Climate Change Governance after the Paris Agreement: A Functional Analysis within Formal and Informal Intergovernmental Fora

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TRANSFORMA

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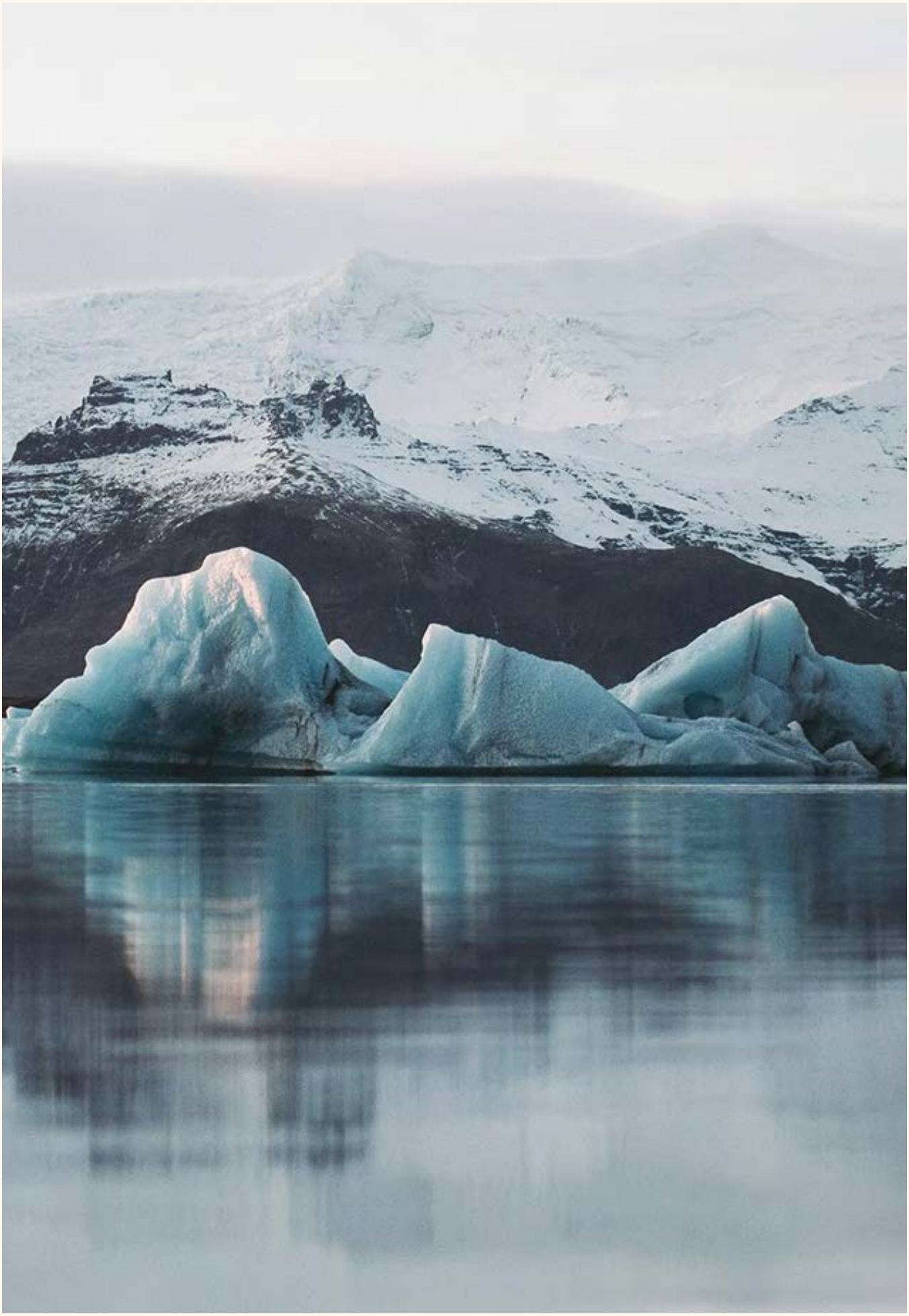

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EXECUTIVE SUMMARY

Background

Climate change has been established as an international regime by the United Nations Framework Convention on Climate Change (UNFCCC). Since the adoption of the Paris Agreement, it has become a priority in various international, regional, and national contexts. However, advancements toward fulfilling the Agreement's objectives have fallen short (UN, 2023). Technical, financial, and policy constraints will continue to require political consensus and intergovernmental cooperation at different levels in the foreseeable future.

About this paper

This paper assesses how multilateral global and regional fora have advanced and reinforced the provisions of the Paris Agreement. Specifically, it evaluates how formal fora like the Association of Southeast Asian Nations (ASEAN) and informal ones like the Group of 20 (G20) have enhanced governance functions such as setting rules and promoting transparency. The analysis highlights the strengths and weaknesses of global climate governance and identifies areas needing improvement.

Approach

The study uses a functional analysis applied to intergovernmental fora. The methodology is based on a functional framework proposed by Obergassel *et al.* (2021) and contextualized for climate change mitigation by Oberthür *et al.* (2021). It consists of five steps.

→ **First,** the framework was adapted to evaluate political signals in texts produced by intergovernmental fora. Each function was divided into sub-functions (see table below) and defined using the Paris Agreement and relevant literature.

FUNCTION	COMPONENTS
Guidance and Signal	► Long-term vision, including decarbonization objectives and narratives. ► Medium-term targets. ► Related roadmaps and strategies.
Rules to Guide Collective Action	► Definitions and standards relating to general or sectoral mitigation. ► Formulation, coordination, or calls for mitigation policies. ► Agreements to pursue certain mitigation measures. ► Statements of intent to comply with the aims and elements of the Paris Agreement.
Transparency and Accountability	► Transparency procedures or systems. ► Accountability procedures or systems.
Means of Implementation	► Joint research and development of technologies. ► Financial and technical assistance. ► Capacity building.
Knowledge and Learning	► Mechanisms and spaces for sharing knowledge. ► Calls and expressions for cooperation.

→ **Second,** we identified and prioritized 12 intergovernmental fora to conduct the functional analysis:

- *Formal/regional*: Organization of American States (OAS); Association of Southeast Asian States (ASEAN); African Union (AU); and the Union for the Mediterranean (UfM).
- *Formal/international*: Shanghai Cooperation Organization (SCO); Organization of the Petroleum Exporting Countries (OPEC); Organization for Security and Cooperation in Europe (OSCE); and Asia Pacific Economic Cooperation (APEC).
- *Informal*: The Group of 20 (G20); the Group of 7 (G7); The Major Economies Forum (MEF); and the so-called BRICS.

→ **Third,** we identified and selected the documentation through which these fora capture and publicize their outcomes, including declarations, joint statements, communiqués, and similar materials. Our analysis focused on publicly available documents from 2015 to 2023.

→ **Fourth,** we scanned all the material to identify, gather, and classify references that comply with the analysis framework. For example, within the function of Guidance and Signal, the framework includes the identification of long-term decarbonization objectives. We searched for and compiled references related to such objectives across the documentation. Each reference was further evaluated based on its scope of application, distinguishing between general aspects (e.g., GHG mitigation trajectories) and those applicable to one or multiple sectors, including energy, industry, transport, agriculture and forestry (AFOLU), fossil fuels, and finance.

→ **Finally,** we evaluated the strength of each reference based on three criteria:

- *Explicitness*: Whether the reference uses direct terms in line with the description of each function.
- *Exclusiveness*: Whether the reference is exclusive to the forum members or applies to others or the world as a whole.
- *Actionability*: Whether the reference implies an action or commitment rather than an expression of aspiration.

The results are presented for each function, including the number of references found, the fora predominantly contributing signals, and an appraisal of the strength of such signals in terms of the percentage considered stronger, both overall and for each forum. Stronger signals are those that are explicit, exclusive, and actionable. Weaker signals meet any combination of two or only one of these criteria.

FINDINGS

Overall, we find that all the fora we evaluated have advanced the functions of global governance, albeit asymmetrically. Visions for global and sectoral decarbonization have been largely adopted along with a wide range of targets, though not always with the same level of strength. Most fora consistently advocate for mitigation actions, with fewer emphasizing policy development or coordination. Various fora also identify Means of Implementation. Transparency and Accountability appear less prominent and weaker overall.

A total of 1,412 references were gathered from all the reviewed documentation. Some consist of recurring language, such as decarbonization objectives, agreements to phase out fossil fuels, and specific targets.

Most signals were identified under 'Guidance and Signal' and 'Rules to Guide Collective Action' (about 67 percent), followed by 'Means of Implementation' (18 percent), 'Knowledge Management' (12 percent), and 'Transparency and Accountability' (3 percent). These signals were primarily identified by the two informal groups evaluated, the G7 and the G20. Most of these signals pertained to general GHG mitigation trajectories or the energy sector, constituting around 60 percent of all references. Approximately 27 percent of all references were evaluated as stronger, with the majority (33 percent) within the G7, followed by the G20 (16 percent) and ASEAN and OAS (about 11 percent each). Among these stronger references, the highest percentage was associated with 'Rules to Guide Collective Action' (39 percent), followed by 'Guidance and Signal' (31 percent), 'Means of Implementation' (14 percent), 'Knowledge and Learning' (13 percent), and 'Transparency and Accountability' (3 percent).

→ Main Findings on Individual Functions:

• Guidance and Signal:

All fora have established political signals for this function. Long-term decarbonization objectives are widely adopted, though few use stronger language. Medium-term targets are common, with some expressed quantitatively or with deadlines. The G7, followed by APEC, ASEAN, and the AU, contributed most targets, covering general GHG mitigation, energy, transport, and AFOLU sectors. While many fora have roadmaps, few relate to long-term objectives or medium-term targets, focusing instead on finance, energy performance, transport, or other sectors.
Total References: 478
Fora Covering All Sub-functions: 5 out of 12
Top Forum: G7 (141 references)

• Rules to Guide Collective Action:

All fora foster collective action, primarily through agreements to promote renewable energy. Some advocate for definitions and standards, with ASEAN being most active. While many fora engage in policy, signals here are weaker. Stronger policy signals come from the G7, OSCE, and AU across various sectors, including macroeconomic policy, energy, and finance. Most fora promote emission mitigation across sectors, with notable agreements on finance improvement, coal phase-out, and electric mobility. Some signals may be detrimental to climate mitigation, such as promoting gas or improving coal's image. Most fora intend to comply with the Paris Agreement, focusing on financial obligations of developed countries.
Total References: 468
Fora Covering All Sub-functions: 4 out of 12
Top Forum: G7

• Transparency and Accountability:

This function has the fewest references. Only a few fora, notably the G7, provided strong references. The G20 and AU mainly linked to climate pledges of developed countries or UNFCCC's transparency framework. The lack of identified transparency mechanisms does not imply their absence but rather their omission in the consulted sources.
Total References: 40
Strong References: Few

• Means of Implementation:

Most fora reference this function, but stronger references are few. Many seek joint R&D in various sectors and technologies like hydrogen, CCUS, or synthetic fuels. Fora like the G20 and G7 mention collaborative R&D mechanisms. Technical and financial cooperation is advocated, with developing country groups demanding and developed/emerging economies offering these mechanisms. Few references pertain to capacity building, mostly within GHG mitigation trajectories or the energy sector.
Total References: 260
Strong References: About half
Top Fora: G7, G20, AU

• Knowledge and Learning:

Most fora acknowledge the importance of knowledge, learning, and cooperation, often acting as platforms for these purposes. Many refer to creating spaces for knowledge sharing, though only a third are strong references. Energy and finance are key sectors, with active fora including the G7 and G20. Most fora see cooperation as essential for climate goals, targeting all sectors and technologies. Some fora like BRICS and SCO consider a broader energy cooperation scope beyond climate and decarbonization, highlighting security importance.
Total References: 166
Strong References: About a third
Top Fora: G20, G7, SCO

• Overall Observations:

Global Governance Advancement: Multilateral fora have progressed in climate governance, driven by the Paris Agreement. Notably, the G7 and G20 are prominent across governance functions.

• Sectoral and Functional Relevance:

Most functions relate to general climate change and energy and finance sectors. Other sectors gain prominence in specific fora.

• Strength of References:

About a third of references are strong, indicating room for improving political signals from multilateral fora. Strengths include long-term objectives, action agreements, commitment to the Paris Agreement, and diverse signals supporting cooperation and knowledge sharing. Weaknesses include limited forum references for global climate governance, indirect roadmaps, weak policy references, sector coverage beyond energy, and overall Transparency and Accountability mechanisms.

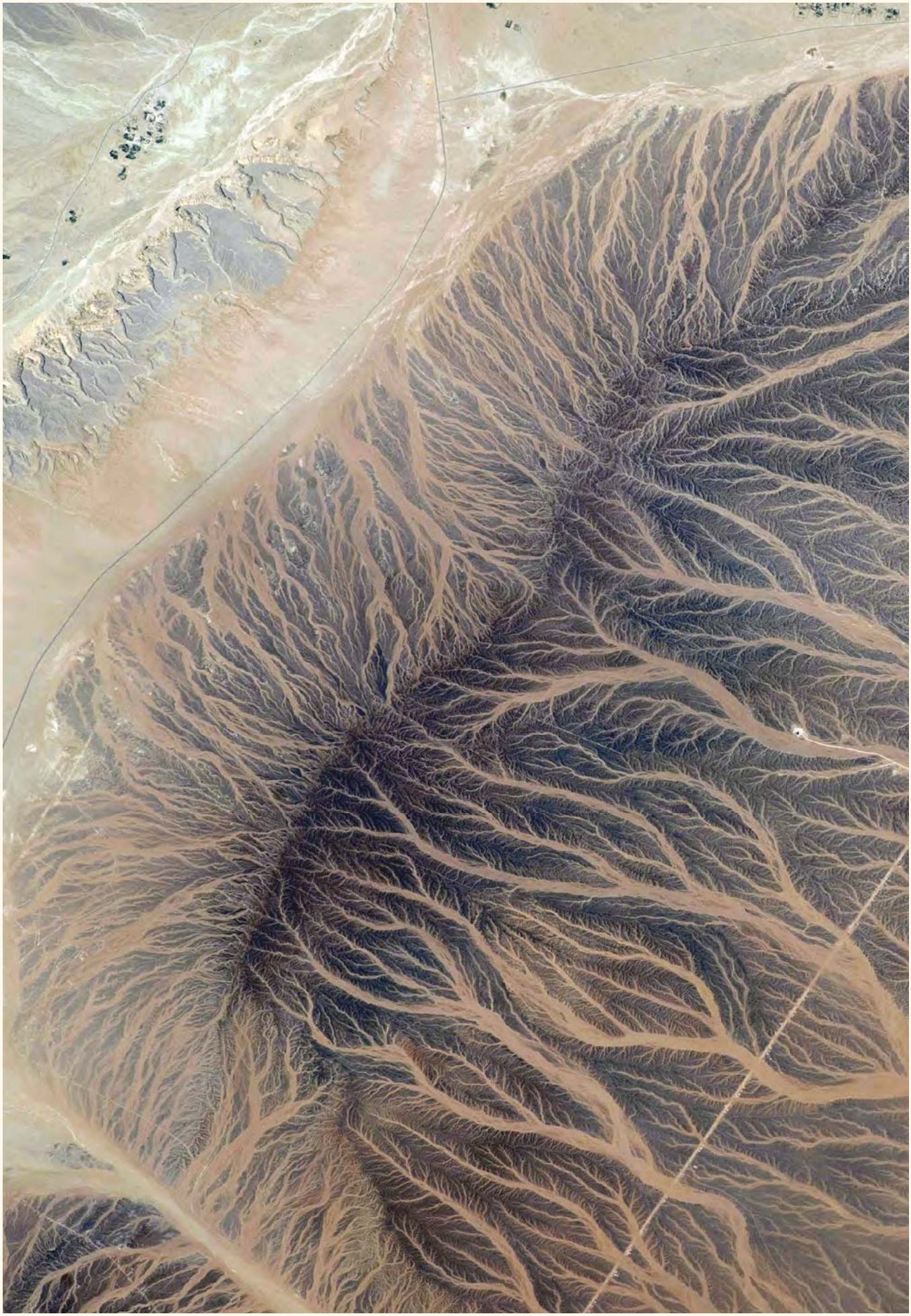
• Contradictory Signals:

Some signals, such as references to fossil fuels as transition fuels or calls to improve the image of coal, could contradict Paris Agreement goals.

RECOMMENDATIONS FOR FUTURE RESEARCH

This paper provides an overview of the functions of climate change governance focusing on climate change mitigation. For future research, we propose extending the analysis to encompass adaptation and conducting a deeper examination of specific functions, sectors, and/or forums by expanding the sources of information to include data from initiatives and organizations that have been established.

The international community's current inability to curb global warming within the 1.5C threshold underscores the imperative of galvanizing political commitment at all levels. As demonstrated, the mechanisms, processes, dynamics, and directions within the multilateral ecosystem are already established for mobilizing regions and sectors alike.



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Climate Change Governance after the Paris Agreement: A Functional Analysis within Formal and Informal Intergovernmental Fora

INTRODUCTION

A. Background

Climate change is a multidimensional problem that has established an international regime involving various actors, including cities, firms, civil society, national governments, and international organizations (Oberthür *et al.*, 2021). Progress toward the Paris Agreement's long-term goals has been limited due to insufficient ambition in Nationally Determined Contributions (NDCs) and slow policy implementation at the national level (UNEP, 2023). The Global Stocktake (GST) process recently concluded that, despite progress, Parties are not collectively on track to achieve the Paris Agreement's core objectives and long-term goals (UN, 2023).

Some authors argue that the UNFCCC process alone is insufficient to limit global warming to below 1.5°C due to the complexity of required solutions (Burke, 2022; Kemp, 2018). Additional or complementary models, such as clubs and minilateral agreements, are suggested as necessary (Carraro, 2017; Falkner *et al.*, 2022; Mourier, 2020; Obergassel *et al.*, 2019). Others contend that the ambitions of the Paris Agreement must be reinforced in other intergovernmental fora like the G7 and G20 (Haase *et al.*, 2021). Global governance remains crucial in the fight against climate change (Oberthür *et al.*, 2021).

This research analyzes how global and regional fora have incorporated the political signals of the Paris Agreement. Global governance is defined as "the purposeful order that emerges from institutions, processes, norms, formal agreements, and informal mechanisms that regulate action for the common good" (Benedict, 2015).

We aim to determine whether global governance constituencies have aligned on visions, trajectories, and mechanisms to secure consensus and spur action to advance the Paris Agreement's objectives. This analysis will highlight the strengths and weaknesses of global governance institutions, identifying areas needing improvement.

Analyses since the late 2000s have focused on expanding international mitigation obligations/actions, particularly for more advanced developing countries under a burden-sharing paradigm (Oberthür *et al.*, 2021). Recent studies have analyzed high GHG impact sectors with substantial transformation potential, including transportation (Rayner, 2021), energy, AFOLU, and fossil fuels.

While specific analyses of ambition and climate goals have been conducted for most fora included in this research, no evidence of a similar analysis using the methodology adopted here has been found. This methodology is based on the five functions of international climate governance.

We conduct a functional analysis using the framework proposed by Obergassel *et al.* (2021), focusing on international intergovernmental fora established to address broad cooperation issues that have incorporated climate into their agendas. Specifically, we evaluate how selected intergovernmental fora operationalize five global governance functions in the context of climate change, focusing on mitigation. Future research will expand to include adaptation.

B. Methodology

→ 1. Framework: Five functions of global governance

Our framework comprises five global governance functions proposed by Obergassel *et al.* (2021), contextualized for climate change mitigation based on the Paris Agreement, IPCC, and other sources. This involves assessing what these fora can reasonably deliver in climate governance (Kinley *et al.*, 2021). The functions are detailed as follows (see Annex 1 for further details):

a. Guidance and Signal

This function involves identifying and specifying trajectories. It includes three components:

- **Setting a long-term vision,** Institutions drive and synchronize ambitions among members, setting broad directions expressed through targets or possible futures. Table 1 illustrates our contextualization of this sub-function.

Table 1. Evaluation Guide for Climate Governance Functions: Long-term vision

GUIDELINE	SOURCE
Signals for long-term economy-wide decarbonization/climate neutrality.	Paris Agreement. IPCC, 2023; UNFCCC, 2021a, 2022a

GUIDELINE	SOURCE
Signals for long-term sectoral decarbonization goals or narratives for sectoral transition (phase down of unabated coal; net zero energy systems; transition away from fossil fuels; non-CO2 gases; zero emissions vehicles; phasing out fossil fuel subsidies; halting deforestation; sustainable life-styles).	Paris Agreement. IPCC, 2023; UNFC-CC, 2021a, 2022a
Signals for financial flows consistent with low emissions development or decarbonization, finan-cial system reform for low emissions and climate resilient development.	Paris Agreement, Art 2.1c

- **Adoption of medium-term targets.** Targets can incentivize action by the initia-tive and its members, especially when they represent commitments beyond existing obligations (Widerberg & Pattberg, 2015). Further contextualization of this sub-function is provided in Table 2:

Table 2. Evaluation Guide for Climate Governance Functions: Adoption of targets

GUIDELINE	SOURCE
Economy-wide or sectoral quantitative GHG targets for the medium term (2030).	UNFCCC, 2021a, 2022a (IPCC, 2023
Sectoral non-GHG quantitative targets (e.g., renewable energy capacity; zero emission vehicles; other).	Boehm et al., 2023

- **Strategies and Roadmaps.** These are structured plans for achieving medium- or long-term targets as part of the Guidance and Signal function. The contextu-alization of this sub-function is provided in Table 3:

Table 3. Evaluation Guide for Climate Governance Functions: Roadmaps and strategies.

GUIDELINE	SOURCE
Development of common economy-wide or sectoral roadmaps towards decarbonization/ net zero emissions detailing the process, steps and means to make it a reality.	Lau, 2022; Oberthür et al., 2021

GUIDELINE	SOURCE
Other roadmaps (e.g., technology based), common strategies and signals relating to the process of economy wide or sectoral decarbonization (e.g., just transition, financial requirements, technology/behavioral/consumption shifts)	Lau, 2022; Oberthür et al., 2021

b. *Rules to Guide Collective Action*

In addition to signaling the desired direction of climate ambition, international institutions can require specific actions from countries and other actors to achieve common objectives through various norms, informal agreements, and legal and policy measures. Rules "may vary in form, ranging from self-enforcing standards for simple coordination problems to harmonized policies and agreements to purse certain courses of action linked to problems with strong interdependencies" (Obergassel et al., 2021). We have contextualized this sub-function in Table 4:

Table 4. Evaluation Guide for Climate Governance Functions: Rules to Guide Collective Action.

SUB-FUNCTION	GUIDELINE	SOURCE
Standards	Call for the development, adoption, and/or harmonization of climate-related sectoral definitions and standards (e.g., net zero sectors or products like steel, hydrogen, or cement).	Oberthür et al., 2021
Policy	Call for the formulation, adoption, and/or or coordination of mitigation-related policies (e.g., carbon pricing, removal of subsidies, taxonomies, and others).	Oberthür et al., 2021
Agreements to pursue action	Agreement to commonly pursue determined courses of action leading to the reduction of national or sectoral emissions (e.g., promotion of renewable energy, energy efficiency, sustainable forest management).	Paris Agreement. Oberthür et al., 2021
Obligations	Explicit statements to honor the provisions of the UNFCCC (e.g., nationally determined contributions, financial obligations, or long-term strategies).	Paris Agreement

c. *Transparency and Accountability*

One of the few legally binding obligations of the Paris Agreement is for Parties to be transparent about their progress in meeting their voluntary commitments (Weikmans & Gupta, 2021). Transparency is central to multilateral climate governance as it builds trust and motivates action. The Paris Agreement's Enhanced Transparency Framework will strengthen current reporting and review arrangements (Weikmans & Vihma, 2022). The contextualization of this sub-function is provided in Table 5:

Table 5. Evaluation Guide for Climate Governance Functions: Transparency and Accountability

SUB-FUNCTION	GUIDELINE	SOURCE
Transparency	Methodologies, processes, guidelines, and other requirements to report on measures taken pursuant to other functions of climate governance.	Oberthür et al., 2021; Weikmans et al., 2019
Accountability	Establishment of verification and/or compliance mechanisms of measures taken pursuant to other functions of climate governance.	(Oberthür et al., 2021; Weikmans et al., 2019)

d. *Means of Implementation*

This function includes the mechanisms needed to achieve and implement objectives and goals. "Facilitating the provision of financial, technological and capacity-building support to assist developing countries and support the implementation of treaties gives effect to the principle of equity and is one of the most fundamental functions of any contemporary multilateral regime" (Kinley et al., 2021, p. 6). The contextualization of this sub-function is provided in Table 5:

Table 6. Evaluation Guide for Climate Governance Functions: Means of Implementation

SUB-FUNCTION	GUIDELINE	SOURCE
Joint research and development	Agreements to pursue joint research and development of mitigation related technologies to respond to agreed courses of action.	UNFCCC, 2021b, 2022b, 2023

SUB-FUNCTION	GUIDELINE	SOURCE
Financial and technical assistance	Calls for or establishment of dedicated mechanisms to provide financial and technical assistance to members or other countries.	UNFCCC, 2021b, 2022b, 2023
Capacity Building	Calls for or establishment of dedicated mechanisms to build the capacity of members to respond to agreed courses of action.	UNFCCC, 2021b, 2022b, 2023
	Pilots and demonstration projects.	UNFCCC, 2021b, 2022b, 2023

e. Knowledge and Learning

Lastly, these fora facilitate learning and knowledge dissemination through research and development strategies and by coordinating with other regional and thematic fora.

Table 7. Evaluation Guide for Climate Governance Functions: Knowledge and Learning

SUB-FUNCTION	GUIDELINE	SOURCE
Knowledge and Learning	Establishment of mechanisms and spaces for sharing knowledge, lessons learned, and best practices relating to the agreed courses of action.	Kinley et al., 2021; Obergassel et al., 2021; Oberthür et al., 2021
Cooperation	Calls for cooperation around mitigation and setting up learning partnerships to relating to the agreed courses of action.	Kinley et al., 2021; Obergassel et al., 2021; Oberthür et al., 2021

→ 2. Selection and characterization of intergovernmental fora

We compiled an initial list of 33 intergovernmental fora (See Annex 2) established to advance cooperation in areas like economic development, security, and trade. Table 8 presents a shortlist of 12 fora selected for this study, chosen for a balanced

representation of global, regional, formal, and informal fora. We prioritized the top four based on members' population, economic output, and aggregate greenhouse emissions.

Table 8. Selected intergovernmental fora for analysis.

FORMAL: REGIONAL	FORMAL: INTERNATIONAL	INFORMAL
• Organization of American States (OAS). • Association of Southeast Asian States (ASEAN). • African Union (AU) • Union for the Mediterranean (UfM)1	• Shanghai Cooperation Organization (SCO); • Asia Pacific Economic Cooperation (APEC). • Organization of the Petroleum Exporting Countries (OPEC) • Organization for Security and Cooperation in Europe (OSCE).	• The Group of 20 (G20). • the Group of 7 (G7). • The Major Economies Forum (MEF). • The so-called BRICS.

→ 3. Instruments to capture and communicate outcomes.

Intergovernmental fora capture their agreements through various documents, depending on the forum's nature. For example, formal fora like the Organization of American States use formal decisions, while informal fora like the G20 use declarations, joint statements, or communiqués. We selected documents with the highest political or legal value for each forum, issued between 2015 and 2023 (see Annex 3).

We scanned all relevant documents for references to the five functions of global governance. The documents were read in full, and references consistent with the described functions were identified and gathered. A database of references, categorized by function and its elements, was prepared for each of the 12 fora. For all functions except Transparency and Accountability, each reference was marked to indicate its relevant sector, including general mitigation, multiple sectors, fossil fuels, energy, industry, transport, buildings, AFOLU, and finance.

A limitation of our methodology is that the search for evidence of global governance functions is restricted to the selected documents. Therefore, the absence of references for a particular function does not necessarily mean that the forum in question is not taking action in that area.

1 *The Arab league was also shortlisted; however, the analysis was not possible due to the lack of material in English.*

→ 4. Reference analysis

The final step of the analysis consisted of an individual analysis of each reference. More specifically, for each reference, we evaluated three different criteria that determine its strength, as described in Table 9.

Table 9. Strength criteria for analysis.

CRITERIA	MEANING
Explicitness	The reference is explicit and uses direct terms in line with the description of each function. For example, an explicit reference uses the term net zero or decarbonization instead of indirect terms such as green, sustainable, or others.
Exclusiveness	The reference is exclusive for the members of the fora. For example, an exclusive reference with a call for action will be restricted to the members of the forum rather than general calls for the global community to act.
Actionability	The reference implies an action or a commitment rather than an expression of an aspiration. For example, actionable references reflect commitment to act or to actively pursue courses of action rather than just the reflection or recognition of the importance of such courses of action.

These criteria are proposed by the authors based on our opinion and experience in what constitutes a strong reference, not based on literature. We defined stronger references as those that are explicit, exclusive, and actionable. Weaker references include a combination of two or fewer of these characteristics. An example of a stronger reference is: "We reaffirm our commitment to accelerating the clean energy transition to net-zero greenhouse gas (GHG) emissions by 2050" (G7-31). A weaker reference example is: "The member states support a balance between reducing emissions and development, advocating a fair transition" (SCO-16).

Subjectivity plays a role in evaluating these references. To reduce bias, each reviewer performed the analysis independently, and differences were discussed and resolved collectively. Such differences were rare.

Our results present the number of references identified per function, their distribution among fora, the sectors they apply to, and the distribution of stronger and weaker references. We use the following conventions:

Table 10. Conventions for the analysis

FOR THE PERCENTAGE OF FORA WITH STRONGER REFERENCES:	FOR THE NUMBER OF FORA ADOPTING A FUNCTION
• A few: less than 30% • Several: between 30% and 60% • Some: less than 50% • Half: 50% • Most or Many: More than 60%	• None/ Only one: 0 or 1 forum • A few: 2 fora • Less than half/some: 3-5 fora • Half: 6 fora • More than half /many: 7-8 fora • 9-11: Most fora • 12: All the fora

II. RESULTS

A. Overview

Overall, all evaluated fora have advanced global governance functions, albeit unevenly. Visions for global and sectoral decarbonization have been widely adopted, along with a range of targets. Most fora promote mitigation actions and, to a lesser extent, policy development or coordination. Means of Implementation were identified in several fora, though with significant differences in strength. Transparency and Accountability signals are less prominent. References pertaining to Means of Implementation and Knowledge and Learning were found across all fora, though their strength varies.

A total of 1412 references were filtered from all reviewed documentation. Some references consist of language carried over from year to year, with similar formulations that are reinstated due to their established strength or political constraints. Most restated references were identified for the G20 and the G7.
About 67% of all references were identified for Guidance and Signal and Rules to Guide Collective Action, while few were identified for Transparency and Accountability (see Figure 1a). Around 27% of all references were classified as "stronger," being explicit, exclusive to members, and actionable. The highest percentage of stronger references was for Rules to Guide Collective Action (39%, see Figure 1b), followed by Guidance and Signal (31%), Means of Implementation (14%), Knowledge and Learning (13%), and Transparency and Accountability (3%).

Figure 1a. Distribution of References Among All Functions

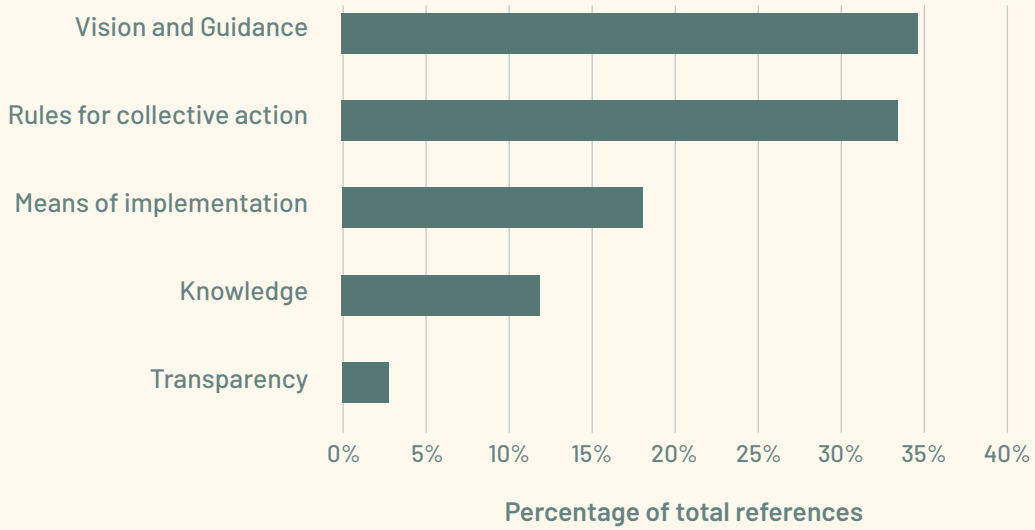
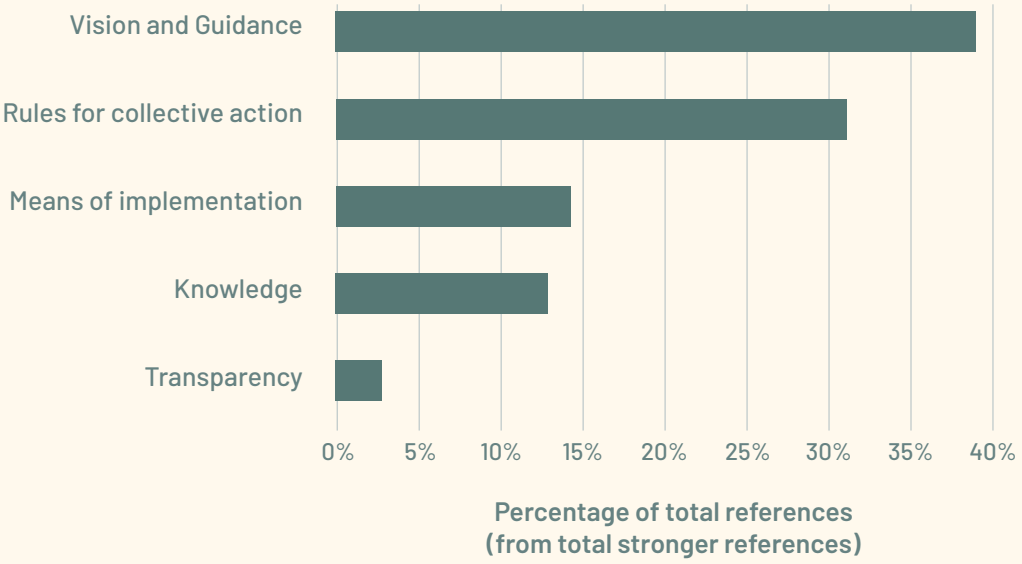
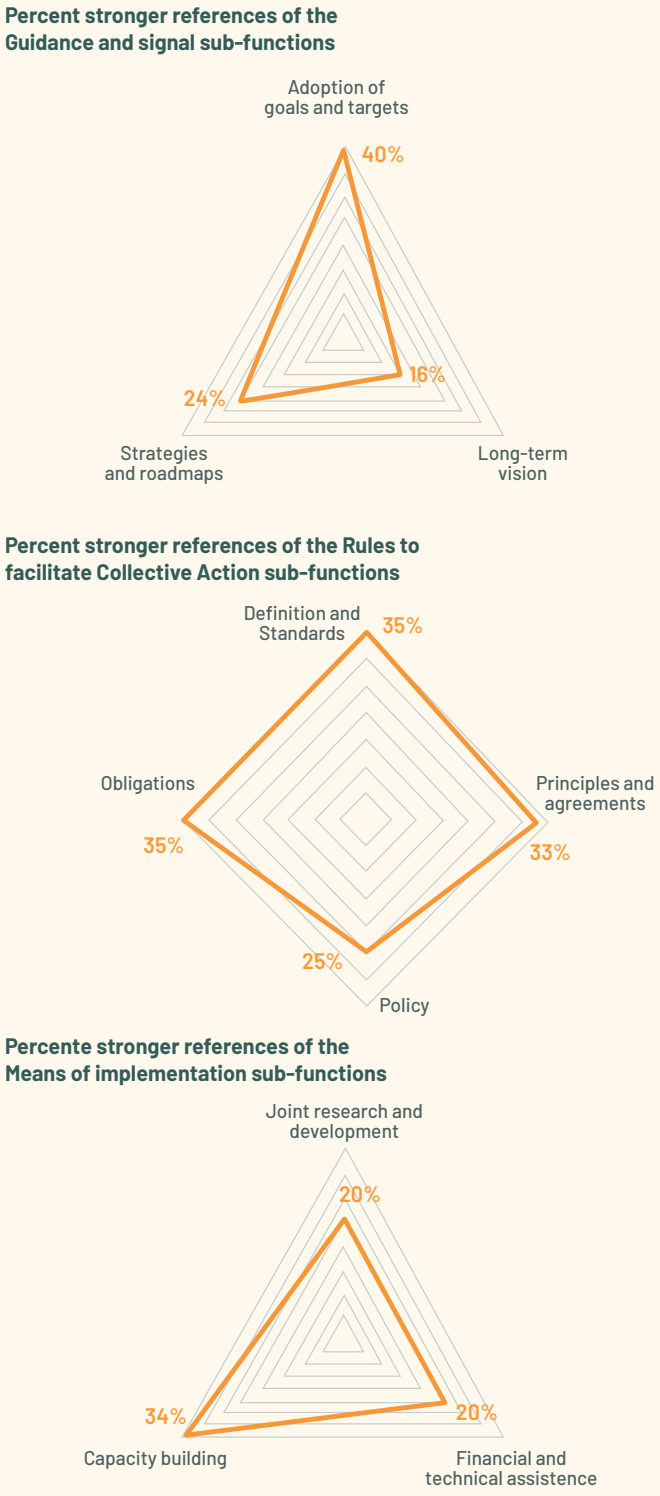


Figure 1b. Distribution of Stronger References Among All Functions



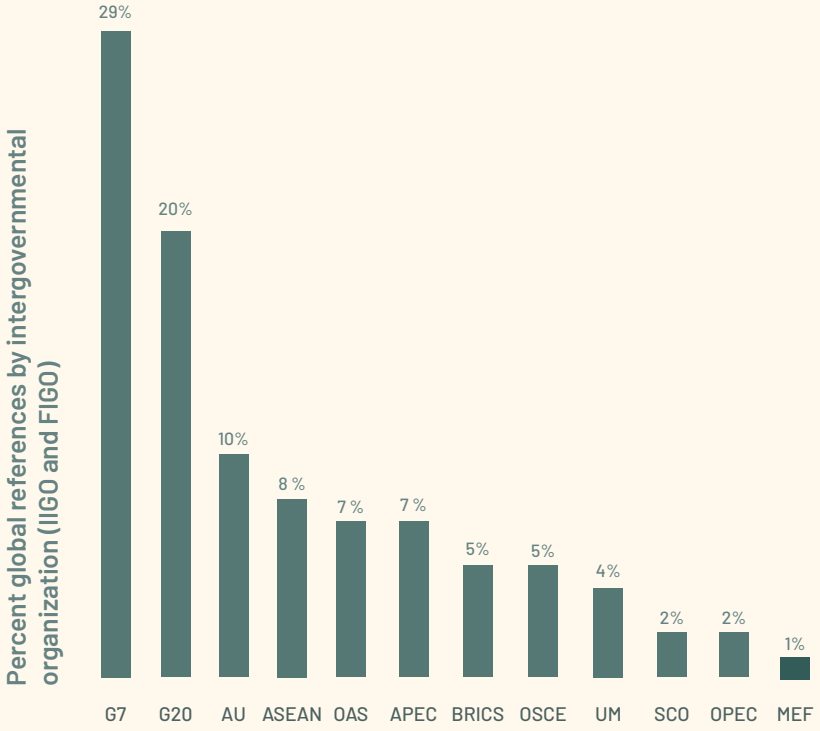
The number of stronger references within each function varies significantly among all sub-functions. For Guidance and Signal, stronger formulations were mainly found for medium-term targets. For Rules to Guide Collective Action, most were identified for definitions and standards, as well as obligations. Finally, for Means of Implementation, the highest number of stronger references relates to capacity building (see Figure 2).

Figure 2. Percentage of Stronger References of the Total: Guidance and Signal, Rules to Guide Collective Action, and Means of Implementation



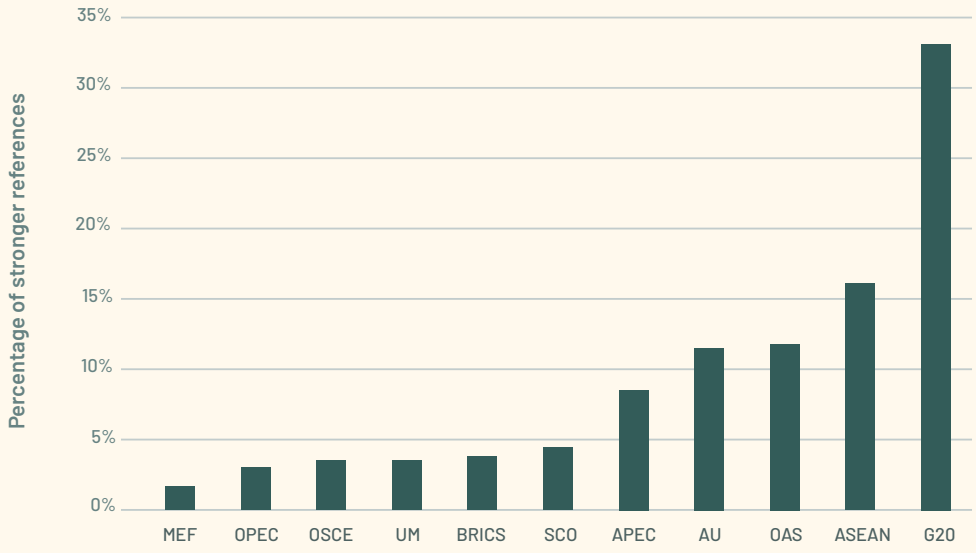
The distribution of political signals across all fora evaluated showed significant variability. Over half of the signals were identified for informal fora, with the G7 (29 percent) and the G20 (20 percent) having the largest shares (see Figure 3). Among formal fora, the majority of references were identified for the AU (10 percent), followed by ASEAN (8 percent).

Figure 3. Distribution of References Across All Fora.



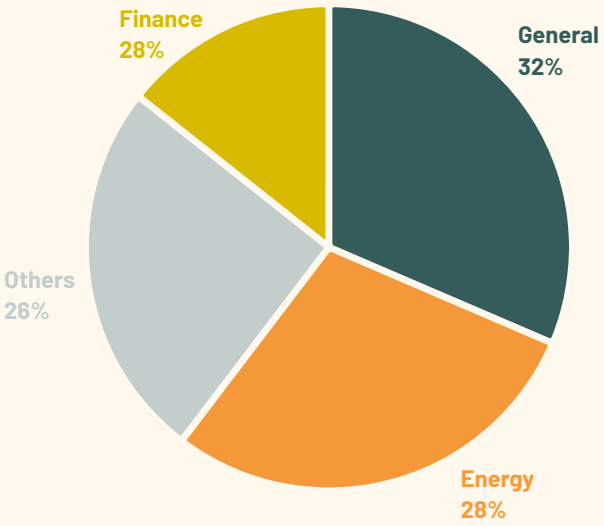
Overall, the forum with the highest percentage of stronger references was the G7, with about 33 percent of all stronger references, primarily classified under Guidance and Signal and Rules to Guide Collective Action. The G20 accounted for about 16 percent of all stronger references, similar to the G7, but with a higher percentage under Means of Implementation. All other fora each gathered 12 percent or less of all stronger signals (see Figure 4).

Figure 4. Distribution of Stronger References Across All Fora



Finally, regarding sectors, about 32 percent of the references were classified as General (e.g., reducing GHGs), followed by Energy (28 percent), Finance (14 percent), Fossil fuels (7 percent), and AFOLU (7 percent) (see Figure 5).

Figure 5. Distribution of References Across Sectors



The distribution of references among all sectors varies by function. For Guidance and Signal, the most common sectors were energy (33 percent) and general (25 percent), with a similar pattern for Knowledge and Learning. For Rules to Guide Collective Action, about 33 percent are general and 23 percent relevant to energy. Finally, for Means of Implementation, about 37 percent of references were general, and 27 percent pertained to finance.

B. Guidance and Signal

Despite its importance, the strength of political signals varies across the fora assessed. Relevant references were found for all fora, but fewer than half are explicit, exclusive, and actionable. A total of 478 references were identified, mostly related to long-term vision, with the majority targeting energy. Out of 12 fora, only 5 have adopted references covering all three sub-functions. The G7 had the most references, with 141.

→ *1. Long-term vision*

All fora have adopted a long-term vision of decarbonization and/or climate neutrality. However, only a few of the 198 references identified are explicitly formulated, exclusive, and actionable. Most references target global or economy-wide decarbonization, with only a few relevant to the energy and transport sectors. Some fora emphasize the link between the energy transition and development, stressing the importance of energy security. Fora such as the OAS, ASEAN, APEC, and the MEF highlight the promotion of financial flows for low emissions and climate-resilient development.

Table 11 categorizes the fora according to the strength of their long-term visions, indicating that although fewer than half of the references have strong formulations, most fora have adopted stronger signals overall.

Table 11. Fora Ranked by Strength Long-term Vision Signals

FORA WITH STRONGER REFERENCES	FORA WITH WEAKER REFERENCES
• SCO • APEC • G20 • OAS • G7 • BRICS	• UfM • OSCE • OPEC • MEF • AU • ASEAN

G7 leaders committed to "ambitious and accelerated efforts to achieve net zero greenhouse gas emissions as soon as possible and by 2050 at the latest" (G7-23, G7-24). They further aligned finance to net zero emissions (G7-24), transitioned the road sector (G7-26), and phased out fossil fuels (2023 summit). The G7 also adopted signals for decarbonizing industry (G7-31, G7-34) and global supply chains, deforestation, and international transport. The G20 emphasized energy transition and security, highlighting gas as a transition fuel (G7-6, G20-17). Recent G20 declarations reiterated a "commitment to achieving global net zero greenhouse gas emissions/carbon neutrality by or around mid-century" (G7-26, G7-32). The OAS explicitly signaled a goal of achieving net-zero emissions by 2050 (OAS-26).

In contrast, weaker signals lack actionability, explicitness, or exclusiveness. For instance, UfM texts do not clearly define decarbonization or climate neutrality, only mentioning the need to "reflect the highest possible ambition by accelerating the transition towards sustainable, climate-neutral, green, fair, circular, and resilient economies" (UFM-8). The AU lacks explicit decarbonization calls, focusing instead on just transition pathways and climate resilience. OSCE signals recognize transitioning to a low-carbon economy (OSCE-19) and diversifying energy sources towards clean sources (OSCE-18) but lack specific actions. OSCE references a "green energy transition must be fair and beneficial for workers" (OSCE-19) and mentions electric transport (OSCE-6). APEC signals low-carbon development with a mix of energy resources (APEC-1) and commits to the Paris Agreement for a low-carbon, climate-resilient economy (APEC-3), but terms are vague. MEF emphasizes the "need for greater ambition and action during this critical decade" and mentions IPCC-aligned goals to peak emissions by 2025 (MEF-4).

Some signals potentially conflict with decarbonization goals, such as avoiding "cooperative activities to enhance the image of coal considering global environmental concerns" (ASEAN-1) and recognizing fossil fuels in the long-term vision (OPEC-4).

References to medium-term targets

Half of the fora have adopted medium-term targets, totaling 124 references. These targets mainly focus on reducing fossil fuels in the energy sector. Over the years, the G7 and G20 have consistently committed to reducing fossil fuel emissions. Table 12 categorizes fora based on the strength of their medium-term target references, indicating that most fora have adopted stronger formulations.

Table 12. Fora Ranked by Strength of Medium-term Targets Signals

FORA WITH STRONGER REFERENCES	FORA WITH WEAKER REFERENCES	FORA WITH NO REFERENCES
• G7 • G20 • ASEAN • APEC • OAS • AU • OPEC	• UfM • OSCE • MEF	• SCO • BRICS

Most references to medium-term targets were identified for the G7, which has set targets across various sectors, including national GHGs, transport, energy, fossil fuels, and AFOLU. The G7 aims to halve collective emissions by 2030, transition to a predominantly decarbonized power sector by 2035, and eliminate inefficient fossil fuel subsidies by 2025. The G20 has reiterated its commitment to phase out inefficient fossil fuel subsidies over the medium term.

ASEAN has targets for renewable energy in the power mix by 2030, reducing energy intensity, and fuel consumption of vehicles. The OAS is working towards implement- ing emission mitigation targets by 2030. Details on these targets are provided in the subsequent sections and in Annex 4.

References to medium-term targets are generally explicit, exclusive, and actionable, with 40 percent evaluated as stronger. About a third of the references are not explicit, exclusive, or actionable, with weaker signals such as calls for investment in sustainable energy research and development. The UfM includes intentions for infrastructure investment without concrete actions.

No strong references were found for the MEF, but its members have announced their own targets, like the collective goal of 50 percent sales for zero-emission light-duty vehicles and 30 percent for medium- and heavy-duty vehicles.

Finally, no targets or goals were found for SCO and BRICS.

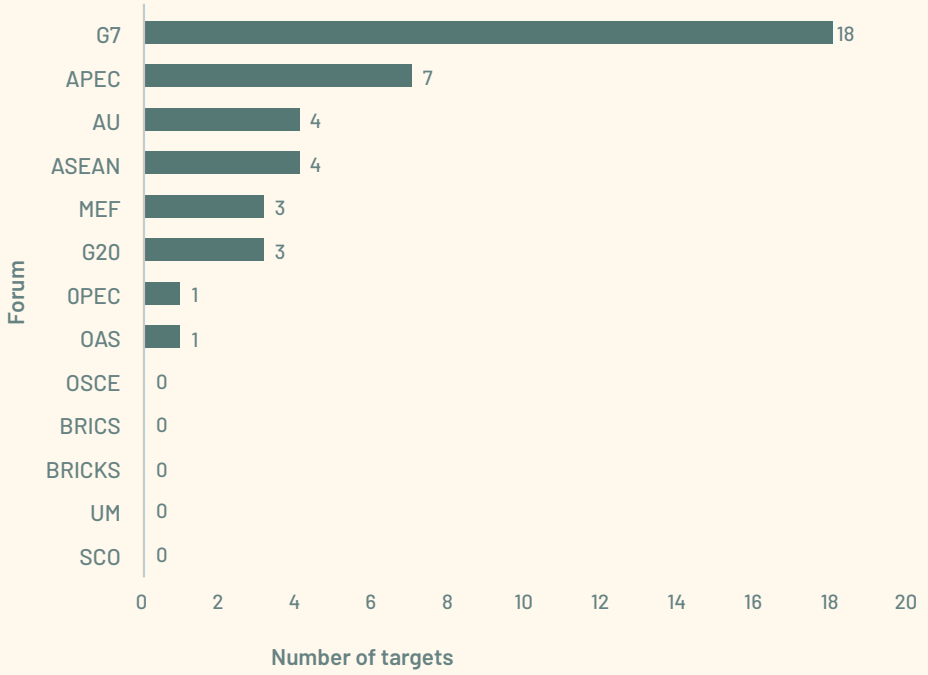
b. Overview of set targets

Targets provide clarity regarding policy objectives. For example, a quantitative target to achieve a set percentage of renewable energy sends a clear signal to public and private actors about the objectives of public policy. It also sets a standard against which to design and monitor the policy itself.

A total of 72 targets were collected from the references assessed (see Annex 4 for a full list). Of these, a little more than half are quantitative, expressed by means of a quantitative indicator—such as greenhouse gas emissions or a percentage of electric vehicle sales—and included a deadline. For example, the G7 has agreed to "Achieve 100 percent electrified vehicles in new passenger car sales by 2035" (G7-32).

Most quantitative targets have been put forward by the G7—18 in total—followed by APEC (7), AU (4), and ASEAN (4). No quantitative targets were identified in the texts consulted for the OSCE, BRICS, UM, and SCO (see Figure 6).

Figure 6. Quantitative Targets



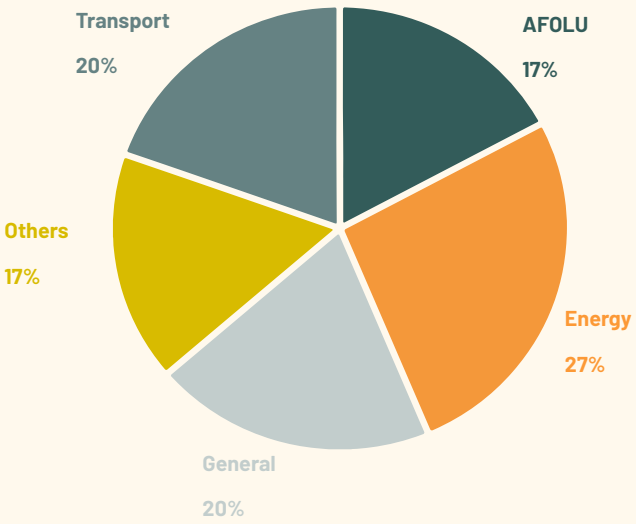
About 27 percent of all quantitative targets identified were related to the energy sector. These include set percentages of renewable sources in the energy matrix (e.g., APEC and the G20), levels of energy intensity (ASEAN), commitments to achieve a 'predominantly decarbonized electricity sector' (G7), and reforms and support to increase the share of renewable energy financing (AU).

Targets pertaining to the transport sector account for 20 percent of the total. Examples include reducing CO2 emissions from vehicle stock (G7), reducing average fuel consumption (ASEAN), and achieving sales of light-duty vehicles (LDVs) as zero-emission vehicles (G7).

A smaller portion of targets (17 percent) were identified for AFOLU, such as conserving land and supporting the establishment of green corridors worldwide (G7), restoring degraded ecosystems, and achieving land degradation neutrality (G20).

Targets related to finance, such as increasing climate financing (OPEC), and some related to emissions reductions, were less common. No targets were identified for the industrial sector (see Figure 7).

Figure 7. Percentage of Quantitative Targets by Sector



The distribution of quantitative targets across sectors within the analyzed fora shows wide variations. For example, the G7 has specified targets for all sectors except finance and industry. APEC has targets for energy, fossil fuels, AFOLU, and finance. Fora like OAS (AFOLU) and OPEC (finance) have targets for only one sector.

Regarding the strength of target formulation, 69 percent are explicit, 72 percent are exclusive to forum members, and 62 percent are actionable. Of all quantitative targets, 66 percent are simultaneously explicit, exclusive, and actionable. Examples of strong targets include:

- To reduce average fuel consumption per 100 km of new light-duty vehicles sold in ASEAN by 26% between 2015 and 2025 (ASEAN-28).
- Contributing towards and supporting a global tripling of renewable energy capacity and a doubling of annual energy efficiency improvements by 2030 (G7-35).
- Committing to restoring at least 30% of all degraded ecosystems and scaling up efforts to achieve land degradation neutrality by 2030 (G20-36).
- Increasing OPEC's climate financing to 25 percent by 2025 and 40 percent by 2030 (OPEC-43)

→ 3. Roadmaps and strategies

In principle, the roadmaps and strategies implied in this sub-function should relate to set long-term visions or targets. For example, if a forum has set a goal for net zero CO2 emissions by 2050, the relevant roadmap would outline the path, milestones, resources, and other necessary steps to achieve this long-term vision. However, upon review, we found that only a few of the 156 references identified met this definition. Most references compiled and identified as roadmaps and strategies apply to broad issues beyond the other sub-functions and target energy, fossil fuels, the financial sector, etc.

Table 13 categorizes the fora according to the strength of their roadmaps and strategies, indicating that most fora have set stronger related formulations.

Table 13. Fora Ranked by Strength of Medium-term Targets Signals

FORA WITH STRONGER REFERENCES	FORA WITH WEAKER REFERENCES	FORA WITH NO REFERENCES
• ASEAN • G20 • AU • OAS • G7 • APEC • SCO • UfM • BRICS	• OPEC • OSCE	• MEF

Most fora have referred to or identified roadmaps or strategies for specific sectors. Notably, ASEAN has welcomed, endorsed, or adopted roadmaps for energy performance, clean buildings, energy investment and financing, and carbon neutrality. Similarly, the G7 references several roadmaps and strategies targeting the finance sector, such as climate-related financial risks (G7-24) and sustainable finance (G7-26). However, references that could potentially conflict with the function include the recognition that fossil fuels will "remain a part of the global energy mix for some time" (G7-10).

For the G20, the term "Roadmap" is used in connection to the G20 sustainable finance roadmap. The group has developed action plans, roadmaps, and toolkits for renewable energy, finance, and financial risk (G20-32), covering the role of energy efficiency, renewable energy, cleaner fossil fuels (G20-14), hydrogen, and biofuels.

Other fora with stronger references include the UfM, which agreed to implement strategies to reduce emissions in the tourism sector and called for roadmaps and strategies for energy efficiency in all sectors (UFM-7). The OAS committed to developing country-level roadmaps to accelerate energy transition (OAS-24). The Roadmap for BRICS Energy Cooperation up to 2025, mentions energy efficiency and emission reductions (BRICS-19).

Many weaker signals lack actionability and are not explicit or linked to other sub-functions. These were found for OSCE and OPEC. For example, OSCE's recognition of the need to accelerate the clean energy transition includes measures but lacks a concrete strategy or roadmap (OSCE-18). No references to roadmaps were found for the MEF.

C. Rules to Guide Collective Action

Most fora have identified Rules to Guide Collective Action, with 468 references collected, primarily related to agreements on courses of action. Similar to Guidance and Signal, most references were identified for the G7 (160). Only 4 of the 12 fora had references covering all four sub-functions. Most references target the energy sector, followed by general considerations and finance.

→ *1. Definitions and standards*

Most fora have adopted or called for the development and harmonization of climate-related sectoral definitions and standards. Although only 49 references were found, it is a relatively strong sub-function, as several were explicit, exclusive, and actionable. Most are general or apply to the energy sector or finance. Table 14 categorizes the fora according to the strength of their definitions and standards.

Table 14. Fora Ranked by Strength of Definitions and Standards Signals

FORA WITH STRONGER REFERENCES	FORA WITH WEAKER REFERENCES	FORA WITH NO REFERENCES
• ASEAN • G7 • G20 • AU • BRICS	• UfM • SCO • OSCE • APEC	• MEF • OAS • OPEC

Among all forums with stronger references, ASEAN has adopted and/or called its members to develop and adopt different tools such as energy efficiency guidelines (ASEAN -3), sustainable land transport indicators on energy efficiency (ASEAN -8), Agroforestry Development Guidelines (ASEAN-9), Sustainable Agriculture Guidelines (ASEAN -13), plans for sustainable urban mobility (ASEAN-17) and taxonomies for sustainable finance (ASEAN -24). The group has also called for harmonized standards for electrical vehicle ecosystems (ASEAN-22), biomass energy technologies (ASEAN-30), and the adoption of national fuel consumption for transport (ASEAN-28). In the case of the G7, fewer references were found to be actionable, and a significant portion relates to finance. Related tools include codes and standards for clean energy, definitions for industry decarbonization, and performance stan-

dards for energy efficiency in buildings (G7-31). References for the G20 were more limited and included a target to develop a global reporting baseline for climate-related financial disclosures (GF1), where a task force has been working on the issue; standards for biofuels production (G7-34); and zero or low hydrogen emissions, with this latter being aimed at a globally harmonized approach to certification (G7-34). Finally, also worth mentioning is the case of BRICS, where members have called for Development Finance Institutions (DFI) to integrate sustainability criteria into their assessments, specifically to promote investments contributing to the Paris Agreement (BRICS-1). BRIC countries have also agreed to strengthen cooperation and develop standards relating to energy transitions within the Energy Research Cooperation Program framework (BRICS-25).

Weaker references were identified for UfM, SCO, OSCE and APEC. In many cases, such references were found to be not exclusive or actionable. For example, for the SCO, an agreement was reached to continue the development of draft Regulations for the Meeting of SCO Heads of Ministries and Agencies on Climate Change (SCO Climate Council). However, the reference is not explicit (SCO-1). The UfM has a general call to strengthen regulatory frameworks for the installation of renewable marine energy infrastructure (UFM-7).

OAS, OPEC, and MEF have no references for this sub-function.

→ *2. Policy*

Most of the evaluated fora have called for adopting or coordinating mitigation-related policies and measures. However, this function is considered weak, with only a few of the 134 references being explicit, exclusive, and actionable. The G7 accounted for most of these references. Regarding sectors, we found a balanced collection of references generally applicable to mitigation, multiple sectors, energy, AFOLU, and finance. Table 15 categorizes the fora based on the strength of their definitions and standards, indicating that most fora had stronger references.

Table 15. Fora Ranked by Strength of Policy Signals

FORA WITH STRONGER REFERENCES	FORA WITH WEAKER REFERENCES	FORA WITH NO REFERENCES
• G7 • G20 • OAS • OSCE • UfM • AU • ASEAN	• APEC • BRICS	• MEF • SCO • OPEC

The fora with the highest number of stronger signals include the G7, OAS, and OSCE. For the G7, most actionable policy and policy coordination signals are general and

expressed, for example, as a commitment to apply effective policies and actions to support the transition (G7-23). G7 leaders have agreed to coordinate macro-fiscal policies to support decarbonization and implement policies for financial alignment with climate (G7-26), while the group has also recognized the importance of carbon pricing instruments. For the OAS, there are several calls to formulate and coordinate policies related to the transportation and industry sector targeting the use of cleaner and more efficient technologies (OAS-1). The OAS also promotes policies related to the green economy (OAS-10) and the coordination of social protection and climate change mitigation (OAS-14). There are also express mentions of policies related to water management (OAS-16) and the incorporation and disclosure of climate and environmental risks in investment decisions consistent with the goals of the Paris Agreement (OAS-20). Other examples include policies for reducing biodiversity loss and deforestation and others relevant to AFOLU (OAS-25); calls for members to pursue policies to mitigate climate change and forge bilateral and multilateral agreements, including markets (OSCE-5); and many others pertaining to transport, forests, and agriculture (OSCE 5, 11, 14).

Conversely, UfM, ASEAN, AU, and the G20 have fewer explicit, exclusive, and actionable references. For example, necessary policy reforms are proposed to encourage and accelerate the transition towards sustainable consumption and production models, and the need for policies related to climate change to be integrated into national development strategies is recognized (UFM-1); however, there are no explicit calls. For the G20, agreements on policy and policy coordination are generic and more of a reflection of the "importance of a policy mix consisting of fiscal, market and regulatory mechanisms [...] toward carbon neutrality and net zero" (G20-36). The group has requested the different work streams to work in synergy to inform discussions on such a mix, including carbon pricing and other incentives (G20-27). While the group recognizes the importance of accelerating the adoption of policies to transition towards low-emission energy systems (G20-36), evidence of an aim to implement such policies was only found in relation to energy efficiency and energy savings (G20-37).

About one-half of all related signals were not actionable, and about a third were not exclusive or explicit. References evaluated for APEC and BRICS were found to be in this category as most recognize the need or importance of policies, including energy-efficient technologies (APEC-1) and combating illegal logging (APEC-10). Particularly, the BRICS calls for policies adopted by third parties to be designed to avoid arbitrary or unjustifiable discrimination or disguised restrictions on international trade (BRICS-29), ensuring they do not negatively affect the energy sector (BRICS-25), or impose barriers to trade or investment (BRICS-28).

Finally, we found no relevant references for the MEF, SCO, and OPEC.

→ *3. Agreements to pursue action.*

Most fora promote agreements to pursue specific actions for reducing national or sectoral emissions. For this sub-function, we found 156 references, several of them strong. Most references were general, followed by energy, AFOLU, and finance. Table 16 categorizes the fora according to the strength of agreements and shows that stronger references were found for most.

Table 16. Fora Ranked by Strength of Action Agreements Signals

FORA WITH STRONGER REFERENCES	FORA WITH WEAKER REFERENCES	FORA WITH NO REFERENCES
• G7 • OAS • OPEC • G20 • UfM • BRICS • ASEAN • APEC • AU • SCO	• OSCE	• MEF

We found the G7 to be the forum with the largest amount and variety of stronger references, most of them action-oriented and covering all sectors, with half of them being general. Examples of strong signals include agreements to increase and improve their climate finance contributions through 2025 (G7-25), taking steps towards the goal of accelerating the phase-out of domestic unabated coal power generation, and increasing electricity generated by renewable energy (G7-30). Likewise, OAS members have agreed to promote sustainable energy systems (OAS-2), reduce GHGs from sectors related to land use, increase investment in agricultural innovation (OAS-14), promote energy efficiency in new public and private infrastructure plans (OAS-24), and strengthen the role of the oceans in mitigating climate change (OAS-25), among others. References identified for the G20 were found to tackle discrete issues with few explicit links to elements of Guidance and Signal. For example, members have committed to significantly reduce GHGs (G20-27); they have encouraged investments in renewable energy (G20-6); and have agreed to maximize the role of agriculture in mitigation (G20-26) and to protect forests (G20-35).

For other fora, we identified a large number of stronger references on a wide variety of issues and sectors, including advancing GHG reduction through the use of renewable energy (UFM-10), reducing methane emissions (UFM-9), advancing the use of clean energy options (BRICS-31), expanding green financing (BRICS-29), committing to increase the share of renewable energy (BRICS-16), and screening new projects for their climate benefits, such as in the case of the OPEC fund (OPEC-43), among others.

Finally, we found some references that could be interpreted as inconsistent with the function specification, including promoting gas activities that minimize environmental impact (G20-5) and using fossil fuels to contribute to the transition toward a low-emissions economy (BRICS-19). No relevant references were identified for the MEF.

→ 4. Obligations

We identified 129 references related to obligations under the Paris Agreement, with only a few being strong. Over half were general, followed by finance and NDCs. Table 17 categorizes the fora according to the strength of these obligations, indicating that weaker references were prevalent for most.

Table 17. Fora Ranked by Strength of Obligation Signals

FORA WITH STRONGER REFERENCES	FORA WITH WEAKER REFERENCES	FORA WITH NO REFERENCES
• G7 • G20 • AU • OSCE • OAS • UfM • SCO	• OPEC • BRICS	• MEF • ASEAN • APEC

Most fora have explicitly stated their commitment to the multilateral system, with the G7 having the most references. Signals in support of the Paris Agreement and explicit expressions of intent to comply with obligations are robust and present throughout all the texts evaluated for this forum. For example, the G7 reaffirms its strong and steadfast "commitment to strengthening the Paris Agreement's implementation and unleashing its full potential. To this end, we will make ambitious and accelerated efforts to reduce emissions to keep a limit of 1.5°C temperature rise within reach" (G7-24). Most signals generally support the swift implementation of the Agreement, followed by the reiteration of financial obligations and commitments to prepare NDCs and LTS.

G20 leaders regularly stress their commitment to the Paris Agreement —referred to as irreversible (G20-5)— and its implementation (G20-27, G20-30). The group also regularly states its intent to fulfill individual obligations relating to NDCs (G20-18) and LTS (G20-28). Many references reaffirm the commitments by developed countries to provide Means of Implementation to developing countries (G20-12) and stress the UNFCCC's goal for climate finance (G20-36, G20-29, G20-34).

AU, for example, "urges all parties to design a compliance regime with a comprehensive scope covering all the provisions of the Paris Agreement to facilitate implementation for developing countries and promote compliance for developed countries" (AMECEN-1). OSCE also has specific calls on participating States to ensure oversight of the targets set by the PA and to strengthen their NDS (OSCE-6,7). For the OAS, there are calls for the members to take urgent action to address climate

change and for the developed and undeveloped countries to fulfill obligations under the PA (OAS-17). Finally, the UfM has stated its intention to join efforts and step up in implementing climate commitments (UFM-7), including updating NDC to reflect the highest possible ambition.

Fora with weaker references include those lacking, such as OPEC and BRICS.

Finally, no references for this sub-function were found for the MEF, ASEAN, and APEC.

D. Transparency and Accountability

With just 40 references, Transparency and Accountability have the fewest among all functions evaluated. For transparency, we looked for references related to establishing a dedicated data collection and analysis system or adopting methodologies, processes, or other measures to report on climate mitigation efforts. For accountability, we sought references on verification mechanisms, compliance, and oversight procedures. Some fora have set mechanisms providing Transparency and Accountability, covering commitments and agreements, but these are not explicitly referenced in the texts consulted.

→ *1. Transparency*

We identified 31 relevant references, with few being evaluated as stronger. Table 18 categorizes the fora according to the strength of their transparency obligations, showing that most fora have no references in this category.

Table 18. Fora Ranked by Strength of Transparency Signal

FORA WITH STRONGER REFERENCES	FORA WITH WEAKER REFERENCES	FORA WITH NO REFERENCES
• G7 • AU • G20 • APEC	• OAS	• MEF • ASEAN • OPEC • OSCE • SCO • UfM • BRICS

Strong signals for transparency were identified only for some fora. For example, the G7 recognizes the importance of transparency and the role of the mechanisms of the Paris Agreement about the subject of this analysis; however, specific processes or mechanisms for transparency were not found in the texts consulted, aside from implementing a global data collection framework for steel-related emissions

(G7-34). In the case of the G20, no evidence was found of requests for transparency mechanisms linked to climate action. However, we did find other references, including an affirmation of the importance of Transparency and Accountability on climate finance (G20-4) and related pledges (G20-30), as well as a reference to an agreement among members to improve data collection, verification, and measurement in support of GHG inventories (G20-28). AU, for example, welcomes the establishment of an enhanced transparency framework for action (mitigation and adaptation) and support, which has built-in flexibility to consider Parties' differing capacities and builds on existing transparency arrangements within the framework of the Convention (AMCEN-1).

Many references (about 70 percent) were found not to be actionable, and over forty percent were not exclusive or explicit. In the case of OAS, we only identified a call for the Inter-American Committee for Sustainable Development (CIDS) to identify options to measure progress in advancing sustainable development implementation processes in the region comparatively (OAS-2). We note, however, that the Energy and Climate Partnership of the Americas (ECPA) executes some activities relating to transparency and that, more importantly, the Summit Implementation Review Group (SIRG) is responsible for reporting annually to the Ministers of Foreign Affairs on progress in meeting Summit mandates.

We found no references relating to transparency for the rest of the fora.

→ *2. Accountability*

Only nine references relating to accountability were found, all from the G7, as illustrated in Table 19.

Table 19. Fora Ranked by Strength of Accountability Signal

FORA WITH STRONGER REFERENCES	FORA WITH NO REFERENCES
• G7	• MEF • ASEAN • OPEC • OSCE • SCO • UfM • BRICS • AU • G20 • APEC • OAS

In the case of the G7, no specific references to accountability relating to climate commitments were found; however, leaders have stated their commitment to be accountable for the promises made and welcome the production of regular reports

on development-related commitments (G7-1,5). Weaker references, in general, highlight the importance of transparency in energy-related government and private-sector activities (OAS-1). In the texts consulted for the G20, no evidence was found of requests for transparency mechanisms linked to climate-related agreements by the G20. Other references include an affirmation of the importance of Transparency and Accountability on climate finance (G20-4) and related pledges (G20-30) and an agreement to improve data collection, verification, and measurement to support GHG inventories (G20-28).

E. Means of Implementation

A total of 260 references were found, most belonging to the G7 and the G20, and pertaining to finance and the energy sector. Only a few stronger references were identified.

→ *1. Joint research and technology development*

Most fora have highlighted the importance or intention to pursue joint research and develop mitigation-related technologies. We found 81 references, with a few stronger formulations. Most references were associated with the energy sector, followed by general and finance. Table 20 categorizes the fora according to the strength of joint research and development of technologies and shows that, for most, stronger references were found.

Table 20. Fora Ranked by Strength of Joint Research and Technology Development Signals

FORA WITH STRONGER REFERENCES	FORA WITH WEAKER REFERENCES	FORA WITH NO REFERENCES
• G20 • G7 • OSCE • ASEAN • BRICS • OPEC • UfM • APEC	• OAS • AU	• MEF • SCO

Out of the 12 fora, eight were found to have adopted stronger signals for this sub-function. The G7, for example, has agreed to pursue innovation and R&D with a focus on energy, although references were also found for transport, industry, and

AFOLU. Among others, the group has committed to continue public R&D efforts on clean energy for the emergence of new technologies (G20-28) and to fund innovation in industrial decarbonization, including the use of hydrogen, electrification, sustainable biomass, CCUS, and synthetic fuels, sustainable mobility, and energy storage (G7-24). Political signals emerging from the G7 tend to be stronger, where ministers have stated support to promote R&D on technologies like energy storage, electric vehicles, modern bioenergy, low-emission hydrogen (G20-6), bioenergy with carbon capture and storage (BECCS), and direct air capture, among others. We would also highlight references found for APEC, a forum that explicitly promotes research, development, and deployment of cost-effective low and zero-emissions technologies (APEC-32), hydrogen (AEC-37), and GHG reduction in food processes (APEC-15); and OSCE, with calls to harness the potential of science, digitalization, and technological innovation to support the green transition (OSCE-18) and a specific one for support and investment in carbon capture, utilization, and storage technologies (OSCE-19).

The establishment of initiatives and networks on the subject is noteworthy. References identified within the texts include the RD20, launched in 2019 to strengthen international collaboration by leading research institutes in G20 countries around technologies for carbon neutrality; the Energy Research Cooperation Program by the BRICS; and the Bioenergy Research and Development (R&D) Network Centre (ASEAN-3), among others.

About 40 percent of references are not explicit, exclusive, or actionable. OAS and AU have weaker references for research and development. For example, for OAS, no specific mentions related to research and climate change mitigation were found; we only found references for research on the importance of forest areas (OAS-25).

No relevant references were found for MEF and SCO.

→ *2. Financial and technical assistance*

Regarding financial issues, fora primarily comprising Global South countries, such as the AU, tend to request financial assistance, while fora primarily comprising Global North countries, such as the MEF, tend to provide financial resources. Additionally, some fora have their internal financing mechanisms, such as OPEC.

We identified references for most fora that reflect intentions to promote, call for, or stress the importance of mechanisms to promote financial and technical assistance to members and other countries to advance mitigation action. A total of 128 references were identified, with only a few being evaluated as stronger. Most of the references are general, followed by finance and energy. Table 21 categorizes the fora according to the strength of financial and technical assistance and shows that, for most, stronger references were found.

Table 21. Fora Ranked by Strength of Financial and Technical Assistance Signals

FORA WITH STRONGER REFERENCES	FORA WITH WEAKER REFERENCES	FORA WITH NO REFERENCES
• OAS • AU • G7 • G20 • OPEC • UfM • OSCE	• SCO • BRICS • MEF • APEC	• ASEAN

We identified references associated with financial and technical assistance for 7 out of 12 fora. The AU stands out with the highest number of stronger references, most emerging from the reports of its parent, the African Ministerial Conference on the Environment (AMCEN). For example, the forum calls on developed partners and member states to contribute financially to the NEPAD Climate Change Fund (AU-2) and has requested its commission to explore innovative ways to finance climate actions in Africa (AU-9) and to enhance the capacity of member states to access climate finance through the Africa Climate Change Governance Program (AU-16). Similarly, AMCEN has vowed to work towards enhancing financing for clean energy for domestic and industrial applications (AMCEN-1).

Financial and technical assistance to developing countries is prominent among G7. Most references relate to financial cooperation, with a few specifically targeted at energy and fossil fuels. Examples include commitments to increase and improve G7's overall international public climate finance or promote greater collaboration with MDBs to mobilize additional resources, including from the private sector (G7-23). For the G20, energy ministers have stated their intent to invest, mobilize, or support the mobilization of finance for energy transitions and zero-emission technologies (G20-31), while ministers of finance have stressed the role of MDBs in addressing obstacles for and supporting green transitions in developing countries (G20-25, 29). Leaders have committed to mobilizing international public and private finance to support green development (G20-27) and agreed to "work towards facilitating access to low-cost financing for developing countries" (G20-36). Political signals also target MDBs "to step up their efforts to pursue alignment with the Paris Agreement" (G20-25).

Other fora to highlight in this context include the OAS, whose texts include several calls to increase climate finance while recognizing the role of private actors (OAS-1, OAS-23); the need to support countries in terms of implementing greater energy, transport, and AFOLU efficiency (OAS-6, 27); and invitations to MDBs to mobilize resources (OAS-23). OSCE has called its members to "meet existing financial commitments and come forward with new ambitious climate finance pledges" (OSCE-18), while OPEC has adopted a Climate Action Plan for its fund, which will promote climate investment and drive innovative climate finance solutions for the private sector (OPEC-43).

About half of the weaker references are characterized by not being exclusive, and over 40 percent for not being actionable. We found such references in BRICS, where no evidence from specific mechanisms was found. However, the group emphasizes the need to mobilize affordable, adequate, new, and timely-delivered additional financial resources (BRICS-31). The group has called for the strengthening of financial and investment mechanisms to support climate change programs. Similar references were found for the SCO and APEC.

No relevant references were found in the case of ASEAN.

→ *3. Capacity building*

Most fora have called for establishing dedicated mechanisms to build members' capacity to respond to agreed courses of action, including implementing pilots and demonstration projects. However, we found 12 out of the 35 references to be stronger, with ASEAN being the forum with the most references. The majority of these references are general or energy-related. Table 22 categorizes the fora according to the strength of capacity building and shows that stronger references were found for most.

Table 22. Fora Ranked by Strength of Capacity-building Signals

FORA WITH STRONGER REFERENCES	FORA WITH WEAKER REFERENCES	FORA WITH NO REFERENCES
• G7 • ASEAN • APEC • G20 • OAS • AU • UfM	• SCO • BRICS • OSCE	• OPEC • MEF

Overall, references to capacity building are scarce because most support may be covered by signals relating to financial and technical assistance, some of which relate to capacity building. As noted in the methodology section, the search for references is limited to the texts selected, so related signals and mechanisms established through other means are not necessarily captured here.

Signals from the G7 relate to recognizing the need for a skilled workforce for both the group and developing countries. However, group members have their own resources for building their capacity, and signals relating to developing countries mostly come in the form of finance; hence, capacity building may not be an important function of the G7. The same is the case for the G20, where references were found to be generic. Leaders have, for example, agreed to increase cooperation on enhanced country-driven capacity building around the potential of zero or low-emission solutions (G20-27), and ministers recognize the importance of capacity building for low emissions and climate-resilient development (G20-28). OAS members call

for strengthening members' capacity to address climate change and refer to cooperation with institutions such as the GEF, the GCF, and CTCN (OAS-15, OAS-23, OAS-28). In this context, it is worth mentioning ASEAN's endorsement of the Capacity Building Roadmap on Energy Investment and Financing (ASEAN-7). Nonetheless, the group has called for capacity building to enhance the image of coal considering global environmental concerns (ASEAN-2).

Over forty percent of weaker references are characterized by not being actionable, some not explicit, and a few not exclusive. Such references were collected from SCO, OSCE, and BRICS. For example, in Samarkand's climate change declaration, the SCO includes references to facilitating efforts to reduce GHG, promoting capacity building, creating systems for training climate specialists, and expanding cooperation on energy-saving measures. The BRICS recognizes the value of capacity building through links, research centers, and other means (BRICS-25). Finally, while OSCE members aim to "facilitate youth leadership on climate change action by offering capacity building opportunities" (OSCE-13), the language is not specific to concrete actions.

No relevant references were found for MEF and OPEC.

E. Knowledge and Learning

This last function relates to learning and cooperation around agreed courses of action. A total of 166 references were found, with only a few classified as stronger. We gathered most references from the G20, followed by the G7 and SCO. These tend to be general or related to energy and finance.

→ *1. Knowledge and Learning*

Most fora mention mechanisms and spaces for sharing knowledge, lessons learned, and best practices related to the agreed courses of action. However, out of the 56 references found, only a few were classified as stronger. Most references are general or pertain to the energy sector and finance. Table 23 categorizes the fora based on the strength of their signals for Knowledge and Learning, showing a relatively balanced distribution between stronger and weaker signals.

Table 23. Fora Ranked by Strength of Knowledge and Learning Signals

FORA WITH STRONGER REFERENCES	FORA WITH WEAKER REFERENCES	FORA WITH NO REFERENCES
• G7 • G20 • OAS • ASEAN • BRICS • SCO	• UfM • OSCE • OPEC • APEC • AU	• MEF

As with many other functions, the largest number of references and stronger ref-

erences emerge from the G20 and the G7. For example, the importance of spaces to share knowledge on mitigation and related actions is regularly highlighted by G20 leaders and ministers. The G20 actually serves as a platform for knowledge exchange on many topics, specifying elements like the costs of renewable energy (G20-6), the use of natural gas, innovation and policy for renewable energy (G20-17), and energy efficiency (G20-37). Specific mechanisms mentioned include the G20 Energy Efficiency Leading Program (EELP), the Energy Efficiency Hub, and the G20 Green Finance Study Group (GFSG). For the G7, several references to sharing knowledge, experiences, and lessons were found in the evaluated texts. Most are action-oriented and distributed relatively equally across all sectors, such as halting forest loss, low-carbon and renewable hydrogen production, and eliminating fossil fuel subsidies. Another forum worth highlighting is the SCO, whose Samarkand declaration states its intent to hold intra-SCO seminars, fora, and roundtable discussions around climate change.

A relatively high percentage of references (over 40 percent) were found to be stronger. About 40 percent of weaker references are not explicit or actionable, while only 10 percent are not exclusive. Such references were found for 5 out of the 12 fora evaluated. For example, APEC's action plan for food security and climate change includes several activities on Knowledge Management and other collaboration mechanisms. However, these are not formulated in an actionable manner (APEC-15). The OSCE is mentioned as a platform for facilitating the exchange of information and best practices related to climate change mitigation (OSCE-7). The OSCE recommends that participating States ensure sufficient funding to finance a mechanism for transferring relevant knowledge and know-how from industrialized to developing countries (OSCE-4). However, there are no strong actions or calls for members.

No relevant references were found for the MEF.

→ *2. Cooperation*

Overall, most intergovernmental fora consider cooperation a key determinant of success, which is one of the main reasons for establishing such fora. This is reflected in the 110 references on cooperation around mitigation, although only a few were evaluated as stronger. These stronger references were identified for most fora. Most references or calls for cooperation are general or relate to energy, with a few relevant to finance. Table 24 categorizes the fora according to the strength of cooperation signals and shows that, for most, stronger references were identified.

Table 24. Fora Ranked by Strength of Cooperation Signals

FORA WITH STRONGER REFERENCES	FORA WITH WEAKER REFERENCES	FORA WITH NO REFERENCES
• SCO • G7 • G20 • OAS • BRICS • APEC • ASEAN • OSCE • UfM	• AU	• OPEC • MEF

The intention to cooperate and establish partnerships to advance climate goals is prominent within G7 texts, although most references are not actionable. The group targets cooperation in several sectors, including energy, industry, finance, and fossil fuels. It has played a crucial role in establishing international initiatives like Mission Innovation and the Climate Club, focusing on industrial emissions. G20 leaders recognize the importance of international dialogue and cooperation around policy, finance, and technology (G20-36). Statements and communiqués identify a wide range of subjects ranging from clean energy (G20-36), nature-based solutions and sustainable agriculture (G20-35), biofuels (G7-34), Carbon Capture Utilization and Storage, clean vehicles, and net-zero energy buildings (G20-18).

Other fora worth mentioning in this context include BRICS, where several stronger references were identified. The group targets cooperation to transition towards cleaner, flexible, and energy-efficient systems (BRICS-25). It supports strong international cooperation on environmental protection and mitigating climate change while stressing the need to avoid inequality, unfair competition, or discriminatory practices (BRICS-19). ASEAN calls for cooperative activities to enhance the image of coal considering global environmental concerns (ASEAN-1). Finally, concrete steps within UfM aim to strengthen regional cooperation, "including —where possible— through transboundary initiatives, to urgently and efficiently address shared environmental and climate challenges" (UFM-8). The group focuses cooperation on energy integration between countries (UFM-9) as well as maritime transport and its links to climate neutrality (UFM-11).
AU has weaker references that are not explicit or actionable. The references are formulated in terms of "stressing" the importance of coordination and cooperation between African agencies (AU-18).

No references were found for OPEC or the MEF.

III. KEY FINDINGS AND FUTURE RESEARCH

This report presents a functional analysis of climate governance applied to twelve intergovernmental fora. We found that climate change has become a central element of the global multilateral ecosystem, likely triggered by the adoption of the Paris Agreement. Formal and informal fora have become crucial spaces for mobilizing consensus and providing political signals on climate action beyond the realm of the UNFCCC.

All the fora analyzed have advanced all functions identified in our framework, albeit with significant differences in the amount, scope, and strength of the references. Most strong political signals were identified for informal fora such as the G7 and the G20. At the level of individual sub-functions, fora like ASEAN and the AU are active in delivering political signals on Definitions and Standards, and Means of Implementation, respectively. Among all functions, stronger references were identified for Rules to Guide Collective Action and Guidance and Signals.

Specific functions reveal that all fora have set Guidance and Signals for climate action, with widespread signals for decarbonization and some supporting mid-term targets. The same is true for Rules to Guide Collective Action, Means of Implementation, and Knowledge and Learning, where most fora have provided significant guidance on actions, support to achieve them, and targeted cooperation. Transparency and Accountability are generally weak, likely due to the methodological approach taken, which restricts the sources of information.

Most references are general, applying broadly to reducing GHG emissions rather than to specific sectors. Energy and finance are prominent in political signals, likely because cooperation in these areas is a priority in intergovernmental cooperation.

In conclusion, there are several strengths in the international governance of climate change, particularly in long-term objectives, medium-term targets, and commitment to the Paris Agreement. We found relatively strong signals for agreements to pursue specific actions, joint research and knowledge, and cooperation.

However, our analysis also revealed areas needing strengthening. Many fora lack references or strong references for certain functions. Roadmaps often lack direct connections to decarbonization goals or targets, and policies lack the strength to mobilize formulation, implementation, or harmonization within the fora. Transparency and Accountability remain weak overall.

To deepen our understanding of international climate governance, we recommend applying the same methodology to adaptation and exploring the five functions identified in our framework, especially Long-term Vision, Policies, and Transparency. A better sectoral overview, particularly for industry and agriculture, which are less focused on climate change work, is also needed. Given the limitations of our methodology, further research on established mechanisms and processes relevant to the functions evaluated could complement this analysis.

The international community's current shortcomings in limiting global warming to 1.5˚C highlight the need for mobilizing political commitment at all levels. Mechanisms, processes, dynamics, and directions are in place within the multilateral ecosystem for mobilizing regions and sectors alike.

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