielen für 2030. Einige NDCs enthalten diese Information nicht, obwohl das Ziel für 2030 verschärft wurde. Dies wurde in Einzelfällen als Hintergrundinformation durch den Vergleich des 'alten' mit dem 'neuen' NDC festgestellt.

## 7. Schlussfolgerungen und Empfehlungen

Der erste Zyklus des Ratchet-Mechanismus ist abgeschlossen; er hat die globale thematische Agenda aus der GST1-Entscheidung in die NDC 'eingebracht'. Die formale Verankerung bzw. Darstellung des Einflusses auf die NDCs erscheint jedoch unvollständig.

Empfehlungen für die ICTU-Überprüfung 2027

- ▶ Standardisierung von Abschnitt 4c: Harmonisierung der ICTU-Vorlagen, um die GST-Paragrafen standardisierter zu berücksichtigen.
- ▶ Paragrafen-spezifische Berichterstattung: Über 'allgemeine Informationen' hinausgehend könnten neue Vorlagen vorsehen, spezifisch über die Relevanz jedes GST-Paragrafen (28a-h, 33, 36) im jeweiligen nationalen Kontext zu berichten.
- ▶ Verpflichtende Bewertungen der 'indikativen Relevanz': Die Vertragsparteien könnten aufgerufen werden, eine Bewertung der 'indikativen Relevanz' unter Verwendung vereinbarter Indikatoren (z. B. Anteil von Kohle am Strommix) durchzuführen. Ist ein

Paragraph der GST-Entscheidung indikativ relevant (z. B. hoher Kohleverbrauch), wird aber im NDC nicht behandelt, könnte vorgegeben werden, dass die Vertragspartei die Nicht-Behandlung erläutert.

#### Empfehlungen für die zweite globale Bestandsaufnahme (GST2)

- ▶ Quantifizierte Benchmarks: Die GST2 könnte auf quantifizierte globale Benchmarks hinarbeiten, ähnlich denen in den Absätzen 28a (Erneuerbare Energien/Energieeffizienz) und 33 (Natur/Ökosysteme), da auf diese klar definierten Ziele deutlich höhere Bezug genommen wird und mehr Nennungen von Zielen (Kategorie 3) aufweisen als qualitative Forderungen.

#### Weitere Forschungsfragen

- ▶ Wurde durch die GST-Entscheidung ´tatsächlich` die nationalen Ambitionen angepasst oder lediglich ein neues Vokabular für bestehende nationale Pläne geliefert?
- ▶ Untersuchung der technischen, politischen und weiteren Hindernisse in den sechs Ländern, die den GST in ihren NDCs gar nicht berücksichtigt bzw. erwähnt haben, um für den GST2 zu lernen, wie die Berücksichtigung verbessert werden kann.

# 1 Introduction and Background

The Paris Agreement marks a shift in global climate governance, moving away from the approach of the Kyoto Protocol to establish legally binding emission targets and timetables towards a more open framework. In this new framework, all Parties are required to submit and maintain Nationally Determined Contributions (NDCs). They can largely determine the content and ambition levels by themselves, supported by processes that periodically review progress and encourage increased ambition (UNFCCC, 2016).

The NDCs are therefore the main way of achieving the Paris Agreement's mitigation objectives (Art. 2 PA), namely to limit global warming to well below 2°C — preferably 1.5°C — above pre-industrial levels. Parties to the Paris Agreement must submit their new climate commitments (NDCs) to the UNFCCC Secretariat every five years, demonstrating their highest possible ambition and showing progression over time (Arts. 4.3 and 4.9 PA) (UNFCCC, 2016).

The process of assessing collective progress towards meeting the goals of the 2015 Paris Agreement was completed for the first time in 2023 at the fifth Conference of the Parties serving as Meeting of the Parties to the Paris Agreement (CMA5) in Dubai. The Global Stocktake will be carried out every five years thereafter to evaluate countries' collective progress in achieving the goals set out in the Paris Agreement (Art. 14.2 PA). One function of the GST process is retrospective assessment (Northrop et al., 2018), while the second function is to stimulate further measures in a forward-looking manner.

The Global Stocktake revealed that while action has accelerated since 2015, the world is not on track to limit global warming to 1.5°C (UNFCCC, 2023).

The GST outcome decision includes a number of recommendations that the Parties should take into account when preparing their next round of NDCs (UNFCCC, 2023). The GST decision contains several recommendations relevant to this analysis, which are summarised below:

- ▶ triple the expansion of renewable energy capacity and double the annual energy efficiency rate by 2030 (paragraph 28a);
- ▶ accelerate efforts towards net zero emission energy systems utilising zero or low emission fuels (paragraph 28c), in particular by transitioning away from fossil fuels in energy systems in a just, orderly and fair manner so as to achieve net-zero by 2050 (paragraph 28d), with specific provisions for unabated coal-fired power plants and inefficient fossil subsidies (paragraphs 28b and 28h);
- ▶ accelerate the development of zero-emission and low-emission technologies (paragraph 28e);
- ▶ substantially reduce non-carbon greenhouse gas emissions (especially methane) by 2030 (paragraph 28f);
- ▶ accelerate emission reductions in the road transport sector, for example by developing infrastructure and the rapid introduction of zero- or low-emission vehicles (paragraph 28g);
- ▶ increased efforts to halt and reverse deforestation and forest degradation by 2030, and to protect and restore other terrestrial and marine ecosystems and by conserving biodiversity (paragraph 33);
- ▶ transition to sustainable consumption and production patterns, circular economy (paragraph 36);

- ▶ The NDC 2030 targets should be reviewed and adjusted by the end of 2024 to align with the temperature target of the Paris Agreement (paragraph 37).
- ▶ Long-term strategies for reducing greenhouse gas emissions (Long-Term Low Greenhouse Gas Emission Development Strategies, LT-LEDS) should be submitted by November 2024 (paragraph 42).
- ▶ Finally, the GST decision calls on all countries to submit NDCs that cover all sectors, categories, and greenhouse gases. These should be aligned with the 1.5°C target and long-term low greenhouse gas emission development strategies (LT-LEDS), covering the entire economy (paragraphs 39 and 40).

Following the completion of the initial Global Stocktake (GST1) at CMA5 in Dubai, countries were required to submit their new round of Nationally Determined Contributions (NDCs) by 2025. In their new NDCs, Parties must detail how they have taken the outcomes of the GST into account (UNFCCC, 2023). Article 14.3 PA states: “The outcome of the global stocktake shall serve as a basis for Parties to update and enhance their actions and support in accordance with the relevant provisions of this Convention, and to enhance international cooperation on climate action” (UNFCCC, 2016). Future Global Stocktakes will always be completed two years before each NDC revision. The architects of the Paris Agreement had intended the GST to provide countries with the knowledge and pressure needed to make their contributions (NDCs) even more ambitious. As of early March 2026, 134 Parties have submitted their updated NDC pledges, representing approximately two-thirds of global emissions (Climate Watch, 2026)<sup>1</sup>. Sixty-three countries, including India as a significant emitter, have not yet submitted new NDCs.

Parties were provided with the instruction to detail how their NDCs are informed by the first Global Stocktake (GST1) within a specific section of their NDCs. When communicating their NDCs, Parties ‘shall’ provide information necessary for clarity, transparency and understanding (ICTU) (Article 4.8 of the Paris Agreement). The ICTU template structures the information contained in the NDCs (UNFCCC, 2018, Annex I). As the title demonstrates, the objective of the ICTUs is to make NDCs clear and transparent, providing information on e.g., the scope and coverage of the NDC, methodological approaches and that the NDC is ‘fair and ambitious, in the light of national circumstances’. Parties often use the ICTU in table form. In Section 4, ‘Planning Processes’, subsection 4c of the ICTU guidance, Parties should explain how GST results informed the NDC. However, it is not specified which elements of the GST should be mentioned here, nor to what extent they should be detailed.

The use of the ICTU guidance has been made mandatory for the second and subsequent NDCs to ensure transparency and comparability (Decision 4/CMA.1, which operationalized Article 4.8 of the Paris Agreement). However, according to the decision 4/CMA.1, Parties shall provide ICTU ‘as applicable to their NDCs’ (UNFCCC, 2018). While the guidance is applicable to all Parties, each Party must assess the relevance of the guidance elements contained in Annex I of the aforementioned decision to their respective NDCs.

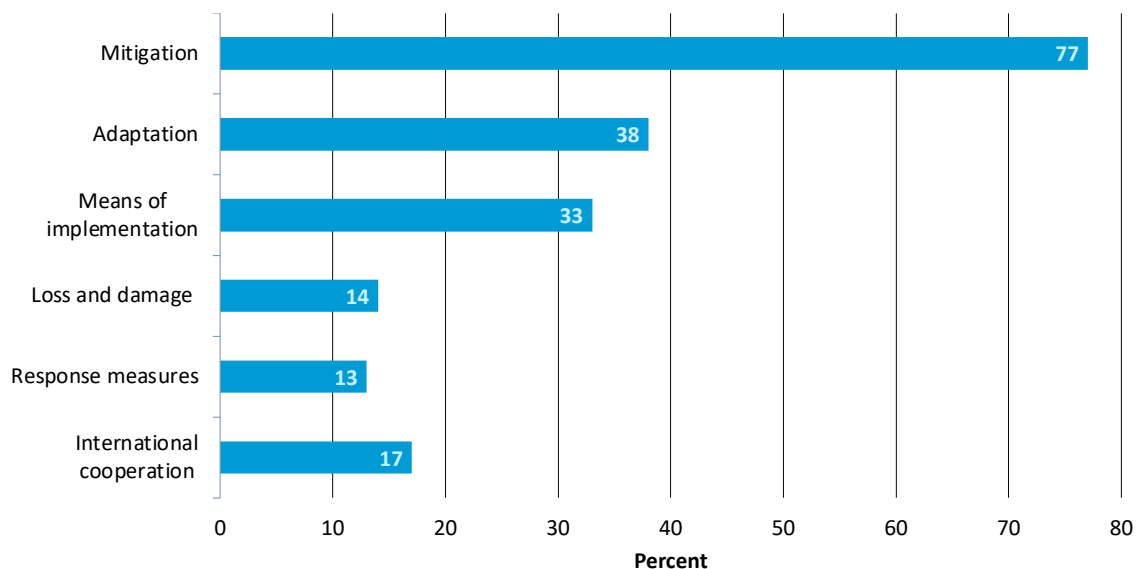
The purpose of this paper is to consider to what extent Parties to the Paris Agreement are following the requirement to disclose how their NDC has been informed by the GST. This research contributes to the existing body of knowledge on this topic. Initial assessments of the new and updated NDCs, such as the NDC synthesis report (UNFCCC, 2025), which analysed the

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<sup>1</sup> The source excluded the US share of global GHG emission of 10.61% after the US withdrawal from the Paris Agreement took effect on 27 January 2026. However, as this occurred at the end of the analysis period of this study, the reported results retain the earlier figures and the US NDC is still part of the analysis and report. In doing so, the report refers to a share of total global GHG Emissions covered by the sample of 81.25%.

64 NDCs submitted by 30 September 2025, indicate that the vast majority of countries who submitted their new NDCs (88%) drew on the first Global Stocktake (GST) to inform their new NDCs (Figure 1). The analysis found that mitigation (77%) was the most frequently addressed topic in the NDCs, followed by adaptation and means of implementation.

**Figure 1: Shares of Parties referring to the elements of the first GST outcomes in NDCs**



Source: adapted from (UNFCCC, 2025).

The papers by the OECD Climate Change Expert Group (CCXG) (Lo Re et al., 2025) and the Center for Climate and Energy Solutions (C2ES, 2025) go into greater depth, providing more comprehensive analysis of how the NDCs respond to the calls of the GST mitigation section, especially regarding paragraph 28. Both analyses reveal an inconsistent integration of GST1 outcomes across the new NDCs. Some Parties structure their NDCs around these outcomes, while others barely reference them. Certain GST1 signals receive substantially more attention than others. The NDC Energy Commitments Tracker (E3G, 2025) only focuses on the energy commitments in newly submitted NDCs. Of all the seven energy commitments in the new NDCs that have been analysed, it shows that increasing the deployment of renewable energy and improving energy efficiency are the most frequently mentioned. 64 of the 101 analysed NDCs even give a quantified target for renewables deployment.

Building on previous analyses, this paper provides further insights into the subject by examining 75 new NDCs. Specifically, we examine how and if Parties that have submitted a new NDC have responded to the calls in paragraphs 28, 33, 36, 37, 39, 40 and 42 of the Global Stocktake decision. Our detailed research questions were:

1. Where do the Parties cite the Global Stocktake? Specifically, it was analysed whether ICTU subsection 4c is used by Parties to explain how the GST has informed the NDC or other parts of the NDC, or both.
2. Do the Parties simply refer to the general substance mentioned in these paragraphs, or do they explicitly reference the Global Stocktake decision paragraph?
3. If Parties explicitly reference a GST paragraph in their NDC, are they simply making a general statement of intent, or are they presenting national policies or measurable targets that would help implement the GST call at a national level?

The research aims to contribute to refining the ambition mechanism of the Paris Agreement by examining what lessons can be learned from the first Global Stocktake uptake in the NDCs. Can the first cycle of the Paris Agreement's so-called ratchet mechanism be called a success? Does it set a precedent for how the Global Stocktake can guide and elevate global climate ambition? The extent to which enhanced commitments in the NDCs submitted in 2025 are being driven by the inaugural Global Stocktake will serve as a true test of the credibility and effectiveness of the Agreement. How Parties translated the outcomes of the GST into their 2025 NDCs will be critical for achieving the Agreement's long-term goals.

Our study aims to demonstrate the extent to which the new NDCs reflect specific GST mitigation outcomes, and to inform future actions, including the next global stocktake. This is scheduled to begin at CMA 8 and end at CMA 10. In addition, it aims to contribute to the UAE dialogue regarding the implementation of the outcomes of the GST, as it will be discussed in the SB64 (June 2026) and SB66 (June 2027) meetings. As the ICTU review is due to take place in 2027 (UNFCCC, 2018), paragraph 18), this research may help to inform the further design of ICTU subsection 4c.

The report is structured as follows: Chapter 2 provides an overview on the methodological approach applied. In Chapter 3, the results of the analysis of 75 NDCs are presented. These results are discussed in Chapter 4. Chapter 5 concludes with overall findings and recommendations.

## 2 Methodological Approach

This study employs a multi-staged analytical framework to assess the extent to which the mitigation outcomes of the First Global Stocktake (GST) under the Paris Agreement have been integrated into the Nationally Determined Contributions (NDCs). The analysis focuses on both the explicit mention of GST outcomes and the topical alignment of the GST mitigation paragraphs with the NDC content.

### 2.1 Selection of the NDC Sample

A total of 75 NDCs were selected for analysis from the 134 submissions made to the UNFCCC secretariat before the cut-off date for the analysis of January 31, 2026. As the EU NDC submission is also the NDC submission of its 27 Member States, the analysis covers in total 102 of the 134 submitted NDCs. As the EU NDC was treated as one document in the analysis, subsequently the results relate to '75 NDCs'. The sample accounts for approximately 81% of total global greenhouse gas (GHG) emissions. The selection of NDCs was based on the following criteria:

- ▶ Criterion 1 (C1): Inclusion of all countries with a share of total global GHG emission exceeding 0.1 percent.
- ▶ Criterion 2 (C2): NDCs featuring a reduction target for 2035 or later.
- ▶ Criterion 3 (C3): New NDCs with a 2030 target year, provided they represent an increase in ambition and the country accounts for >0.1% of global GHG emissions.

Data for the selection were sourced from the UNFCCC NDC Portal, the European Unions' EDGAR Database (Crippa et al., (2025)), and Climate Watch. Applying the criteria to the NDCs submitted by January 31st 2026 (cut-off date), Table 1 shows the NDCs selected as sample for the analysis. The 75 NDCs selected cover 81.25 percent of the global total greenhouse gas emissions. From the thirty highest greenhouse gas emitting countries, 25 are included in the analysis as the other 5 (India, Iran, Vietnam, Egypt, Argentina) did not submit their NDC before the cut-off date. Regarding the NDCs below the 0.1% threshold for the selection, the selection was guided by the aim of achieving a geographically balanced representation. As the NDCs were only submitted during the course of the analysis, this aim could not be fully realised. The 75 selected NDCs represent 101 countries and the EU, as the 27 European Member States do not submit their own NDCs but are part of the NDC of the European Union.

**Table 1: NDC sample**

| NDC of        | C1 (%) | C2 | C3 | NDC of                   | C1 (%)      | C2       | C3       |
|---------------|--------|----|----|--------------------------|-------------|----------|----------|
| China         | 29,20  | 1  | 1  | Bahrain                  | 0,12        | 1        | 0        |
| United States | 11,11  | 1  | 1  | Bolivia                  | 0,12        | 0        | 0        |
| EU            | 6,09   | 1  | 1  | <i>Hungary (EU NDC)</i>  | <i>0,11</i> | <i>1</i> | <i>1</i> |
| Russia        | 4,84   | 1  | 1  | <i>Ireland (EU NDC)</i>  | <i>0,11</i> | <i>1</i> | <i>1</i> |
| Indonesia     | 2,49   | 1  | 0  | Azerbaijan               | 0,11        | 1        | 1        |
| Brazil        | 2,44   | 1  | 1  | Norway                   | 0,10        | 1        | 1        |
| Japan         | 2,00   | 1  | 1  | <i>Portugal (EU NDC)</i> | <i>0,10</i> | <i>1</i> | <i>1</i> |

| NDC of                             | C1 (%) | C2 | C3 | NDC of                            | C1 (%) | C2 | C3 |
|------------------------------------|--------|----|----|-----------------------------------|--------|----|----|
| Saudi Arabia                       | 1,58   | 1  | 0  | Sweden (EU NDC)                   | 0,10   | 1  | 1  |
| Canada                             | 14     | 1  | 1  | Cambodia                          | 0,09   | 1  | 0  |
| Mexico                             | 1,29   | 1  | 1  | Finland (EU NDC)                  | 0,09   | 1  | 1  |
| Germany (EU NDC)                   | 1,27   | 1  | 1  | Bulgaria (EU NDC)                 | 0,09   | 1  | 1  |
| South Korea                        | 1,26   | 1  | 1  | Uruguay                           | 0,08   | 1  | 1  |
| Australia                          | 1,11   | 1  | 1  | Switzerland NDC and Liechtenstein | 0,08   | 1  | 1  |
| Türkiye                            | 1,09   | 1  | 1  | Nepal                             | 0,08   | 1  | 0  |
| South Africa                       | 1,07   | 1  | 1  | Paraguay                          | 0,08   | 1  | 1  |
| Pakistan                           | 0,99   | 1  | 1  | Slovakia (EU NDC)                 | 0,07   | 1  | 1  |
| Thailand                           | 0,79   | 1  | 1  | Zambia                            | 0,07   | 0  | 0  |
| Iraq                               | 0,78   | 1  | 0  | Denmark (EU NDC)                  | 0,07   | 1  | 1  |
| United Kingdom                     | 0,73   | 1  | 1  | Côte d'Ivoire                     | 0,07   | 1  | 1  |
| France (EU NDC) and Monaco         | 0,71   | 1  | 1  | Sri Lanka                         | 0,07   | 1  | 1  |
| Italy (EU NDC), S. Marino, Vatican | 0,70   | 1  | 1  | Cuba                              | 0,07   | 0  | 0  |
| Nigeria                            | 0,66   | 1  | 1  | Burkina Faso                      | 0,07   |    |    |
| Poland (EU NDC)                    | 0,65   | 1  | 1  | Mozambique                        | 0,06   | 1  | 0  |
| Malaysia                           | 0,62   | 1  | 1  | Zimbabwe                          | 0,06   | 1  | 1  |
| Kazakhstan                         | 0,62   | 1  | 1  | Croatia (EU NDC)                  | 0,05   | 1  | 1  |
| Spain (EU NDC) and Andorra         | 0,54   | 1  | 1  | Kyrgyzstan                        | 0,04   | 1  | 1  |
| United Arab Emirates               | 0,50   | 1  | 1  | Panama                            | 0,04   | 1  | 0  |
| Uzbekistan                         | 0,43   | 1  | 0  | Lebanon                           | 0,04   | 1  | 0  |
| Bangladesh                         | 0,42   | 1  | 1  | Slovenia (EU NDC)                 | 0,03   | 1  | 1  |
| Colombia                           | 0,41   | 1  | 1  | Costa Rica                        | 0,03   | 1  | 1  |
| Ukraine                            | 0,37   | 1  | 1  | Estonia (EU NDC)                  | 0,03   | 1  | 1  |
| Ethiopia                           | 0,36   | 1  | 1  | Moldova                           | 0,02   | 1  | 1  |
| Venezuela                          | 0,31   | 0  | 0  | Latvia (EU NDC)                   | 0,02   | 1  | 1  |
| Qatar                              | 0,31   | 0  | 0  | Armenia                           | 0,02   |    |    |
| Netherlands (EU NDC)               | 0,27   | 1  | 1  | Jamaica                           | 0,02   | 1  | 0  |
| Chile                              | 0,22   | 1  | 0  | Cyprus (EU NDC)                   | 0,02   | 1  | 1  |
| Morocco                            | 0,20   | 1  | 0  | Rwanda                            | 0,02   | 1  | 1  |

| NDC of                  | C1 (%) | C2 | C3 | NDC of                     | C1 (%) | C2 | C3 |
|-------------------------|--------|----|----|----------------------------|--------|----|----|
| <i>Belgium (EU NDC)</i> | 0,20   | 1  | 1  | <i>Luxembourg (EU NDC)</i> | 0,02   | 1  | 1  |
| Mongolia                | 0,20   | 1  | 0  | Sierra Leone               | 0,01   | 1  | 0  |
| Peru                    | 0,20   | 1  | 1  | Mauritius                  | 0,01   | 1  | 0  |
| Kenya                   | 0,19   | 1  | 1  | Bhutan                     | 0,01   | 1  | 1  |
| <i>Romania (EU NDC)</i> | 0,19   | 1  | 1  | Fiji                       | 0,01   | 1  | 0  |
| <i>Czechia (EU NDC)</i> | 0,19   | 1  | 1  | <i>Malta (EU NDC)</i>      | 0,00   | 1  | 1  |
| Belarus                 | 0,16   | 1  | 1  | Maldives                   | 0,00   | 1  | 0  |
| New Zealand             | 0,15   | 1  | 1  | Bahamas                    | 0,00   | 1  | 1  |
| Singapore               | 0,14   | 1  | 1  | Cabo Verde                 | 0,00   | 1  | 1  |
| Ecuador                 | 0,14   | 1  | 1  | Vanuatu                    | 0,00   | 1  | 0  |
| <i>Greece (EU NDC)</i>  | 0,13   | 1  | 1  | Samoa                      | 0,00   | 1  | 1  |
| <i>Austria (EU NDC)</i> | 0,13   | 1  | 1  | Marshall Islands           | 0,00   | 1  | 0  |
| Angola                  | 0,13   | 1  | 0  | Tuvalu                     | 0,00   | 1  | 0  |
| Serbia and Montenegro   | 0,13   | 1  | 0  | Global GHG emission share  | 81.25  |    |    |

Source: Own compilation, based on data of Crippa et al., (2025) and Climate Watch(2026).

## 2.2 Analytical Framework: GST Mitigation Outcomes

The analysis investigates how mitigation outcomes detailed in Decision 1/CMA.5, specifically paragraphs 28 (a-h), 33, 36, 37, 39, 40, and 42, have informed the NDCs. The integration is assessed through two lenses: The ‘information’ provided by the GST was detected through direct alignment of NDC content with the paragraph number and/or key terms related to the specific GST paragraphs. Is the GST mentioned in the NDCs or not at all? Are there references to the mitigation outcomes and/or other outcomes? In most cases, the reference to the GST paragraph is not entirely clear or verbatim. The paragraph number is not very often mentioned in NDCs, nor is the exact wording, though it may appear in section headings. In the vast majority of cases, key terms or thematic descriptions are cited in the NDC. We only count this as ‘referencing the paragraph’ if explicit reference is made to the GST within the context of the sentence, the paragraph or a (sub-section). This is summarised as ‘mentioned in GST context’.

Moreover, the analysis uses two distinct levels of visibility, explicit GST alignment in NDCs and topic alignment:

### ► Explicit GST alignment in NDCs:

Definition: Instances where the NDC specifically credits the GST, cites paragraph numbers, or uses GST outcome terminology. The explicit GST alignment in NDCs can be differentiated according to the part of the NDC, where the information has been included:

- Explicit GST alignment (ICTU 4c): alignment is visible. Cases where specific GST paragraphs or related key terms (e.g., ‘circular economy’ for paragraph 36) were mentioned within the structured ICTU framework, in section 4c ICTU.

- Explicit GST alignment (General NDC): alignment is visible. Instances where the GST was explicitly cited alongside mitigation content in other parts of the NDC document or other ICTU sections than the ICTU section 4c of the NDC document.

It has to be noted that the total number of NDCs calculated as ‘Explicit GST alignment in NDCs’ is not the addition of the numbers from GST alignment found in ICTU section 4c and the numbers found in the general NDCs texts. To avoid double counting in cases of NDCs where GST alignment was found in both searches, this was included only once in the total number. Illustrating this with a result from chapter 3, regarding paragraph 28 (a), ‘Explicit GST alignment (ICTU 4c)’ was found in 33 NDCs. ‘Explicit GST alignment (General NDC)’ was found in 19 NDCs. The total is 45 NDCs and not 52 NDCs as in 7 NDCs both categories applied.

► Topic alignment (total):

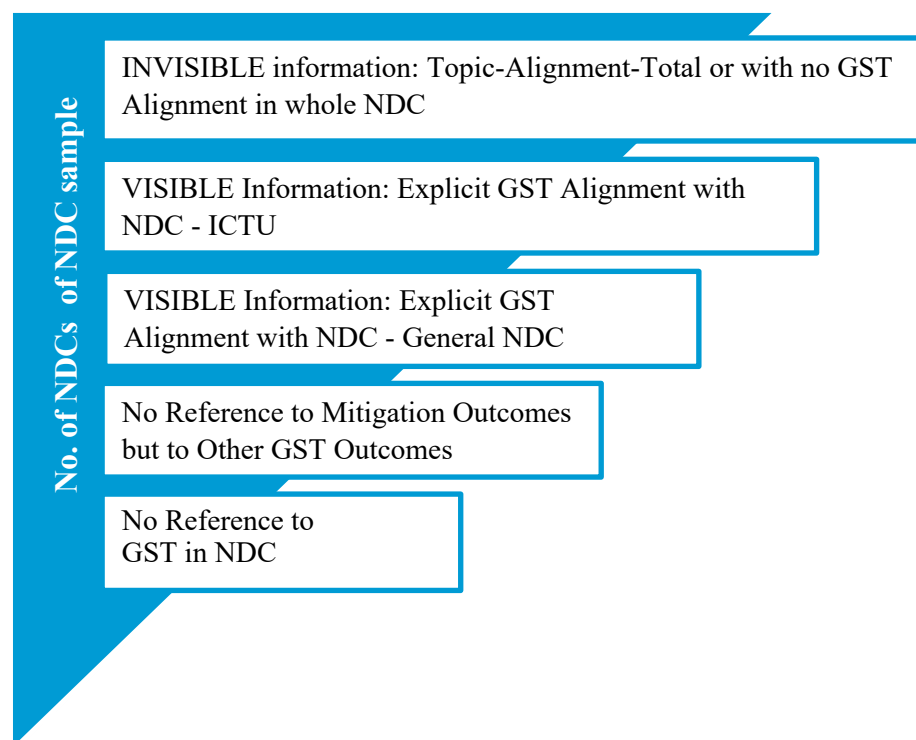
Definition: Instances where the NDC covers a thematic area (e.g., renewable energy) but does not credit the GST as the informing framework. The fact that the topic is discussed in the NDC but not with a reference to the GST in the same sentence or the related text section suggests an implicit, non-visible alignment or pre-existing national priorities so that the topic was covered anyhow.

Therefore, potential GST alignment is not visible. Identified through searchword analysis, these results represent coverage of the thematic areas of the mitigation outcomes but the GST was NOT cited alongside or credited as the informing framework in that context.

Within ‘Topic alignment (total)’, a subgroup has been defined in order to capture those cases where thematic areas of the mitigation outcomes were found in the NDC but the key themes of the respective GST mitigation outcome paragraphs of Decision 1/CMA.5 had NOT been AT ALL mentioned in the NDC. Illustrating this again with a result from chapter 3, regarding paragraph 28 (a), ‘Topic alignment (total)’ was found in 74 NDCs, i.e. 74 NDCs include one or several times text excerpts on renewable energy or energy efficiency without in that direct context mentioning paragraph 28 (a) of Decision 1/CMA.5 by number or its key terms. However, in a number of these 74 NDCs, renewable energy or energy efficiency has been found related to the GST in other parts of the NDC. In the subgroup ‘Topic alignment (without paragraph 28a alignment in NDC)’ are those 30 NDCs included that focus one or several times in the NDC on renewable energy or energy efficiency without at all mentioning paragraph 28 (a) of Decision 1/CMA.5 by number or its key terms in the NDC.

In summary, Figure 2 visualises the two levels in a broader context of results to the question of how the GST informed the new round of NDCs.

**Figure 2: Visualisation of the elements of the analysis**



Source: own illustration, Wuppertal Institute.

Table 2 shows how the visibility and non-visibility of ‘how the GST informed the NDC’ has been applied in the overall results table in Chapter 3. The two subdivisions of ‘Explicit GST alignment in NDCs’ have been applied in the discussion of the results in Chapter 4.

**Table 2: Heading of overall result table in Chapter 3**

| Para-graph | Topic | Topic alignment                                      |                         | GST alignment in NDCs          |   |                   |                  |
|------------|-------|--|-------------------------|--------------------------------|---|-------------------|------------------|
|            |       | Topic alignment (without paragraph alignment in NDC) | Topic alignment (total) | Explicit GST alignment in NDCs | General statement of intention included | Policies included | Targets included |
|            |       |  |                         |                                |   |                   |                  |

Source: own compilation, Wuppertal Institute.

### 2.3 Data Collection and Tooling

The analysis utilized NotebookLM to process the NDC documents. This tool was selected after a test phase revealed that it provided better results than another Large Language Model<sup>2</sup> (LLM).

<sup>2</sup> An option to analyse the 75 NDC documents using Elicit’s ‘Automatic Review and Data Extraction’ function was explored. However, the NDC document body appeared to have very different formats with the result that e.g. text embedded in image formats within certain UNFCCC files was not correctly parsed.

Specific prompts<sup>3</sup> were developed for each of the 14 GST paragraphs to identify the coverage of GST paragraphs in the NDCs and to extract direct citations. For non-English NDCs (Arabic, Chinese, French, Portuguese, Russian, Spanish), the tool translated citations into English for standardized analysis.

### Searchword Analysis (Topic alignment)

To capture broader alignment, a searchword analysis was conducted to identify thematic coverage of GST mitigation outcomes (e.g., ‘circular economy’ for paragraph 36) even when the respective GST paragraph is not explicitly cited in the respective NDC. This identifies cases where NDCs cover relevant thematic areas regardless of whether the GST was the documented driver. The following key terms (Table 3) were utilized to identify topical alignment with the Global Stocktake (GST) mitigation outcomes, regardless of whether the GST was explicitly cited.

**Table 3: Key Terms of Topic Analysis**

| Paragraph | Searchwords (Key Terms)  |
|-----------|--|
| 28a       | Paragraph 28a, tripling, renewable energy, doubling energy efficiency  |
| 28b       | Paragraph 28b, phase-down of unabated coal power   |
| 28c       | Paragraph 28c, net zero energy systems, zero- and low-carbon fuels   |
| 28d       | Paragraph 28d, transitioning away from fossil fuels in energy systems  |
| 28e       | Paragraph 28e, zero- and low-emission technologies, carbon capture, hard-to-abate, hydrogen  |
| 28f       | Paragraph 28f, reduction of non-carbon-dioxide emissions, methane  |
| 28g       | Paragraph 28g, reduction of emissions from road transport, infrastructure, zero- and low-emission vehicles                                       |
| 28h       | Paragraph 28h, fossil fuel subsidies   |
| 33        | Paragraph 33, conserving, protecting and restoring nature and ecosystems, deforestation, sinks and reservoirs, biodiversity, safeguards, Kunming |
| 36        | Paragraph 36, transition to sustainable lifestyles, sustainable consumption and production, circular economy                                     |
| 37        | Paragraph 37, revisit and strengthen 2030 targets to align with Paris Agreement goal   |
| 39        | Paragraph 39, economy-wide emission reduction targets, different national circumstances <sup>4</sup>   |
| 40        | Paragraph 40, align NDC with LT-LEDS, longterm emission  |
| 42        | Paragraph 42, communicate or revise LT-LEDS  |

Source: own compilation, Wuppertal Institute.

<sup>3</sup> All prompts were built along the same logic. For example, the prompt used for para 28a was the following: ‘In the first step, consider only ICTU section 4c of the NDC and indicate whether paragraph 28, 28 (a) of the GST decision or the term renewable energy or the term energy efficiency is mentioned there. You find the wording of the paragraph in the document named: GST1\_1\_CMA.5.pdf. In the second step, consider the whole NDC document and indicate any references to paragraph 28, 28 (a) of the GST decision. Indicate also if the term renewable energy or the term energy efficiency is mentioned there. Give me only direct citations from the text and no explanations to the citations. Structure your answer according to the two steps. Answer in English and don’t use tables.’ Further optimization would have taken some time but probably would have reduced the time for review activities.

<sup>4</sup> As the term ‘different national circumstances’ was found in the NDCs in many contexts, the focus was on the more specific substance of paragraph 39 such as economy-wide targets.

## Review

All AI-generated outputs have been documented and underwent modifications as a result of a review process. The triple internal review process involved manual validation to ensure the quality and contextual accuracy of the AI-generated outputs. This quality assurance framework focused on NDC-level assessments, verifying the GST alignment in NDCs and of the searchword analysis regarding citations. Specific paragraph-level reviews were also conducted to correct potential misalignments regarding some specific issues such as electric vehicles (para 28g), 2030 targets (para 37), and Paris Agreement alignment (para 39). To eliminate bias, the output (analysis grid) underwent an independent review.

## 2.4 Documentation and Categorization

Based on the quality assurance, the results were documented in an Excel-based analysis grid (qualitative and quantitative data). In case that no reference to the GST paragraph or wording in a GST context was determined, the category 'No reference' was assigned.

For NDCs showing explicit GST alignment (either in ICTU 4c or generally elsewhere in a GST context), the qualitative data was categorized based on the depth and clarity of the stated actions. The results for paragraphs 28(a-h), 33, 36 were sorted into the following categories: (Table 4):

**Table 4: Categorization of actions**

| Category                         | Characteristics       | Description  |
|----------------------------------|-----------------------|--|
| Category 1:<br>General Statement | Broad announcement    | Statement but does not explain how the country will act on the issue.  |
| Category 2:<br>Policy/Measure    | Action-oriented       | Mentions specific domestic policies or measures, with or without a set timeframe.  |
| Category 3:<br>Target            | Quantified commitment | Sets a specific, quantified target and timeline (e.g., Net Zero Energy systems, increasing renewable energy, or decreasing deforestation). |

Source: own compilation, Wuppertal Institute.

For paragraphs 37, 39, 40 and 42, the analysis was limited to a binary 'yes/no' determination of 'information by the GST', as specific categorization was deemed non-applicable.

Finally, to contextualize the findings, each paragraph was mapped to specific indicators (Table 5). The indicator values for each country, where available, were used as indication to determine if specific topics are more or less relevant within the varying national contexts. The thresholds indicating less or more relevance are roughly designed to provide a first estimation. This indication of relevance was used in Chapter 3.

**Table 5: Paragraph specific indicators to determine the relevance of the paragraph to the national context**

| <b>GST decision Paragraph</b> | <b>Indicator</b>  |
|-------------------------------|---|
| 28a                           | Share of electricity production from renewables                             |
| 28b                           | Share of coal in electricity generation                                     |
| 28c                           | Lifecycle carbon intensity of electricity generation                        |
| 28d                           | Electricity production from oil, gas and coal sources                       |
| 28e                           | Carbon intensity of GDP   |
| 28f                           | Share of methane in total national GHG emissions                            |
| 28g                           | Electric car sales as share of total car sales per country                  |
| 28h                           | Fossil-fuel subsidies (consumption and production) per capita               |
| 33                            | Tree cover loss (2002 to 2024, equivalent to % of the 2000 tree cover area) |
| 36                            | Recycling rate (Environmental Performance Indicators - EPI)                 |

Source: own compilation, Wuppertal Institute.

### 3 Results of the analysis

In order to assess how the results of the first GST have been reflected in new NDCs, the 75 NDCs have been analysed with the methods described in Chapter 2. The focus was on the mitigation related paragraphs, 28 (a)-(h), 33, 36, 37, 39, 40 and 42 of the GST. The NDCs analysed cover 81.25 % of the total global GHG emissions (base year 2024).

The analysis provided qualitative data for each paragraph for each selected NDC resulting in a qualitative Excel matrix, an 'analysis grid' of 75x14 entries. These have been analysed and transformed into quantitative data tables concluding for each paragraph whether and where the respective NDC is referencing it or not. This Chapter presents the results of the analysis. In the first part, it shows the overarching results while the second part gets into details and describes how each of the GST mitigation paragraphs is represented in the NDCs. The 'numbers' are accompanied by some examples from NDCs.

#### 3.1 Overarching results

In most cases, the reference to the GST paragraph is not entirely clear or verbatim. The paragraph number is not very often mentioned in NDCs, nor is the exact wording, though it may appear in section headings. In the vast majority of cases, key terms or thematic descriptions are cited in the NDC.

Table 6 summarises the general results of the analysis.

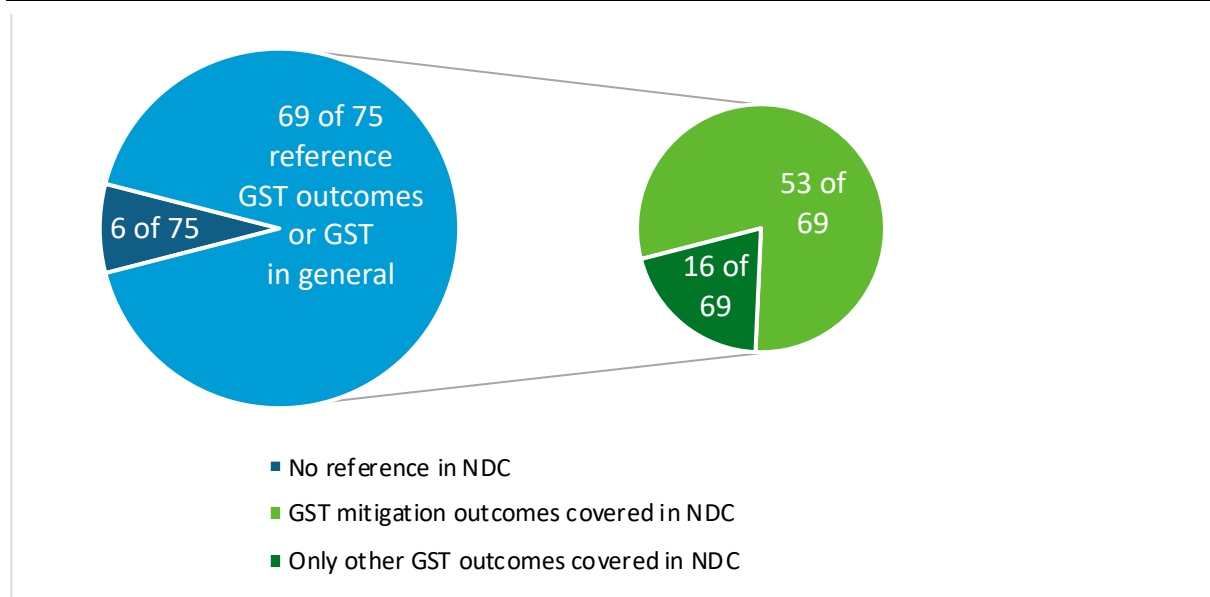
**Table 6: Overview on overarching results**

| The term 'Global Stocktake'...     | ...is mentioned in NDC | ...and paragraphs are mentioned (in ICTU and/or elsewhere in NDC) | ...is mentioned but no reference to paragraphs of concern | ...is not at all mentioned in NDC |
|------------------------------------|------------------------|---|---|-----------------------------------|
| Percentage / Number of NDCs (n=75) | 92% (69 NDCs)          | 71% (53 NDCs)   | 21% (16 NDCs)   | 8% (6 NDCs)                       |

Source: own compilation, Wuppertal Institute.

Of the 75 analysed NDCs, 69 NDCs (92%) mention the GST in some form in their NDC. This reference is not limited to the GST mitigation outcomes alone, but often also refers to other aspects of the GST, such as adaptation or finance. The six NDCs (8%) analysed that do not draw on the GST in their NDCs at all are Burkina Faso, Côte d'Ivoire, Ethiopia, Sierra Leone, Venezuela and Zimbabwe. Considering only the GST-mitigation-related paragraphs (para. 28 (a)-(h), 33, 36, 37, 39, 40 and 42), the analysis shows that 53 NDCs (71%) draw on at least one of the mitigation paragraphs, while 16 NDCs (21 %) mention the GST in general or other outcomes than mitigation outcomes (Figure 3, the light blue part is the sum of the green segments).

**Figure 3: Overall results of the explicit GST alignment in NDCs analysed**



Source: own illustration, Wuppertal Institute.

Within the sample, the NDCs that appear informed by the GST vary in the number of referenced paragraphs. As 14 mitigation related paragraphs were considered in this analysis, it is the maximum number of references that could be found in a NDC in this analysis and references to other GST paragraphs were not determined. However, no NDC draws on all of the 14 paragraphs. The analysis shows that six NDCs draw on one paragraph (Bahamas, Belarus, Costa Rica, Lebanon, Mozambique, Tuvalu) while two NDCs, namely of Switzerland and of the United Kingdom, reference 12 paragraphs, the maximum number of mitigation paragraph references in this sample. However, due to the individual national circumstances and respective applicability of certain mitigation paragraphs, a higher number of GST paragraphs mentioned in a NDC does not necessarily signal a better NDC. The quantitative result does not contain or imply any information on how the respective paragraph is covered and which actions relate to it. Table 7 lists the group of Parties that mention a certain number of paragraphs in their NDC.

**Table 7: Number of GST-1 decision paragraphs explicitly referred to in NDC (per Party)**

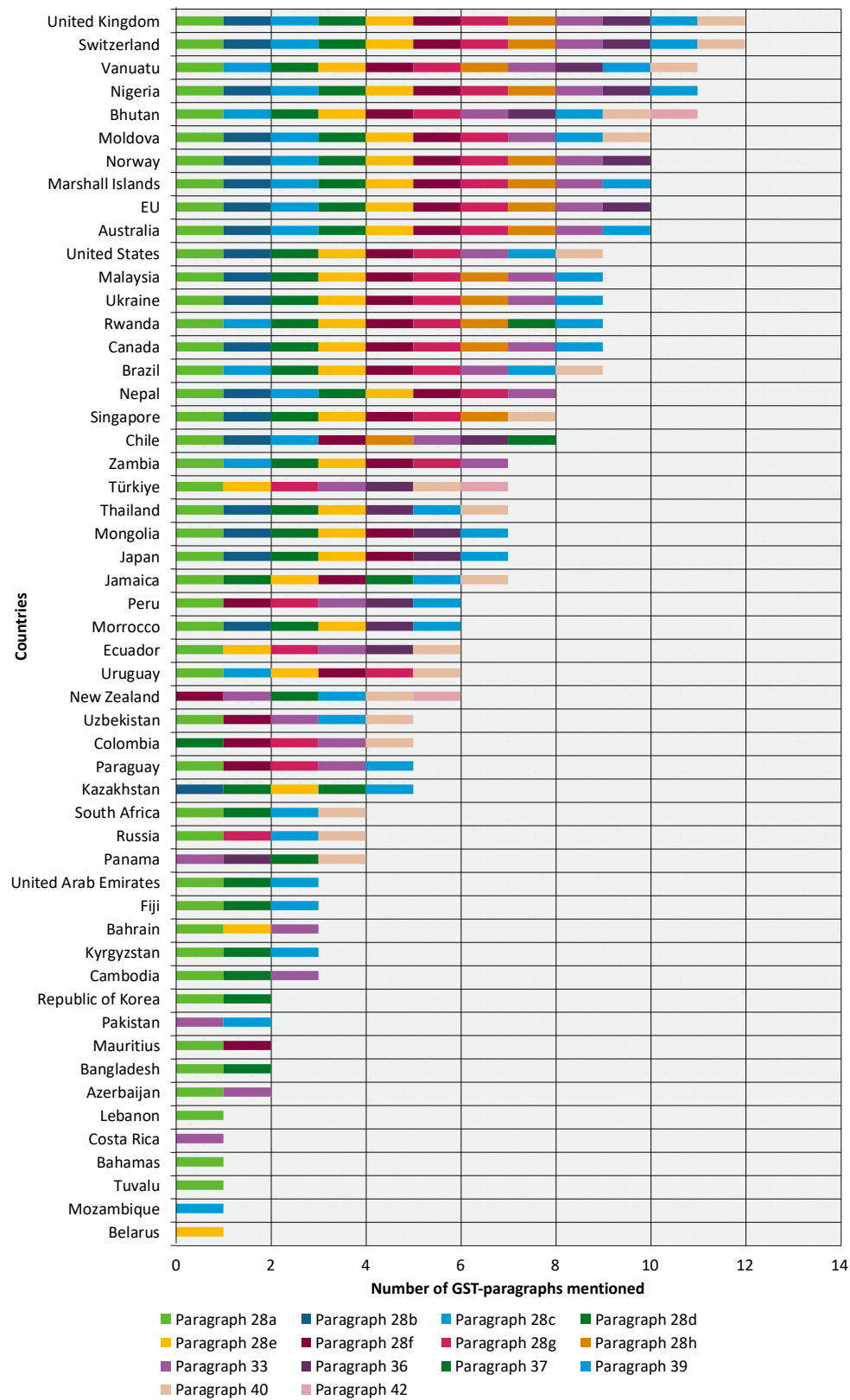
| Countries  | Number of GST paragraphs explicitly referred to |
|--|---|
| Angola, Armenia, Bolivia, Burkina Faso, Cabo Verde, China, Cote d’Ivoire, Cuba, Ethiopia, Indonesia, Kenya, Maldives, Mexico, Qatar, Samoa, Saudi Arabia, Sierra Leone, Sri Lanka, Venezuela, Zimbabwe | 0   |
| Bahamas, Belarus, Costa Rica, Lebanon, Mozambique, Tuvalu  | 1   |
| Azerbaijan, Bangladesh, Mauritius, Pakistan, Republic of Korea   | 2   |
| Bahrain, Cambodia, Fiji, Kyrgyzstan, United Arab Emirates  | 3   |
| Panama, Russia, South Africa,  | 4   |

| Countries  | Number of GST paragraphs explicitly referred to |
|--|---|
| Colombia, Kazakhstan, Paraguay, Uzbekistan               | 5   |
| Ecuador, Morocco, New Zealand, Peru, Uruguay,            | 6   |
| Jamaica, Japan, Mongolia, Thailand, Türkiye, Zambia      | 7   |
| Chile, Nepal, Singapore                                  | 8   |
| Brazil, Canada, Malaysia, Rwanda, Ukraine, United States | 9   |
| Australia, EU, Marshall Islands, Moldova, Norway,        | 10  |
| Bhutan, Nigeria, Vanuatu                                 | 11  |
| Switzerland, United Kingdom                              | 12  |

Source: own compilation, Wuppertal Institute.

In addition to the number of paragraphs contained in the NDCs, Figure 4 illustrates which paragraphs these are. The colours displayed on the bottom of Figure 4 indicate the paragraphs. The 22 Parties that either do not mention the GST at all or do not reference the mitigation related paragraphs as shown in Table 5 were not included in this figure.

**Figure 4: Mitigation Outcome paragraphs explicitly referred to in NDCs**



Source: own illustration, Wuppertal Institute.

### 3.2 Paragraph specific results

Below, we examine in more detail the results for each of the 14 analysed paragraphs (Table 8). The summary table is organized by the forms of alignment of the respective paragraph in an NDC beginning left with the weaker forms (topic alignment) to the right with stronger forms (explicit alignment). Observed categories in the grey columns are also organized from weaker, i.e. general statements, to stronger, i.e. policies and finally targets.

Each of the following paragraph specific sections, in addition, will include some citations from the NDCs. However, the citations are illustrative examples and the citations provided are non-exclusive.

**Table 8: Paragraph-specific results**

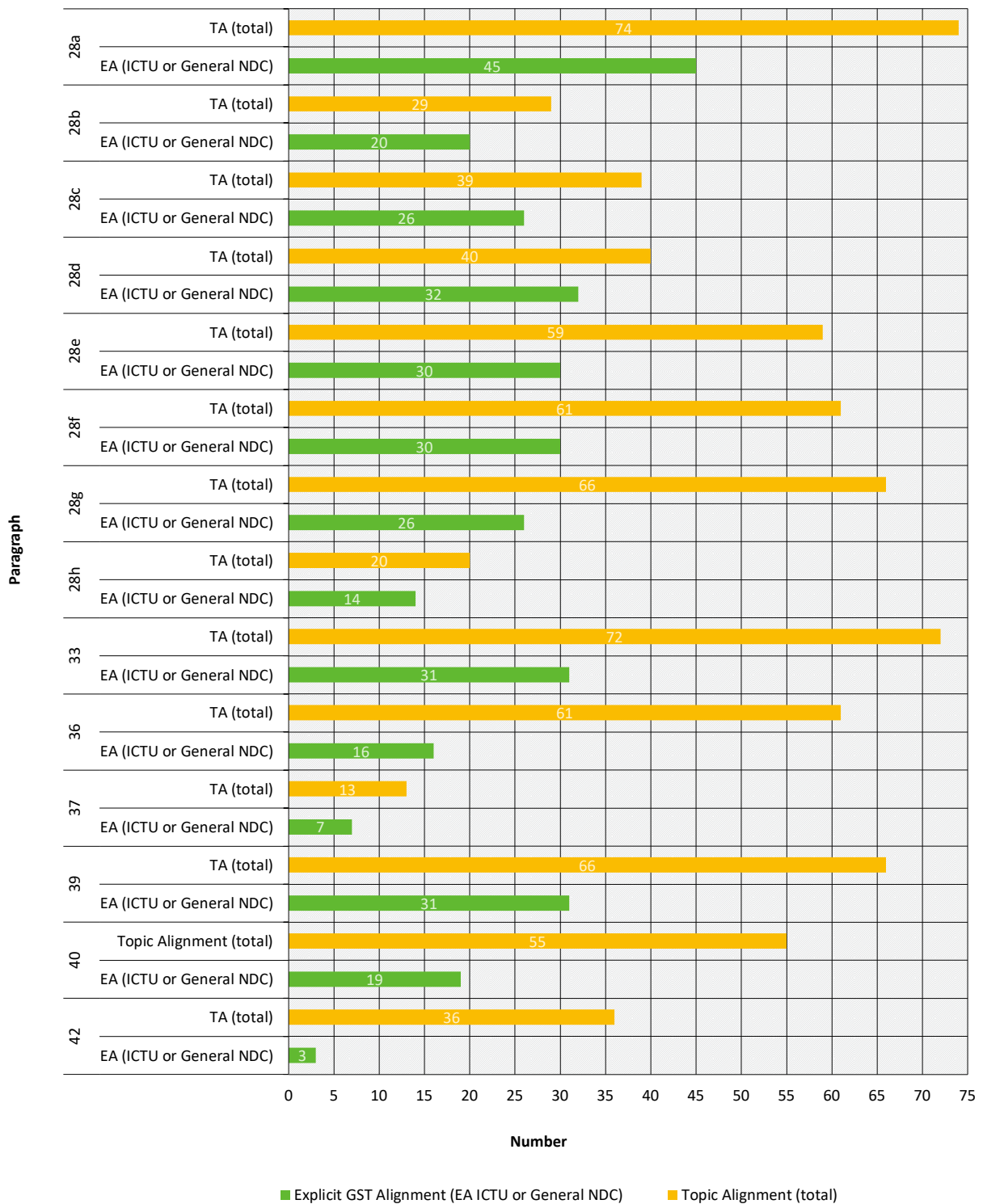
| Para-graph | Topic  | Topic alignment                                      |                         | GST alignment in NDCs          |   |                   |                  |
|------------|--|--|-------------------------|--------------------------------|---|-------------------|------------------|
|            |  | Topic alignment (without paragraph alignment in NDC) | Topic alignment (total) | Explicit GST alignment in NDCs | General statement of intention included | Policies included | Targets included |
| 28a        | tripling, renewable energy, doubling energy efficiency   | 30   | 74                      | 45                             | 24                                      | 34                | 28               |
| 28b        | phase-down of unabated coal power  | 14   | 29                      | 20                             | 7                                       | 4                 | 7                |
| 28c        | zero- and low-carbon fuels   | 26   | 39                      | 16                             | 7                                       | 10                | 2                |
| 28d        | Transitioning away from fossil fuels in energy systems   | 17   | 40                      | 32                             | 14                                      | 13                | 8                |
| 28e        | accelerating zero- and low-emission technologies, carbon capture, hard-to-abate, hydrogen                    | 33   | 59                      | 30                             | 19                                      | 16                | 3                |
| 28f        | accelerating the substantial reduction of non-carbon-dioxide emissions or the term methane                   | 37   | 61                      | 30                             | 14                                      | 17                | 15               |
| 28g        | Accelerating the reduction of emissions from road transport, infrastructure, zero- and low-emission vehicles | 41   | 66                      | 26                             | 16                                      | 18                | 12               |
| 28h        | phase out inefficient fossil fuel subsidies  | 10   | 20                      | 14                             | 6                                       | 7                 | 2                |

|           |   | Topic alignment |    | GST alignment in NDCs |    |    |    |
|-----------|---|-----------------|----|-----------------------|----|----|----|
|           |   |                 |    |                       |    |    |    |
| <b>33</b> | conserving, protecting and restoring nature and ecosystems, deforestation, sinks and reservoirs, biodiversity safeguards, Kunming | 42              | 72 | 31                    | 20 | 27 | 20 |
| <b>36</b> | transition to sustainable lifestyles , sustainable consumption and production, circular economy                                   | 48              | 61 | 16                    | 11 | 10 | 6  |
| <b>37</b> | revisit and strengthen 2030 targets to align with Paris Agreement goal  | 10              | 13 | 7                     | 0  | 0  | 0  |
| <b>39</b> | economy-wide emission reduction targets, different national circumstances   | 35              | 66 | 31                    | 0  | 0  | 0  |
| <b>40</b> | align NDC with LT-LEDS, long-term emission  | 38              | 55 | 19                    | 0  | 0  | 0  |
| <b>42</b> | communicate or revise LT-LEDS   | 33              | 36 | 3                     | 0  | 0  | 0  |

Source: own compilation, Wuppertal Institute.

The following two figures illustrate key findings from the analysis. Figure 5 shows the number of NDCs in which a respective paragraph was mentioned in a GST context (Explicit GST alignment in NDC) in the ICTU and/or the general NDC text, and if the key-term(s) of a paragraph were mentioned in the NDCs (Topic alignment). The figure illustrates that regarding every paragraph, topic alignment was more prominent than explicit GST alignment. In conclusion, while many NDCs cover topics that are key terms of the mitigation paragraphs, not every NDC is actually visibly informed by the GST. As said earlier it may have been informed but did not reference this.

**Figure 5: GST Mitigation Outcome coverage in NDCs**

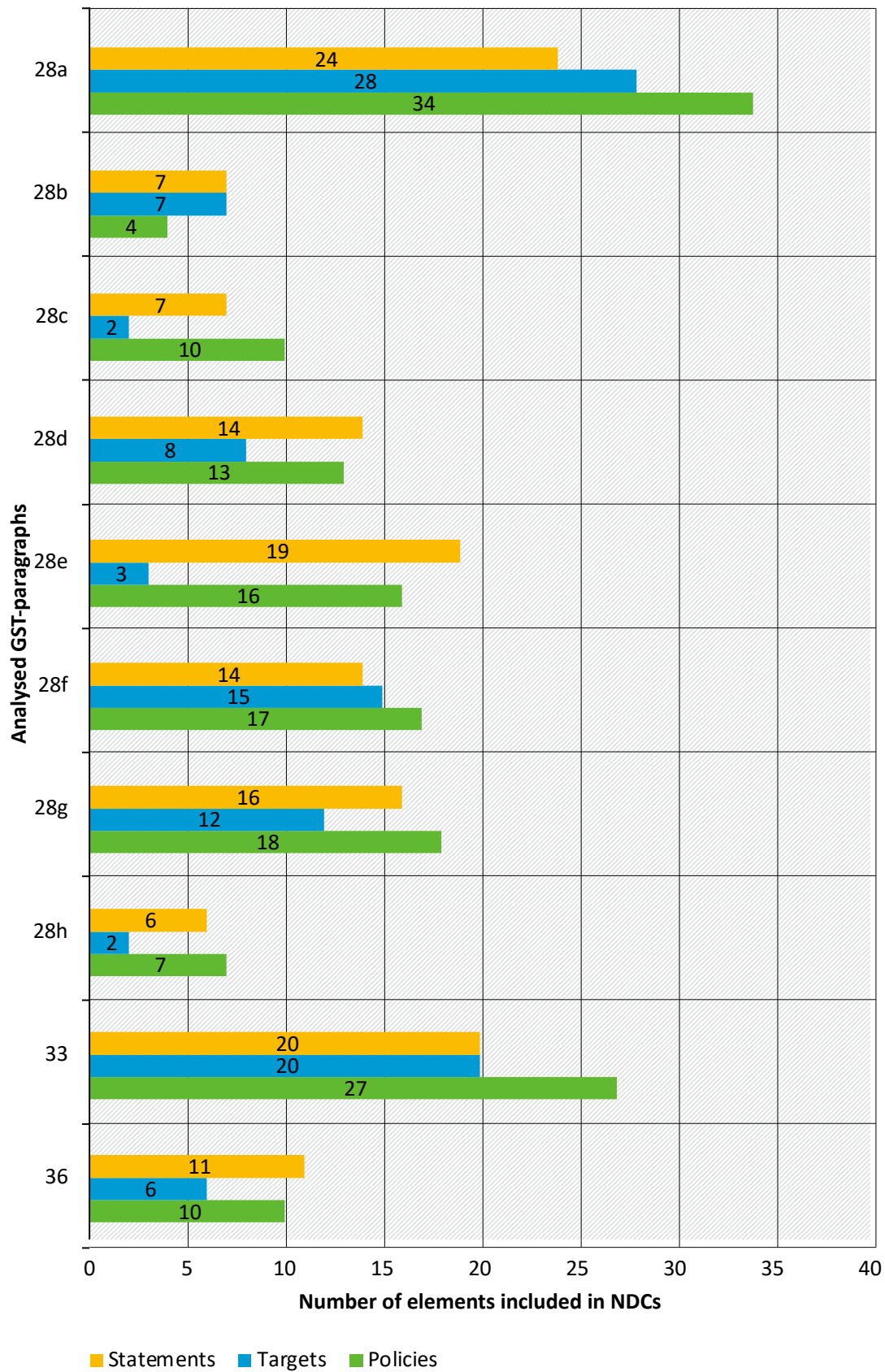


Source: own illustration, Wuppertal Institute.

Exclusively focusing on the NDCs that are informed by the GST, Figure 6 further shows the results of the categorization of which actions have been described in the NDCs that contribute to the implementation of the GST paragraphs. The categories are general statements, policies, or targets. Looking at the occurrence of statements, policies, and targets shows that there is no single main prominent category among the NDCs. For some paragraphs, more policies have been

observed (e.g., 28a and 28c), while for other paragraphs, statements have been more prominently observed, e.g., for paragraph 28d and 36 demonstrating a vaguer approach to these paragraphs. There is no paragraph for which targets are dominantly mentioned. Regarding paragraph 28b, the same number of statements and targets has been observed. As for paragraphs 37, 39, 40 and 42, the analysis was limited to a binary 'yes/no' determination of 'information by the GST' as the categorization did not apply to these paragraphs. A specific categorization was deemed non-applicable due to the topic of the respective paragraphs (strengthen the 2030 target to align with the Paris Agreement goal, economy-wide target, aligning NDC with LT-LEDS and communicate or revise LT-LEDS). Hence it was analysed whether the NDC includes information on these paragraphs and if yes whether there was information that the issues have been implemented, are under implementation or there is no information.

Figure 6: Statements, Targets, and Policies relating to GST paragraphs



Source: own illustration, Wuppertal Institute.

The following section briefly describes the results per paragraph. The text for each paragraph is structured as follows: first, the paragraph and the key themes are presented. Second, the section focuses on the 'Explicit GST alignment with NDCs'<sup>5</sup>. It is shown how often the paragraph (either by number and/or by mentioning the key themes) is represented in a GST context. Among the NDCs that mention the paragraph it is then described how often policies, targets and/or general statements are included in the NDCs. Third, the section focuses on the 'Topic alignment'. The first insight is how many NDCs mention one or more of the key themes. This does not occur in a direct GST context. The second figure shows how many NDCs include at least one of the key themes, but don't draw on the respective paragraph at all throughout the NDC (Topic alignment - without paragraph alignment in NDC). The Topic alignment analysis shows how prominent the key themes of the mitigation outcomes are, beyond the question how many of the NDCs are visibly informed by certain GST mitigation related paragraphs.

For better illustration, the text provides examples from the analysed NDCs.

**Paragraph 28a** of the GST decision calls for 'tripling renewable energy capacity globally and doubling the global average annual rate of energy efficiency improvements by 2030'. The key themes are renewable energy and energy efficiency.

**Explicit GST alignment with NDCs:** According to our analysis, paragraph 28a is the most widely covered element of the GST decision, with 45 NDCs mentioning the paragraph number and/or the key themes in a GST context. Coherently, this paragraph features the highest numbers of NDCs outlining policies (34 NDCs), targets (28 NDCs) or statements (24 NDCs). For example, Australia describes a number of policies on this matter in the NDC, like the 'Rewiring the Nation program' which shall 'support the modernisation of the electricity grid' (Department of Climate Change, Energy, the Environment and Water, 2025, p. 26) or Bhutan where the 'National Energy Policy 2025 highlight(s) the key role of hydropower and expansion of solar and other renewable energy sources' (Royal Government of Bhutan, 2025, p. 3). In terms of targets, Chile stipulates that '(b)y 2030, at least 80% of electrical energy will be generated from renewable sources' (Gobierno de Chile, 2025, p. 22 translated by the authors). In a similar manner, the EU describes that 'a new target to ensure that the share of energy from renewable sources in the EU's gross final consumption of energy in 2030 is at least 42.5%' (Danish Presidency of the Council of the European Union & European Commission, 2025, p. 5). Examples for general statements as regards paragraph 28a are for instance the NDC of Brazil as 'Brazil will also prioritize the extension of energy efficiency actions' (Brazilian Government, 2024, p. 15) and the NDC of Fiji where 'promoting renewable energy' is considered a 'key priority' (Department of Climate Change, Ministry of Environment and Climate Change, Government of Fiji, 2025, p. 20) but not further specified.

**Topic alignment:** However, beyond concrete references to the GST, all NDCs, except the one of Norway, mention the key themes of paragraph 28 (a) (renewable energy and energy efficiency). From these 74 NDCs, however, 30 NDCs mention the key themes but do not reference the respective GST decision at all in the NDC.

**Paragraph 28b** of the GST decision calls for 'Acceleration efforts towards the phase-down of unabated coal power'. The key theme is phase-down of unabated coal power.

**Explicit GST alignment with NDCs:** 20 NDCs mention the paragraph number and/or the key themes in the context of the GST. For example, Ukraine shows full support for coal phase out in the ICTU section 4c of the NDC, (Кабінету Міністрів України, 2025, p. 16 translated by the

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<sup>5</sup> For the definition of terms, reconsider the methodology chapter 2.

authors). An example of mentioning paragraph 28b in the context of the GST elsewhere in the NDC is Nigeria. In a table, the NDC provides the '(m)apping of NDC 3.0 measures with the GST lines of action', where the 'phasing down of unabated coal power' shall be achieved by replacing fossil fuels with 'cleaner alternatives under Manufacturing and Construction Industries' (National Council on Climate Change, 2025, p. 26). Considering the policies, targets and general statements as regards paragraph 28b, it appears that relative to the number of NDCs that draw on paragraph 28b, the number of policies, aims and statements identified in the analysis is rather small. Four NDCs indicate a policy (Australia, Canada, Morocco, Nepal). For example, Morocco draws on its 'national low-carbon roadmap and its adherence to the Powering Past Coal Alliance (PPCA)' (Royaume du Maroc, 2025, p. 51). Seven NDCs include a target (Australia, Canada, Chile, Morocco, Singapore, Ukraine, UK), for example Singapore that 'is committed to phasing out unabated coal in (their) electricity mix by 2040' (Inter-Ministerial Committee on Climate Change, 2025, p. 12). Lastly, seven NDCs contain general statements (Australia, Chile, EU, Japan, Kazakhstan, Nigeria, USA), like the EU when stating to leave 'no room for new coal power' (Danish Presidency of the Council of the European Union & European Commission, 2025, p.7) in order to decarbonise the energy sector well ahead of 2050.

**Topic alignment:** The key term phase-down of unabated coal power or analogue concepts of reducing coal in the energy mix etc. is mentioned in about one-third of the NDCs analysed, (29 out of 75). 14 of these 29 NDCs do not refer to the substance of paragraph 28 (b) anywhere in their NDC.

**Paragraph 28c** is among the mitigation paragraphs that are mentioned the least in the 75 analysed NDCs. Paragraph 28c describes the acceleration of global efforts 'towards net zero emission energy systems, utilizing zero- and low-carbon fuels, well before or by around mid-century'. The key themes are zero emission energy systems and zero- and low-carbon fuels.

**Explicit GST alignment with NDCs:** 16 NDCs mention the paragraph (by number and/or key theme) in a GST context. For example, in the ICTU section 4c of the NDC, the Marshall Islands state that the 'Electricity Roadmap sets out the potential technology pathways for reaching net zero energy systems by 2050 and the major steps that need to be taken to reduce reliance on our diesel generators and increase the provision of renewable energy capacity' (The Republic of the Marshall Islands, 2025, p. 27). Furthermore, 10 NDCs indicate policies that shall advance the implementation of paragraph 28c. For example, Switzerland's NDC describes a 'hydrogen roadmap (...) which sets measures to develop markets for hydrogen and low-carbon fuels' (Schweizerische Eidgenossenschaft, 2025, p. 2). Two countries, Brazil and the EU, include targets in their NDCs. Brazil states that it aims to 'increase the share of biofuels in the transport energy matrix by 50%' (Brazilian Government, 2024, p. 17) and the EU refers to its FuelEU Maritime Regulation that 'sets maximum limits for the yearly average GHG intensity of the energy used by ships above 5,000 gross tonnage calling at European ports, regardless of their flag. Targets aim at ensuring that the GHG intensity of fuels used in the sector will gradually decrease over time, starting with a 2% decrease by 2025, 14.5% decrease by 2035, and reaching up to an 80% reduction by 2050' (Danish Presidency of the Council of the European Union & European Commission, 2025, p. 7). Seven NDCs include a general statement on the implementation of zero emission energy systems and utilizing zero- and low-carbon fuels. For example, Vanuatu states that its 'energy supply composition is redirected towards lower emissions, cleaner and local fuel sources' (Ministry of Climate Change, 2025, p. 27).

**Topic alignment:** In addition, the relevant key terms of paragraph 28 (c) (zero emission energy systems and zero- and low-carbon fuels or related concepts) are mentioned in 39 NDCs without

explicit reference to the GST paragraph or the GST in general, but with the paragraph being mentioned in a GST context somewhere else in the respective NDC, while 26 NDCs include key terms without putting it into context of the GST anywhere.

**Paragraph 28d** calls for ‘transitioning away from fossil fuel in energy systems, in a just, orderly and equitable manner, accelerating action in this crucial decade, so as to achieve net zero by 2050 in keeping with the science’. The key theme is transitioning away from fossil fuels in energy systems.

**Explicit GST alignment with NDCs:** The analysis shows that 32 NDCs are informed by this paragraph in a GST-context. For example, the NDC of the United Kingdom, states that ‘in line with the outcomes of the GST, the UK is committed to transitioning away from fossil fuels to achieve net zero by 2050’ (Secretary of State for Energy Security and Net Zero, 2025, pp. 1-2). In the ICTU section 4c, Singapore’s NDC describes that the country is ‘supporting efforts to transition away from fossil fuels in energy systems’ (Inter-Ministerial Committee on Climate Change, 2025, p. 10). Among the 32 NDCs that draw on paragraph 28d, 13 NDCs contain respective policies. For example Bangladesh outlines as an policy of how the country plans to transition away from fossil fuels: ‘Replace liquid-fuel peaker plants with battery energy storage paired with renewable energy like solar and flexibility resources, such as lithium-ion batteries and demand programs, and avoid lock-ins by limiting lifetime extensions of unabated capacity to security of supply needs, with a clear replacement plan’ (Ministry of Environment, Forest and Climate Change Government of the People’s Republic of Bangladesh, 2025, p. 11). Furthermore, eight NDCs mention concrete targets, such as the NDC of Cambodia: ‘This transition will be implemented in two key phases: 70% RE by 2030, followed by a further increase to 72% by 2035, ensuring a gradual yet decisive shift away from fossil fuel dependency in the power sector’ (Kingdom of Cambodia, 2025, p. 30). Ultimately, 14 NDCs have general statements on paragraph 28d. The NDC of Kazakhstan points to the national circumstance of being ‘the largest continental developing state (...) and the socio economic-consequences of the transition away from fossil fuels’ (Министерство экологии и природных ресурсов Республики Казахстан, 2025, p. 2 translated by the authors). Further, Vanuatu’s NDC states that it ‘adheres to the following element of the Stocktake decision: (...) Transitioning away from fossil fuels’ (Ministry of Climate Change, 2025, p. 15).

**Topic alignment:** Beside drawing directly to the GST, 40 NDCs also draw on the key theme of paragraph 28 (d) (transitioning away from fossil fuels in energy systems). 22 of these 40 NDC mention the key term in the NDC and do not refer to the GST in the context of that mention but elsewhere in another part of the NDC. 18 NDCs of these 40 mention the key term but do not refer to the substance of paragraph 28 (d) at all in the NDC.

**Paragraph 28e** calls for ‘Accelerating zero- and low-emission technologies, including, inter alia, renewables, nuclear, abatement and removal technologies such as carbon capture and utilization and storage, particularly in hard-to-abate sectors, and low-carbon hydrogen production’. The key themes are accelerating zero- and low-emission technologies, the term carbon capture, the term hard-to-abate, or the term hydrogen.

**Explicit GST alignment with NDCs:** In total, 30 NDCs appear informed by paragraph 28e. For example, the Canadian NDC has a dedicated paragraph in its ICTU titled ‘Accelerating zero- and low-emission technologies’ with information on specific policies ‘Examples include the Canada Growth Fund, the Strategic Innovation Fund – Net Zero Accelerator, the Energy Innovation

Program and the Low Carbon Economy Fund.` (Government of Canada, 2025, p. 23). Canada is one of the 16 countries that actually set out specific policies in their NDCs in relation to paragraph 28 (e). As another example, Uruguay's NDC states 'In the case of heavy-duty vehicles, progress is being made on the basis of the Green Hydrogen Roadmap and derivatives, which is in the process of implementation through the H2U Programme.` (República Oriental del Uruguay, 2024, p. 49 translated by the authors). Meanwhile, only three NDCs actually mention concrete targets such as the NDC of the EU regarding hydrogen: 'At least 42% of the hydrogen used for final energy and non-energy purposes in industry by 2030 should come from renewable sources, and 60% by 2035.` (Danish Presidency of the Council of the European Union & European Commission, 2025, p. 6). Finally, 19 NDCs include general statements of intentions on paragraph 28 (e). Those statements remain rather general, one example can be found in Nepal's NDC: 'Opportunities for green hydrogen consumption, production, transportation and storage, including through carbon financing, will be determined.` (Government of Nepal, 2025, p. 7).

**Topic alignment:** Although relatively few countries mention specific targets and policies regarding paragraph 28 (e), 59 NDCs mention the key terms of the paragraph somewhere in the NDC not directly in that context related to the GST. Of these, 33 NDCs mention key themes of paragraph 28 (e) in their NDCs but do not refer to the substance of paragraph 28 (e) at all.

**Paragraph 28f** focuses on the acceleration of 'the substantial reduction on non-carbon-dioxide emissions globally, in particular methane emissions by 2030`. The key themes are accelerating the substantial reduction of non-carbon-dioxide emissions or methane.

**Explicit GST alignment with NDCs:** The paragraph is mentioned by number or key theme in 30 NDCs. For example, the ICTU section 4c of Peru's NDC outlines that 'In waste management, the drive to reduce other gases, such as methane, in addition to reducing CO<sub>2</sub>` are also a priority (Ministerio del Ambiente, Dirección General de Cambio Climático y Desertificación, 2025). The analysis shows that around 50% of the NDCs that are informed by paragraph 28 (f) indicate policies (17 NDCs), targets (15 NDCs) and/or contain general statements (14 NDCs). As a policy, Bhutan for example 'has initiated the preparation of a National SLCP (Short-Lived Climate Pollutant) Plan and Methane Roadmap to enhance emission inventories and assess abatement strategies that will further inform and support the implementation of the NDC` (Royal Government of Bhutan, 2025). Further, the Marshall Islands aims at moving away from landfill and fossil fuel use in energy generation and transport that shall contribute to reductions in RMI's methane emissions` (The Republic of the Marshall Islands, 2025, p. 29). Furthermore, Parties announce targets and policies: The NDC of Mauritius envisages a concrete target as the country aims to '(r)educe methane and nitrous oxide emissions by 10% by 2035 from animal waste through the adoption of biogas digesters, composting and improved manure management` (Republic of Mauritius, 2025, p. 16). Furthermore, Moldova 'aims to monitor methane emissions from the oil and gas sector more strictly and to reduce its total national methane emissions significantly through enhanced regulations by 2030` (Government of the Republic of Moldova, 2025, p. 14). Considering general statements on how paragraph 28 (f) is further considered in the NDCs, one example is that Uzbekistan points to the participation in the Global Methane Initiative which is 'confirming its commitment to reducing methane emissions and supporting international efforts to combat climate change` (Republic of Uzbekistan, n.d., p. 44 translated by the authors).

**Topic alignment:** Furthermore, a majority of 61 NDCs mention at least one of the key terms of paragraph 28 (f) (accelerating the substantial reduction of non-carbon-dioxide emissions or

methane) in their NDC without drawing on the GST in that particular context. 37 NDCs mention the key terms without referring to the substance of paragraph 28 (f) at all in the NDC.

**Paragraph 28g** states that ‘Accelerating the reduction of emissions from road transport on a range of pathways, including through development of infrastructure and rapid deployment of zero-and low-emission vehicles’. The key themes are accelerating the reduction of emissions from road transport, the term infrastructure, or zero- and low-emission vehicles.

**Explicit GST alignment with NDCs:** In total, 26 NDCs are informed by paragraph 28 (g) in relation to the GST. The NDC of the Marshall Islands is exemplary in taking up the GST providing detailed answers to each GST paragraph in its ICTU: As depicted in the ‘Rebberlib 2050’ and the ‘Tile Til Eo 2050 Climate Strategy’, the Republic of the Marshall Islands seeks to decarbonize its land transport, to further reduce its dependence on fuels. For example, a pilot project supported by the World Bank is underway to test electric vehicles in Majuro (The Republic of the Marshall Islands, 2025). As such the Marshall Islands are also among the 18 NDCs who actually mention specific policies in relation to paragraph 28g. Another example is provided by the Colombian NDC which states: ‘The transition to electric mobility in Colombia requires not only regulatory and technical support, but also the necessary financial backing to boost the market. In this sense, the measure consists of developing financial instruments that contribute to achieving the circulation of 600.000 electric vehicles in Colombia by 2030, through schemes such as support funds, promoting the participation and articulation with strategic actors and aligning with the country’s decarbonisation and energy transition objectives.’ (p. 134-135). In this paragraph Colombia not only states specific policies but is also among the 12 countries which mention specific targets. Moreover, there are also 16 NDCs who mention only general statements on paragraph 28 (g) in the GST context.

**Topic alignment:** 66 NDCs mention at least one of the key themes of paragraph 28 (g) without drawing on the GST in that particular context. 41 NDCs mention the key themes without referring to the substance of paragraph 28 (g) anywhere in the NDC.

**Paragraph 28h** is about ‘phasing out inefficient fossil fuel subsidies that do not address energy poverty or just transitions, as soon as possible’. The key theme is phase out inefficient fossil fuel subsidies.

**Explicit GST alignment with NDCs:** 14 NDCs mention this paragraph (by number or by key theme) in a GST context. Therefore, paragraph 28 (h) is one of the least well covered paragraphs of the analysis. One example where it is covered is the NDC of Malaysia. Paragraph 28 (h’) is reflected in the ICTU 4c in the context of transport decarbonisation: Malaysia ‘began phasing out blanket diesel subsidies on 10 June 2024’ (Ministry of Natural Resources and Environmental Sustainability, 2025). Further, Nigeria’s NDC summarises how their NDC 3.0 measures relate to the GST which also includes paragraph 28 (h). As there is a low number of NDCs that are informed by paragraph 28h, there are also only few NDCs that include a policy, a target or a statement. Seven NDCs describe a policy (Australia, Canada, EU, Nigeria, Switzerland, UK and Vanuatu). For example, the EU’s NDC describes that ‘(t)he EU and its Member States have called for phasing out fossil fuel subsidies that do not address energy poverty or just transition, as soon as possible. This commitment has been reaffirmed in several Council Conclusions and is reflected in legal instruments such as the Energy Efficiency Directive, which calls on Member States to eliminate fossil fuel subsidies that are incompatible with the objective of climate neutrality’ (Danish Presidency of the Council of the European Union & European Commission,

2025). Two countries mention a target in their NDC as regards paragraph 28 (h) (Canada, Chile). Canada's NDC points to the country's 'comprehensive framework towards phasing out inefficient fossil fuel subsidies' (Government of Canada, 2025). The NDC of Chile further announces that by 2030 the country aims to incorporate mechanisms for monitoring mitigation measures in public investment projects that enter the National Investment System through the Integrated Project Bank (BIP), thereby strengthening consistency between investment planning and GHG mitigation objectives' (Gobierno de Chile, 2025). Lastly, six NDCs include general statements (Australia, Canada, EU, Marshall Islands, Singapore, Vanuatu). For example, the NDC of Singapore states that the country does 'not subsidise the use of fossil fuels and instead tax the use of fossil fuels (e.g., through petrol duties) to reflect their negative externalities' (Inter-Ministerial Committee on Climate Change, 2025).

**Topic alignment:** Furthermore, the key theme of paragraph 28h (phase out inefficient fossil fuel subsidies) was mentioned in 20 NDCs while 10 NDCs the key term was mentioned without referring to the substance of paragraph 28 (h) anywhere in the NDC.

**Paragraph (33)** 'emphasises the importance of conserving, protecting and restoring nature and ecosystems (...) including through enhanced efforts towards halting and reversing deforestation and forest degradation by 2030, and other terrestrial and marine ecosystems acting as sinks and reservoirs of greenhouse gases by conserving biodiversity, while ensuring social and environmental safeguards, in line with the Kunming-Montreal Global Biodiversity Framework'. The key themes are conserving, protecting and restoring nature and ecosystems, deforestation, sinks and reservoirs, biodiversity, safeguards and Kunming.

**Explicit GST alignment with NDCs:** This paragraph informs 31 of the analyzed NDCs. For example, the NDC of Panama in the ICTU 4c section has an explicit link to paragraph 33 (Ministerio de Ambiente de Panamá, 2025). Furthermore, the ICTU section 4c of Türkiye's NDC draws on paragraph 33, outlining sectoral policies for 'the protection and enhancement of natural areas and biodiversity, and sustainable forest management based on nature-based solutions and the bio-circular economy' (Republic of Türkiye, 2025). Out of the 31 NDCs that are informed by paragraph 33, almost all include policies on how to implement paragraph 33. 27 NDCs imply a policy, for example the NDC of Pakistan contains the achievement that '(n)early 23,000 hectares of mangroves have been planted in Sindh and Baluchistan, strengthening coastal defences and biodiversity (...). Other ecosystem restoration efforts include reforestation of over 3,000 hectares of riverine areas, restoration of 405 hectares of riverine forests' (Government of Pakistan, 2025). Another example can be found in Moldova's NDC that describes the 'National Forest Extension and Rehabilitation Program (NFERP) for 2023-2032' (Government of the Republic of Moldova, 2025). Further, 20 NDCs include targets in relation to the objective of paragraph 33, like the NDC of Costa Rica. This NDC includes a timeline from 2027 until 2035 with different targets such as a '10% increase in public sector procurement procedures using eco-labelling and/or environmental certificates as evaluation criteria for forestry products' (Dirección de Cambio Climático, 2025). 20 NDCs include a general statement in relation to paragraph 33 such as the NDC of Nigeria envisaging to '(e)nhance removals through the preservation and restoration of oceans and coastal ecosystems' (National Council on Climate Change, 2025).

**Topic alignment:** The key themes of paragraph 33 are most prominently covered in the NDCs: In 72 NDCs, the key terms conserving, protecting and restoring nature and ecosystems, deforestation, sinks and reservoirs, biodiversity, safeguards and/or Kunming are mentioned.

However, 42 NDCs consider at least one of these terms but do not draw on the substance of paragraph 33 at all within the NDC.

**Paragraph 36** ‘notes the importance of transitioning to sustainable lifestyles and sustainable patterns of consumption and production in efforts to address climate change, including through circular economy approaches and encourages efforts in this regard’. The key themes are sustainable lifestyles, sustainable consumption and production and circular economy.

**Explicit GST alignment with NDCs:** 16 NDCs draw on the paragraph (by number and/or key theme) in a GST context. For example, Ecuador, in a section that is equivalent to the ICTU section, describes that some areas of their NDC ‘fall within the framework of the circular economy, as a mechanism that promotes sustainable production and consumption patterns, as well as a change in citizens’ lifestyles (República del Ecuador, 2025, p. 43 translated by the authors). Ten countries further elaborate on the topic of paragraph 36 by including policies in their NDCs. For example, Chile mentions several policies such as ‘the creation of a Roadmap for a Circular Chile by 2040; the national organic Waste Strategy, and the enhancement of Law N° 21.368 which relates the delivery of single-use plastics and plastic bottles’ (Gobierno de Chile, 2025, p. 24 translated by the authors). In a similar manner, also the NDC of Peru mentions ‘the National Roadmap for the Circular Economy’ (Ministerio del Ambiente, Dirección General de Cambio Climático y Desertificación, 2025, p. 46 translated by the authors). Six NDCs have set targets in the context of paragraph 36. In addition to the already mentioned countries of Chile and Peru, the other countries are Nigeria, Panama, Switzerland and the United Kingdom. For example, the NDC of Panama outlines that ‘by 2030, Panama will have reduced poorly managed plastic pollution by 50%’ (Ministerio de Ambiente de Panamá, 2025, p. 29 translated by the authors). General statements were found in 11 NDCs, such as in the NDC of Nigeria where it is generally stated to ‘upscale recycling activities while decreasing waste generation at source’ (National Council on Climate Change, 2025).

**Topic alignment:** Generally, the key terms of paragraph 36 (sustainable lifestyles, sustainable consumption and production, circular economy) were often mentioned by theme: 61 NDCs include at least one key term but not alongside paragraph 36, i.e. not in the same sentence, text paragraph or context. 48 NDCs mention at least one key term but do not refer to the substance of paragraph 36 at all in the NDC.

**Paragraph 37** ‘recalls Article 3 and Article 4, paragraphs 3, 4, 5 and 11 of the Paris Agreement and requests Parties that have not yet done so to revisit and strengthen the 2030 targets in their nationally determined contributions as necessary to align with the Paris Agreement temperature goal by the end of 2024, taking into account different national circumstances’. The key themes are revisit and strengthen 2030 targets to align with Paris Agreement goal.

**Explicit GST alignment with NDCs:** From the NDCs analysed, only 9% (7 NDCs) are informed by paragraph 37, mentioning it in a GST-context. For example, in the ICTU section 4c of the NDC Jamaica states that ‘Jamaica has carefully considered the scope of ambition across all sectors in the country to ensure that national strategies align with the goal of emissions reductions’ (Ministry of Economic Growth and Job Creation, 2025, p. 22).

**Topic alignment:** Only 17% (13 NDCs) of the sample relate to the substance of paragraph 37 (revisit and strengthen 2030 targets to align with Paris Agreement goal) without directly contextualising the GST paragraph 37. Furthermore, 13% (10 NDCs) mention at least one key term in the NDC but do not refer directly to the substance of paragraph 37 anywhere in the NDC.

**Paragraph 39** ‘(r) reaffirms the nationally determined nature of nationally determined contributions and Article 4, paragraph 4 of the Paris Agreement and encourages Parties to come forwards in their next nationally determined contributions with ambitious, economy-wide emission reduction targets, covering all greenhouse gases, sectors and categories and aligned with limiting global warming to 1.5°C, as informed by the latest science, in the light of different national circumstances’. The key themes are economy-wide emission reduction targets or different national circumstances.

**Explicit GST alignment with NDCs:** Our analysis shows that 41% of the NDCs are informed by this paragraph (31 of 75 NDCs).

**Topic alignment:** 66 NDCs mention at least one of the key terms related to the paragraph (basically economy-wide emission reduction targets but also different national circumstances) somewhere in the NDC without directly contextualizing paragraph 39. Of these 66 NDCs, 35 NDCs do not draw on the substance of paragraph 39 at all in the NDC.

**Paragraph 40** ‘notes the importance of aligning nationally determined contributions with long-term low greenhouse gas emission development strategies and encourages Parties to align their next nationally determined contributions with long-term low greenhouse gas emission development strategies’. The key themes are aligned NDC with LT-LEDS and long-term emission

**Explicit GST alignment with NDCs:** Of the 75 analysed NDCs, 25% (19 NDCs) are informed by paragraph 40 of the GST decision. The Moldovan NDC, for instance, states: ‘(...) while formulating its NDC 3.0, Moldova has considered the good practices and opportunities identified during the technical dialogue of the first GST, as well as its guidance, requirements, and/or encouragements for the Parties, including: (...) to align its NDC 3.0 with the next round of long-term low-emission GHG development strategies (i.e., Moldova has initiated the development of its long-term low-emissions development strategy); (Government of the Republic of Moldova, 2025).

**Topic alignment:** The key themes of aligning NDCs with long-term strategies is mentioned in 55 NDCs without directly contextualizing paragraph 40. 38 NDCs include at least one of the key themes without drawing on the substance of paragraph 40 at all in the NDC.

**Paragraph 42** ‘urges Parties that have not yet done so and invites all other Parties to communicate or revise (...) their long-term greenhouse gas emission development strategies referred to in Article 4, paragraph 19, of the Paris Agreement towards just transitions to net-zero emissions by or around mid-century, taking into account different national circumstances’. The key themes ‘communicate and revise LT-LEDS’ is mentioned.

**Explicit GST alignment with NDCs:** Paragraph 42 was mentioned in very few NDCs. Only three NDCs mention their LT-LEDS submission with reference to the GST decision. Türkiye, for example states: ‘Following the adoption of these implementation plans, Türkiye announced its Long-Term Climate Strategy (LTS) 3 at COP 29 in Baku, Azerbaijan, in 2024.’ (Republic of Türkiye, 2025, p. 2).

**Topic alignment:** In 36 of the 75 NDCs analysed, we found references to the key terms without directly contextualizing paragraph 42. 33 NDCs include the key term without drawing on the substance of paragraph 42 at all in the NDC.

### 3.3 Explicit GST alignment and paragraph relevance

In the following, the results of the GST alignment in NDCs regarding paragraphs 28, 33, and 36 are discussed in view of an indicative relevance of the content of the GST paragraphs for Parties. The indicators used have been listed in Chapter 2 on the methodology. They are part of statistics or topical data sets. The thresholds indicating less or more relevance are roughly designed to provide a first estimation of relevance showing the principal methodology and benefit of the approach. Three levels can be distinguished. The three levels of indicative relevance are:

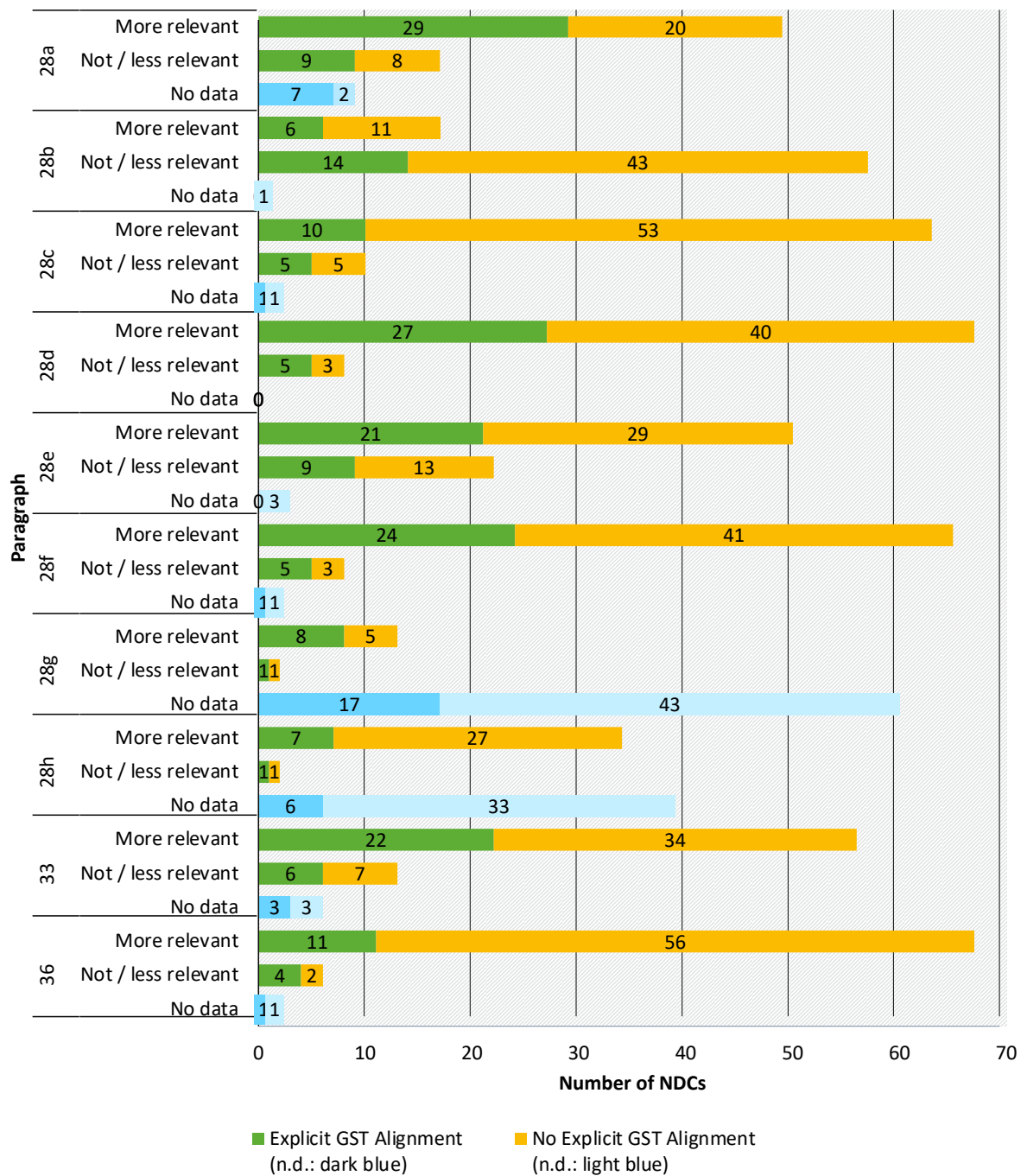
- ▶ The paragraph is more relevant in the specific country context.
- ▶ The paragraph is not or less relevant in the specific country context
- ▶ The indicative relevance has not been determined because of a lack of data (no data)

In addition, for each of these levels, the two sublevels are i) explicit GST alignment in the NDC or ii) no explicit GST alignment in the NDC.

Figure 7 provides paragraph-specific indications. No data for explicit or no explicit GST alignment has been marked blue in order to distinguish the result 'no data' from other results. The total sum of all numbers for the respective paragraphs is always 75 as all 75 NDCs could be assigned to one of the six levels and subgroup combinations for each GST paragraph. Some observations are:

- ▶ Paragraph 28 b (coal phase out) is indicatively not or less relevant for a large majority of Parties in this NDC sample. Of these, a large majority does not cover paragraph 28b in their NDCs (no explicit GST alignment). Regarding Parties for which paragraph 28b is indicatively relevant, almost half of the NDCs do not reference this GST paragraph.
- ▶ Most of the other GST paragraphs are indicatively more relevant in the respective Parties' national contexts but the specific GST paragraph is not referenced in the majority of these NDCs (no explicit GST alignment). The exception is paragraph 28a where the majority of Parties for which the paragraph is indicatively relevant covers it explicitly in an GST context in the NDC.
- ▶ For paragraphs 28 (g) and 28 (h) the data availability is generally low, statistics cover not all countries of the sample.

**Figure 7: Indicative relevance and explicit GST alignment**



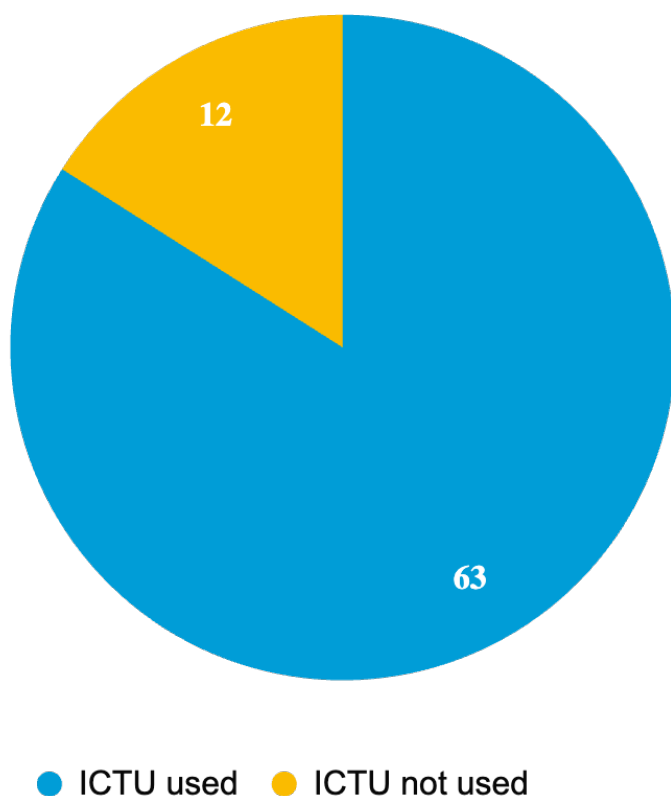
Source: own illustration, Wuppertal Institute.

## 4 Discussion of the results of the analysis - how is the GST reflected in NDCs?

The analysis of the 75 selected NDCs reveals a complex landscape of alignment with the First Global Stocktake (GST) mitigation outcomes. The alignment with these outcomes within the NDC documents, specifically the alignment with formal requirements, remains inconsistent across Parties.

At the structural level, most Parties have followed the requirement to provide Information to facilitate Clarity, Transparency and Understanding regarding their NDC. Figure 8 illustrates that 84% of the sample (63 NDCs) provide this information.

**Figure 8: ICTU use in 75 NDCs**



Source: own illustration, Wuppertal Institute.

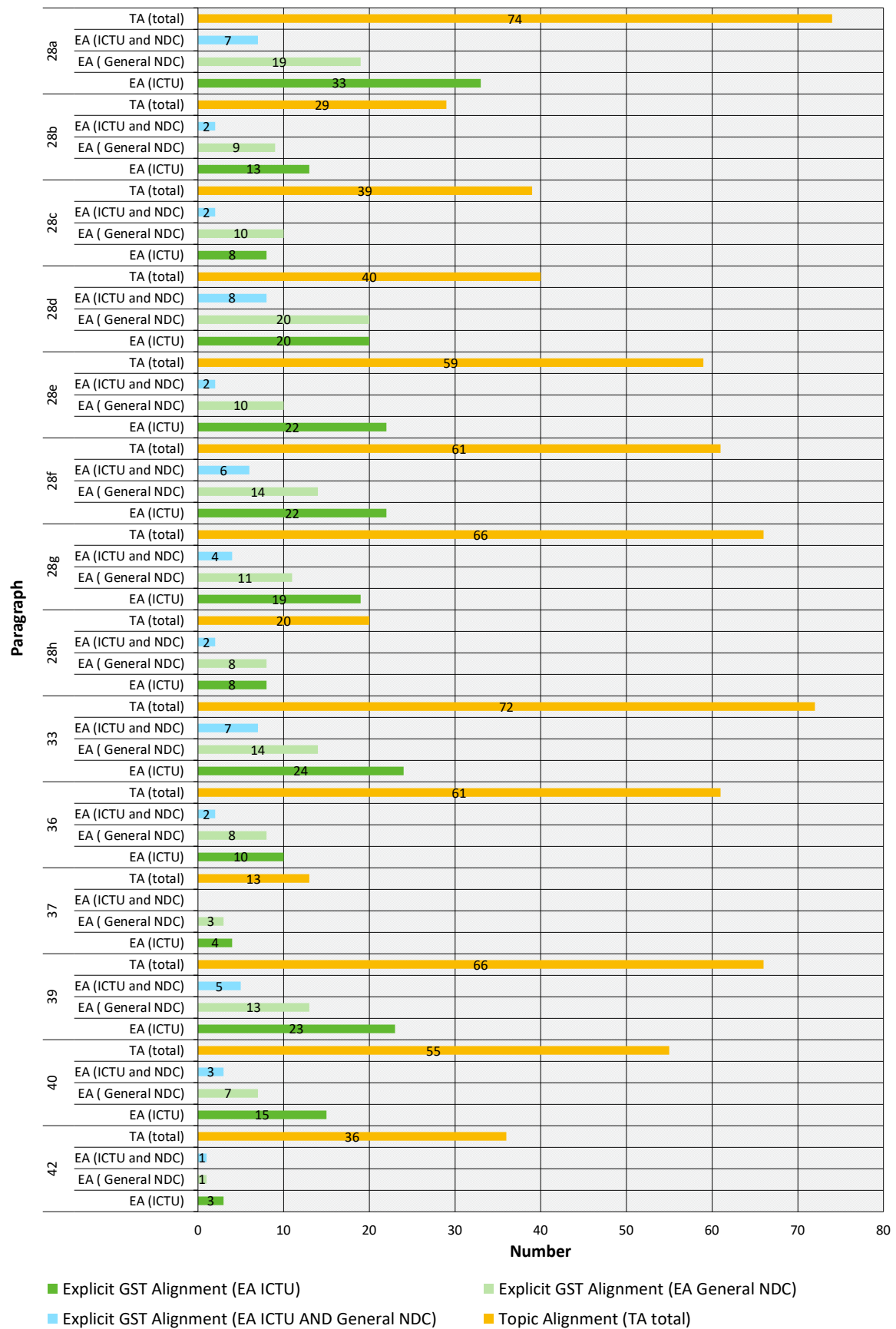
Nevertheless, the NDCs of 12 Parties or 16 percent of the sample do not include ICTU. These are Angola, Bolivia, Burkina Faso, China, Colombia, Cote d'Ivoire, Cuba, Ethiopia, Rwanda, Sierra Leone, Venezuela, and Zimbabwe. Some of the NDCs that do not have information organized according to the ICTU template were developed with support of international organisations. Some Parties use only parts of the ICTU template. Indonesia, for instance, uses the guidance but does not include section 4c where Parties are supposed to outline how the Party's NDC preparation has been informed by the outcome of the Global Stocktake. The reasons as to why these NDCs don't apply the agreed ICTU standards are unclear.

Parties either show alignment to the GST through specific statements in their ICTU sections or refer to GST paragraphs in the NDC document elsewhere, either directly by mentioning the

respective paragraph (explicit alignment) or indirectly by referring to specific topics mentioned in the respective paragraphs (topic alignment). While Figure 5 in Chapter 3 shows integrated numbers of explicit alignment with GST paragraphs in the NDC documents, a more detailed assessment shows for a majority of the references to specific GST paragraphs that explicit references are more often provided in the ICTU section 4c than in other parts of the NDC documents (Figure 9). Only for paragraph 28c the explicit alignment in other parts of the NDC is higher than in the ICTU section. Regarding paragraphs 28d and 28h, these paragraphs are equally often mentioned in the ICTU section and in other parts of the NDC document as a whole. Figure 9 on the following page, also shows that there is a smaller number of NDCs where paragraphs are mentioned in both the ICTU section 4c and in other parts of the NDC with reference to the GST.

In conclusion, although ICTU section 4c provides explicit room for information on how the GST informed the NDC, this information is not always easy to detect in NDCs. This information cannot be found in the ICTU section in all NDCs analysed. It is also found in other parts of the NDC, e.g. the introduction, any other part of the NDC, specific Annexes to the NDC, etc. Furthermore, there is a lack of specific guidance for the ICTU section 4c (Jeudy-Hugo, Re, Hyun, et al., 2024; Lo Re et al., 2025). The current ICTU guidance does not require paragraph specific information and only asks to reflect on the NDC as a whole. In case of comprehensively formulated mitigation outcome paragraphs, e.g. paragraph 28 with sub paragraphs, paragraph 33, etc. this leads to the varied approaches and inconsistent referencing.

**Figure 9: Explicit GST and topic alignment in Detail**



Source: own illustration, Wuppertal Institute.

## 4.1 Explicit alignment in relation to topic alignment

A primary finding of this study is the discrepancy between ‘visible’ GST alignment and general thematic coverage defined as ‘topic alignment’. While the searchword analysis indicates that a majority of NDCs include topics related to the substance of paragraph 28 (e.g. for renewable energy or energy efficiency in all but one NDCs), only a subset explicitly relates this information to the GST. Our analysis supports the findings of other studies regarding the uptake of GST signals in NDCs. The GST has informed the NDCs in a variety of ways. Although the term ‘global stocktake’ appears in almost all analysed NDCs, the NDCs differ greatly in terms of how deeply they address the global stocktake.

It appears that countries picked and chose paragraphs reflecting their political priorities. The number of paragraphs referred to in the 75 NDCs varies considerably. Only two Parties referred to 12 of the 14 paragraphs analysed in this paper, which is the highest number in the entire sample. This means that there is no Party which referred to all paragraphs. This aligns with findings from C2ES (2025), which noted that while 83% of NDCs reference some domestic policies or quantitative measures dedicated to GST targets, only about one-third explicitly reference the goal of tripling renewable energy capacity by 2030.

The UNFCCC Synthesis Report (2025) on the basis of a smaller sample backs this observation, stating that 88% of Parties indicated their NDCs were informed by GST outcomes, yet only 80% specified how this information was utilized.

The analysis highlights a divergence in how countries signal their adherence to the GST. In many cases, NDCs cover the thematic areas of the GST (Category None but ‘Topics Aligned’) without explicit reference to the GST mitigation outcomes and/or wording of Decision 1/CMA.5. This suggests two possibilities that the current methodology acknowledges but does not distinguish: First, the GST was not the primary driver for the NDC development, the topics of the GST mitigation outcomes were already on the agenda of Parties earlier (e.g., renewable energy) and would have been addressed anyway. Second, the NDC was informed by the GST but the influence remains implicit rather than visible.

## 4.2 Explicit GST alignment and ‘implementation status’

As the GST1 decision reiterates the provisions of the Paris Agreement on NDCs and establishes new goalposts (Jeudy-Hugo, Re, Pouille, et al., 2024), it is interesting to observe the current level of GST alignment in the NDCs with regard to paragraphs 37, 39, 40 and 42. While the latest NDCs have an end date of 2035, paragraph 37 of the GST calls on Parties to improve the implementation of the previous (2030) NDCs and to align them with the temperature goals of the Paris Agreement. Paragraph 39 is an important step forward as it encourages all Parties, regardless of whether they are developed or developing countries, to expand the scope of their NDCs.

Paragraphs 40 and 42 of the GST decision refer to long-term low greenhouse gas emission development strategies (LT-LEDS). Paragraph 40 of the decision on the first global stocktake marks a notable shift in expectations for the Parties. While the Paris Agreement (Art. 4.19) only recommended that Parties ‘strive to’ formulate and communicate LT-LEDS, the GST decision now requires parties to communicate or revise their LT-LEDS by COP29 (Article 42) and encourages them to align their NDCs with their LT-LEDS (Article 40) (Català et al., 2024; Jeudy-Hugo et al., 2024).

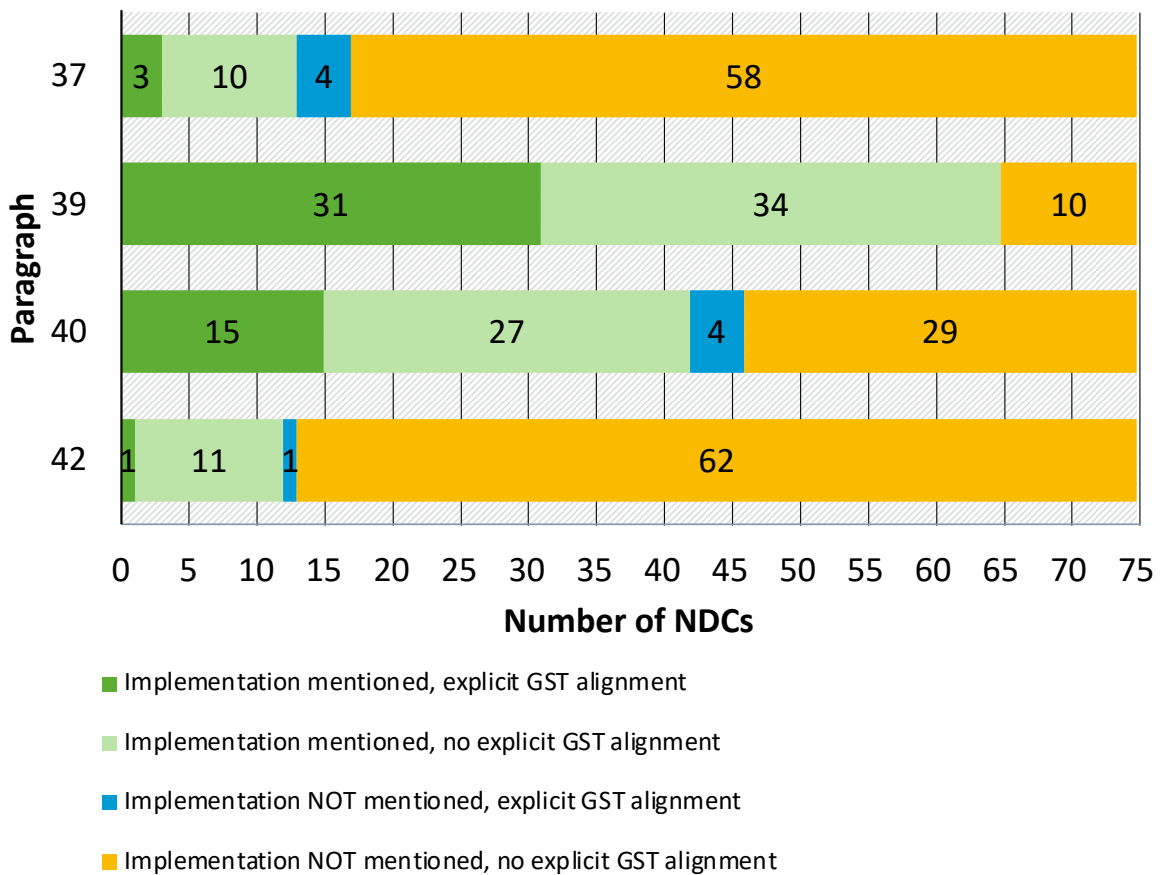
The results of the GST alignment in NDCs regarding paragraphs 37, 39, 40 and 42 are discussed regarding the question whether the topics of these paragraphs are already implemented by

Parties or under implementation or not yet addressed. The analysis shows a diverse picture (Figure 10):

- ▶ In total only 17% of NDCs (13 NDCs) provide information that paragraph 37 is already implemented or under implementation, and only 9% of NDCs (7 NDCs) refer to the GST.
- ▶ With 87% of NDCs (65 NDCs) a large majority of NDCs provides information that paragraph 39 is already implemented or under implementation. Only 41% of these NDCs (31 NDCs) refer to the GST paragraphs while 45% (34 NDCs) do not.
- ▶ More than half of the NDCs (42 NDCs) provide information that paragraph 40 is already implemented or Parties are listed in the UNFCCC Long-term Strategies Portal that they submitted a LT-LEDs. About one third of these NDCs refers to the GST paragraph and roughly two thirds do not.
- ▶ Only 16% of NDCs (12 NDCs) mention that paragraph 42 will be implemented as a new or revised LT-LEDS is under development. Of these only one NDC states this in the context of the GST paragraph.

For example, the NDCs of Venezuela and the EU include topics of paragraph 39. Although the topic is 'implemented' as the NDC has an economy-wide target, the discussion in the NDC is not related to paragraph 39. This has been included in the column for paragraph 39 'implementation mentioned, no explicit GST alignment'. In conclusion, for these paragraphs, the explicit GST alignment or non-alignment does not necessarily reflect the implementation status of the substance of the paragraphs.

**Figure 10: Explicit GST alignment and implementation status**

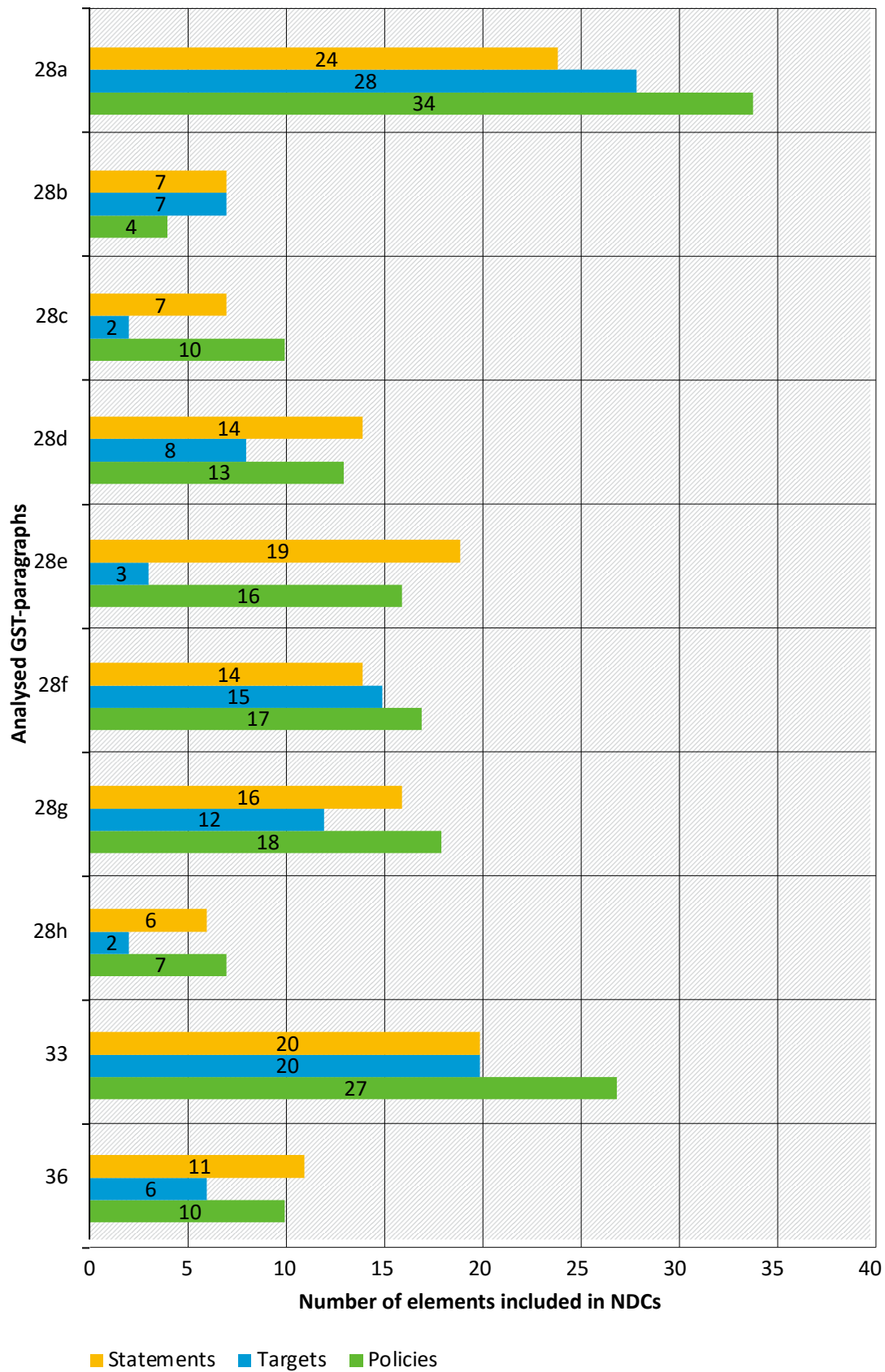


Source: own illustration, Wuppertal Institute.

### 4.3 Sectoral Ambition and the ‘implementation gap’

As Figure 6 in Chapter 3 (renumbered here as Figure 11) shows, the depth of commitment in NDCs varies significantly across the GST paragraphs.

Figure 11: Targets, policies, and statements relating to GST paragraphs (Figure 6 repeated)



Source: own illustration, Wuppertal Institute.

The comparison with other studies (C2ES 2025, E3G 2025) on the uptake of the GST mitigation outcomes in NDCs reveals similar trends in explicit GST alignment in NDCs although the number of NDCs considered here is higher:

- ▶ **Energy Transition (Para 28a-d):** Our results show that while renewable energy and efficiency (28a) are frequently addressed with specific targets (Category 3), language regarding the ‘transitioning away from fossil fuels’ (28d) often remains at the level of unclear which is equivalent to the category ‘General Statement’ (Category 1). This is echoed by E3G (2025), which found that 95% of countries include policy commitments for at least one energy outcome, but none have presented a comprehensive plan to meet all tracked energy goals simultaneously. Regarding the ambition level, the E3G assessment shows similar results compared to this analysis. It concludes that 64% of NDCs have reached a high level of ambition so far in at least one energy goal. At the same time, an implementation gap is observed as regards the lack of comprehensive planning. While 86% mention renewables, only 63% provide quantified targets, and very few address the production side of fossil fuels.
- ▶ **Non-CO2 Emissions and Transport (Para 28f-g):** The analysis shows that ‘Policy/Measure’ (Category 2) is the most frequent classification for these topics, though quantified Category 3 targets are still emerging. The analysis of C2ES (2025) confirms similar results and identifies road transport as one of the most explicitly referenced targets.
- ▶ **Fossil Fuel Subsidies (Para 28h):** The analysis shows that this paragraph is one of the least well covered paragraphs in the NDCs. An explanation could be that many NDCs fail to address this paragraph possibly due to national economic sensitivities or a lack of perceived relevance. Other qualitative results indicate that commitments to phase out inefficient fossil fuel subsidies are primarily present in NDCs from developed nations or specific SIDS, such as the Marshall Islands and Vanuatu (E3G, 2025).
- ▶ **Economy-wide Targets (Para 39):** With a total topical alignment of 88% (66 out of 75 NDCs<sup>6</sup>), the large majority of the analysed NDCs have mentioned economy-wide targets. The analysis here reveals that only 31 NDC report economy-wide targets in the context of paragraph 39 and 34 NDC report economy-wide targets but not in the context of paragraph 39. A The wider implementation of paragraph 39 had already been observed regarding the NDCs submitted until October 2025 before COP 30. The UNFCCC NDC synthesis report (2025) showed a progression in quality, with 89% of NDCs then providing economy-wide targets in their NDC.

The application of the category levels to investigate in more detail on how the GST informed the NDCs, however, suffers from indicator inconsistency as Parties describe what they are doing and often do not use indicators with specific metrics (Jeudy-Hugo, Re, Hyun, et al., 2024)(e.g., decommissioned coal plants vs. reduced consumption), which hampers the ability to assess the approaches described in the NDCs. Lo Re et al. (2025) highlight that some Parties explicitly link their lack of quantitative indicators to capacity constraints which explains part of the categorization results as Category 1 (‘General Statement’) and ‘Category 2’ (Policy/Measure) for many developing nations.

<sup>6</sup>.Topical alignment does not necessarily sum up with implementation/being under implementation.

## 5 Conclusion and Outlook

The analysis of 75 NDCs revealed that a large majority of Parties (69 Parties, 92%) mention the GST in some form in their NDC. Six Parties (8%) do not refer to the GST in their NDCs at all. 53 NDCs (71%) draw on at least one of the mitigation paragraphs considered in this analysis. 16 NDCs (21%) mention the GST in general or other outcomes than mitigation outcomes. More specific results are provided in Chapter 3 and are discussed in Chapter 4.

The following recommendations focus on three aspects: the ICTU guidance and its application in NDCs, information on GST uptake in other parts of NDCs, recommendations for the second GST, and finally some findings regarding the methodology applied in this analysis. The Chapter concludes with recommendations on further research needs.

### ICTU guidance and application

Decision 4/CMA.1 in 2018 focused on further guidance in relation to the mitigation section of decision 1/CP.21 and decided to initiate a review of the ICTU guidance in 2027. Some recommendations are drawn in view of this upcoming review:

As regards the use of the ICTU and in particular with a view to section 4c it became obvious that not all NDCs organize information along the ICTU template. In order to increase transparency and comparability of NDCs, more standardization and application of the templates would be helpful.

Using the ICTU, section 4c should entail all relevant information to provide a clear picture of how the NDC utilized the information by the GST. At the same time, replication of information in other parts of the NDC should be avoided.

Hence, it is recommended to update the ICTU guidance in order to improve transparency and include paragraph specific information. Regarding mitigation outcomes this could entail

- ▶ reporting on relevance of different GST paragraphs for respective countries (e.g. how much electricity is produced from coal) and
- ▶ if a paragraph is relevant for the country it is required to either report on policies and goals reflecting the objectives formulated in GST paragraphs or argue why this is not applicable.

### Recommendations for GST uptake in NDCs

Apart from the ICTU section in NDCs, the recommendations of ICTU guidance and application could have a broader effect on how the GST uptake is demonstrated in NDCs. This relates in particular to the following observations in the current round of NDCs:

- ▶ NDCs not mentioning the GST at all: With a more detailed guidance on ICTU section 4c, Parties could reconsider whether there was a general effect of the GST (Burkina Faso, Côte d'Ivoire, Ethiopia, Sierra Leone, Venezuela and Zimbabwe).
- ▶ NDCs with high topic alignment but low explicit GST mitigation outcome alignment in NDCs: Parties could more easily reconsider the impact of the GST (e.g. China, Indonesia, Maldives, Mexico, Tuvalu),
- ▶ Revised guidance could avoid double text passages in ICTU and NDCs (e.g. Marshall Islands): If it is more transparent what could be reported in which place, this would contribute to a

clear organisation and structure of NDCs (e.g. listing GST paragraphs in ICTU 4c and referring to NDC chapter, annex, etc. where it is explained).

- ▶ NDCs being organised completely by the ICTU template (with introduction, e.g. New Zealand, Jamaica, Norway, Japan, Malaysia, Singapore)): Revised ICTU guidance could help to organise the information provided in the ICTU which in these cases is the NDC e.g. in summarising list and followed by explanatory text.
- ▶ The above recommendation also relates to NDCs with very long ICTU 4c sections (e.g. several pages in UK NDC). However, the point here is not the uptake of the GST in the NDC but the organisation of information).

### **GST coverage in NDCs**

The ‘ambition cycle’ of the Paris Agreement relies on the feedback loop between the GST and NDCs. The results suggest that while the GST has successfully established a global thematic agenda and ‘seeded’ mitigation topics into national discourse, the formal ‘anchoring’ of these outcomes in NDCs is incomplete. This suggests that the ‘forward-looking function’ of the GST is being underutilized. As noted by Lo Re et al. (2025) a ‘Target Consistency Gap’ persists. Without clearer alignment and quantified targets across all paragraph 28, 33 and 36 topics, the path to 1.5°C remains structurally underspecified in national commitments.

Either for the ICTU or the NDC structure, transparency could be increased by a brief overview table on the indicative relevance and implementation status of the specific GST paragraphs. A YES/NO classification and reference to other sections in the NDC where the topic is covered could be sufficient.

- ▶ The indicative relevance of paragraphs 28, 33, and 36 could be determined by Parties themselves on the basis of commonly agreed indicators. The indicators used in this analysis are defined on the basis of official statistics but the values indicating less or more relevance are roughly designed to show the benefit of the general approach. The concept in general and values need thorough consideration before applying the approach widely.
- ▶ The implementation status regarding specific topics (paragraphs 37, 39, 40, and 42) is not necessarily reflected by explicit GST alignment. To increase transparency, it is recommended to include a tabular format on the GST paragraph status.

### **Recommendations for the second GST**

The most clearly quantified GST elements - paras 28a and 33 - got picked up most in NDCs. So it could be useful if GST2 could develop more such quantified benchmarks.

Prescriptive guidance could relate to the different phases of the GST cycle:

- ▶ Facilitation of GST2 Technical Dialogue: The development of more prescriptive guidance for the second GST could encourage the submission of further relevant information in the technical phase of the GST.
- ▶ Information for the GST2 consideration of outcomes component: How could collected input to assess collective progress be organised to inform discussions in the GST consideration of outcomes component?

- ▶ GST 2 decision text.: Suggestions on how information could be organised in the GST2 decision text.

More prescriptive guidance on such benchmarks for the second GST could contribute to the efforts to further increase transparency by more standardized information in the NDCs.

### **Methodological lessons**

Finally, regarding the methodological approach applied in this analysis, in particular the use of AI based tools for this kind of qualitative data generation, the reliance on NotebookLM for parsing NDCs was a critical methodological choice. As noted in the CCXG working papers, the technical complexity and varying formats of NDC submissions pose significant barriers to transparency (Jeudy-Hugo, Re, Hyun, et al., 2024). Our experience shows that this complexity can be addressed by using LLMs but the choice of the tool, the prompts used and the quality assurance mechanisms are vital to confirm the results. Traditional LLMs often struggle with file codings, a challenge that was mitigated by the selected tool's multimodal capabilities. In conclusion, the requirement for the 'triple internal review' underscores that the use of AI is a supportive tool under a methodological quality assurance framework.

### **Some further research questions are**

- ▶ How can we measure the impact of the Global Stocktake and hence the success of the ratchet mechanism? How to compare the 'information' with previous NDCs to discover GST information related changes?
- ▶ In many cases It is difficult to provide an answer on whether NDCs have more or less succeeded in GST uptake. Particularly, if an uptake is reported, is that backed by targets, policies and measures?
- ▶ Regarding NDCs that do not at all mention the GST (neither mitigation paragraphs nor other) Burkina Faso, Côte d'Ivoire, Ethiopia, Sierra Leone, Venezuela and Zimbabwe, one might think that this is due to a short NDC and less detailed NDC. While the length of the NDC documents varies considerably, the average number of pages is 124. Why they do not draw on the GST is an open question that can only be assessed in empirical research addressing stakeholders.
- ▶ Also more generally, what are the reasons why the GST signals have been picked up so differently? Reasons may for example be lack of technical capacity or support or the resistance by certain domestic interest groups. Here as well, national case studies would be necessary to elucidate enablers and barriers and derive lessons for GST2.

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