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WORKING PAPER

A review of intergovernmental cooperation on the mitigation of climate change

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CONTENTS

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HIGHLIGHTS

- Governments have established a wide variety of cooperative initiatives aimed at reducing emissions in all sectors, especially energy supply. Nearly all governments participate in at least one initiative; however, only a few initiatives involve governments that together represent a critical mass in terms of sectoral emissions.
- Most initiatives are dedicated to sharing or producing knowledge products such as guidelines and methodologies. Governments have also established collective targets or policies, but only a limited number of initiatives pursue national-level targets or policies.
- Cooperation could be deepened by shifting from knowledge-sharing to policy- or target-based agreements (e.g., on emissions or technologies); agreeing on political goals for decarbonization and related benchmarks, targets, and road maps; strengthening transparency mechanisms; and supporting greater engagement by the global South.
- Recommended further research includes improving our understanding of the effectiveness of cooperation at the sectoral level, the impact of cooperation when measured against the goals of the Paris Agreement, and the interests of different regions and their motivations to cooperate and take action.

EXECUTIVE SUMMARY

Background

Governments and nonstate actors have established a wide variety of cooperative initiatives in the pursuit of low emissions and climate-resilient development. However, despite the momentum that has characterized the international response, the world is not on track to limiting global warming to 1.5°C (UNFCCC 2022).

Intergovernmental cooperation on sector-based mitigation is a relatively recent phenomenon, and as a consequence, there is limited understanding of the impact and effectiveness of existing initiatives. Filling in this gap is essential to enhance the effectiveness of cooperation in a way that promotes climate ambition at the country level.

About this working paper

To date, efforts to understand the impact of ongoing climate cooperation have concentrated on nonstate actors. This working paper focuses on a less evaluated segment of existing cooperative initiatives: cooperation between governments on mitigation at the sectoral level.

Approach

We have compiled an inventory of 93 alliances and partnerships and evaluated their potential to advance effective cooperation, based on a set of features extracted from the literature.

We have identified a set of nine such features that, based on the literature and our judgment, are associated with effective cooperation on climate change mitigation. This paper categorizes these features as action related, operational, or participatory. *Action related* refers to objectives, targets, support, and high-level engagement; *operational* includes champions, secretariats, and transparency arrangements; and *participatory* refers to the number of members and their relative importance in terms of emissions or other related indicators (e.g., forested area).

We then assigned scores to the operational and action-related features to reflect our views on the relative strength of their potential to contribute to effective cooperation. For example, financial or technical support could facilitate member engagement and action; initiatives with related mechanisms are therefore scored higher than initiatives that do not include such mechanisms.

Based on these scores, we have generated two composite indexes: one for action-related features and a second one for operational features. Finally, we have calculated the percentage of initiatives—at the global and sectoral level—that fall within the low, medium, and high levels of the indexes as well as the values of coverage. Through this approach, we provide an overview of global and sector-based cooperation on the mitigation of climate change and its potential effectiveness.

Findings

Cooperation is advancing in all economic sectors, with energy supply being the most prominent. The landscape is fragmented and not always coherent in terms of aims. Most initiatives have been established since the adoption of the Paris Agreement, generally under the leadership of a government.

Nearly all governments are members of at least one initiative; however, only a few initiatives gather a group of countries that cover a sizable proportion of the relevant sectoral emissions. Participation varies significantly from initiative to initiative depending on interests and perceived benefits and costs (Sabel and Victor 2017). Developed countries dominate the landscape, although some emerging economies are actively engaged, albeit not always where it matters most in terms of their emissions.

Most initiatives (67 percent) have been established to share knowledge, and only a few pursue the adoption of policies or the achievement of targets at the country level. Quantified targets have been identified mostly for energy supply, although there is great variability in the indicators used and the level at which these have been established.

Finally, with few exceptions, operational infrastructure is robust except for transparency arrangements, where no evidence of related processes was found for many of the initiatives analyzed.

The cooperation landscape presents stark differences within and between sectors:

- Energy supply includes a wide spectrum, from small campaigns with limited objectives and low coverage to a few initiatives that identify country-level targets and exhibit medium coverage.
- The industry sector exhibits an inverse relation between the activity index and coverage; for example, commitments on green procurement bring together only a few developed countries, whereas knowledge-sharing initiatives attract members that cover over half of global industrial emissions.
- Most initiatives exclusively relevant to transport target zero-emission vehicles (ZEVs), and only one addresses the whole sector. Overall, transport exhibits medium to high levels on the activity index due to the presence of ZEV targets.
- Few initiatives target direct emissions from the buildings sector, most of which exhibit medium levels of coverage and low scores on the activity index due to the scarcity of targets and the predominance of knowledge sharing.

- The land-use sector is characterized by the presence of global pledges on methane and deforestation, which result in several initiatives exhibiting medium to high coverage and activity index. No evidence of robust operational features was found for a few forestry-related initiatives.
- Finally, with few exceptions, crosscutting initiatives, including finance, present medium to low levels on the activity index despite the presence of some ministerial processes. This is primarily due to the lack of targets and the predominance of knowledge-sharing. Most were found to have low coverage, below 30 percent of the relevant index.

Cooperative arrangements could become more effective by

- moving beyond the sharing of experiences and knowledge toward agreements to implement policies to guide investment, increase the amount of public climate finance, and scale up research and development of green technologies; in other words, moving from "shallow coordination" toward "deeper cooperation" (Keohane and Victor 2016);
- agreeing on political goals for sectoral and technology decarbonization across the board, identifying benchmarks, adopting science-based targets, and developing road maps to guide sectoral transformation;
- strengthening financial and technical support to members and enhancing operational features such as transparency mechanisms; and
- undertaking efforts to secure a critical mass of governments and increase participation by the global South; for example, by enhancing financial and technical assistance mechanisms and supporting the development of cooperation arrangements in the region.

INTRODUCTION

Background

The transition necessary to achieve the aims of the Paris Agreement has been described as unprecedented in terms of scale because it implies deep greenhouse gas (GHG) reductions in all economic sectors and regions (IPCC 2018). The engagement of, and coordination between, governments is essential due to the complexity of global climate change and local realities (Green 2015; Patrick 2021). The need for cooperation also arises because of the varying perspectives and understandings of who should act, perceptions about responsibilities and capacities, and other factors. In fact, the ability to foster cooperation is important for the effectiveness of environmental treaties (Barrett 2005).

Today, eight years after the adoption of the Paris Agreement, a complex landscape of climate cooperation has emerged: the Global Climate Action portal[1] lists over 30,000 actors engaged in reducing emissions and/or enhancing resilience. The Global Climate Action Ecosystem[2] records over 500 cooperative initiatives, most led by nonstate actors (NSAs).

The effectiveness and impact of ongoing sector-based cooperation on mitigation is currently unknown because no systematic or all-encompassing studies exist, nor has a consistent methodology been developed. Given that global efforts are not on track to limit global warming to 1.5°C, filling in this gap will provide valuable information to improve and complement existing initiatives with a goal of making intergovernmental cooperation more effective.

While an important body of literature focuses on proposed agreements for climate cooperation—notably around so-called "clubs"—(Nordhaus 2015; Keohane and Victor 2016; Carraro 2017), less has been done to systematically evaluate ongoing cooperation between national governments. Available literature has evaluated effectiveness based on output performance (Sander et al. 2022), as part of a broader set of criteria applied to a limited sample (Widerberg and Pattberg 2015), as a component of general governance arrangements (Oberthür, Hermwille, and Rayner 2021), and based on a list of roles that initiatives could play (IEA, IRENA, and UN Climate High-Level Champions 2022).

This working paper is a first step toward systematically evaluating the effectiveness and impact of ongoing intergovernmental cooperation on mitigation at the sectoral level. It focuses exclusively on initiatives put forward by governments to advance mitigation action, some of which include NSAs. The paper does not attempt to evaluate the impact or effectiveness to date;

rather, it systematically describes the cooperation landscape and analyzes the extent to which it incorporates features with the potential to promote effective cooperation. It is an attempt to answer the following questions: How are governments advancing cooperation on mitigation? What are the characteristics of such cooperation? Who is engaged and in which sectors? How do initiatives compare in terms of design?

The following section summarizes the methods followed in this working paper. The "Landscape of intergovernmental climate cooperation" section describes the landscape of cooperation, first by providing an aggregated picture of participation, coverage, and design features and, second, by describing in more detail these dimensions on a sector-by-sector basis. The final two sections present conclusions and recommendations for future research.

Methods

Definitions

We define *climate initiatives* as ensembles of national governments to pursue objectives and activities ultimately and explicitly aimed at reducing emissions and/or supporting a transition to low emissions development.

Effective cooperation refers to collaborative relationships between governments toward shared objectives and aimed at incentivizing mitigation action, or ambition, at the national level consistent with the aims of the Paris Agreement.

Inventory of initiatives

An inventory of initiatives that meet the above definition was compiled using the following databases and complemented by desktop search: the Global Action Climate Ecosystem, Climate Initiatives Platform, and Global Climate Action portal.[3]

Initiatives were classified according to the information provided in their websites under the following sector(s): energy supply, buildings, industry, transport, land use, and crosscutting.[4] Some initiatives were found to be relevant to multiple sectors.

Analytical approach

As stated above, an important body of literature has put forward proposals for cooperative arrangements to address issues such as free riding or technology development (see Keohane and Victor 2016; Victor, Geels, and Sharpe 2019; Oberthür, Hermwille, and Rayner 2021; Vangenechten and Lehne 2022). A few studies have evaluated effectiveness from an empirical standpoint (Widerberg and Pattberg 2015; Oberthür, Hermwille, and Rayner 2021; Sander et al. 2022).

From these sources, we selected a small set of features with the potential to promote effective cooperation. We characterize the landscape by evaluating whether these features are part of the initiatives inventoried in this working paper. The actual effectiveness of such features—and of the initiatives in our inventory—falls outside of the scope and should be the subject of further research.

The features have been organized into three categories, as follows:

- *Participation and coverage* (the extent to which the initiative brings a representative set of countries):
  - *Participation* refers to the number of governments that are members.
  - *Coverage* refers to the relative weight of members in terms of sector-specific indicators; for example, coverage for an initiative on forestry is based on the percentage of the global forest cover that its members represent. Appendix A summarizes indicators and their sources.
- *Activity features* (the elements that provide incentive for members to act, based on Oberthür, Hermwille, and Rayner [2021]; Widerberg and Pattberg [2015]; and Keohane and Victor [2016]):
  - Aim,[5] which could take the form of knowledge-based initiatives, agreements to achieve a common target (i.e., through a declaration), or reciprocal agreements to implement policies or achieve an outcome
  - Targets and their scope[6]
  - Financial or technical support to members
  - Level of country representation for guidance and decision-making (ministerial or above, director level or open)
- *Operational features* (the mechanisms to ensure dynamism and engagement, based on Widerberg and Pattberg [2015]):
  - Champions, which are figures entrusted with motivating action or expanding membership; for example, chairs or coordinators
  - Transparency mechanisms, as a basis for accountability
  - Administrative infrastructure, such as secretariats

Scores have been assigned to each feature, reflecting our judgment on its potential to promote effective cooperation. For example, administrative infrastructure could be absent, comprise a single coordinator, or involve an established secretariat; the

latter would be assigned a higher value. Such values set a rating that enables comparison across the cooperation landscape in terms of design.

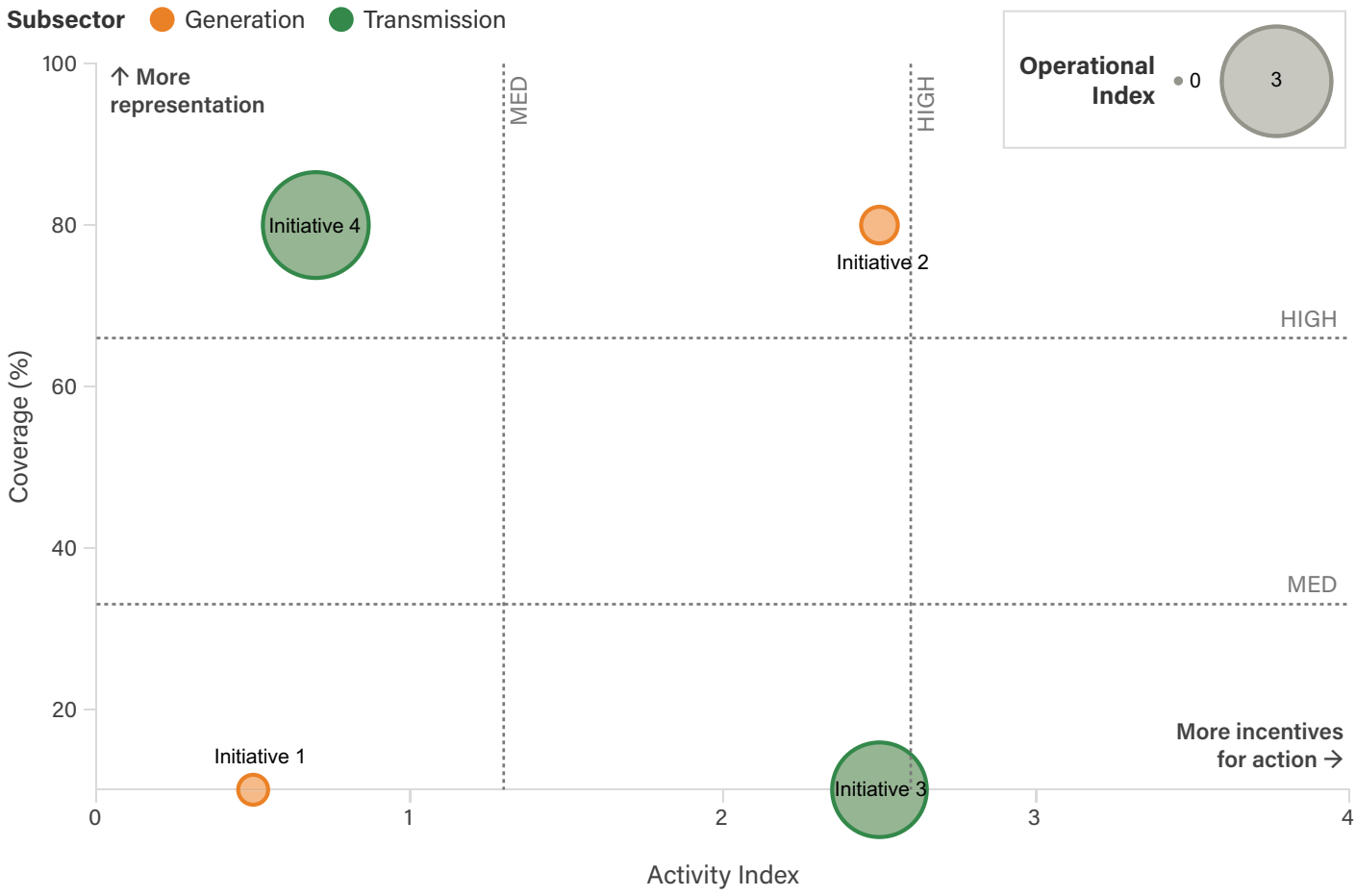
Composite indexes for *activity* and *operational* features have been developed and calculated for each initiative based on the assigned values. The index is a simple sum of the unweighted values assigned to individual features (see Appendix B for a detailed explanation). The activity index takes a value of between 0 and 4, and the operational index takes a value of between 0 and 3, with the highest value reflecting the highest value assigned to each individual feature.

Finally, the values for coverage and the two indexes have been plotted in graphical form with the goal of composing a map of the cooperation in each sector.

Figure 1 presents an example of energy supply where initiatives are classified into generation (orange) and transmission (green). Initiatives that feature toward the right exhibit a greater activity index. Initiatives that feature higher exhibit greater coverage. The size of the bubbles indicates the value on the operational index (e.g., the larger the bubble, the higher the index). For example, the position of Initiative 3 (lower right quadrant), indicates high activity and low coverage. Initiative 2 exhibits the same level of activity but higher coverage. The difference in bubble size indicates that Initiative 2 exhibits a lower operational index than Initiative 3.

The analysis also includes a commentary on the relation between membership and coverage, which is relevant to the level of flexibility and influence of an initiative. Smaller coalitions with large coverage are thought to have higher levels of these attributes:

Figure 1 | **Mapping of the three categories for energy supply, example**



Source: WRI authors.

they are more likely to reach consensus and can, by definition, exercise change over larger percentages of the issues covered (Stewart, Oppenheimer, and Rudyk 2013; Keohane and Victor 2016; Keohane, Petonsk, and Hanafi 2017; Tirkey 2021). The ratio between the global percentage of members and coverage was used as a proxy for flexibility and influence. A ratio of less than 1 indicates a potential for flexibility and influence due to the relatively small size and large significance in terms of the relevant indicator.

LANDSCAPE OF INTERGOVERNMENTAL CLIMATE COOPERATION

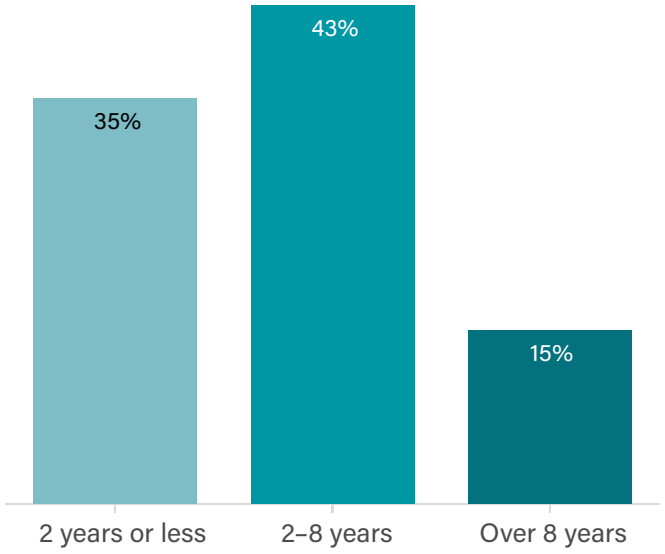
The landscape of intergovernmental climate cooperation in this working paper consists of 93 initiatives that met our definition (see Appendix C for a list and respective codes). Over half (56) are stand-alone initiatives, and the rest operate within a broader framework; namely, the Clean Energy Ministerial (CEM), Mission Innovation (MI), or the Breakthrough Agenda (see Box 1). Most (57 percent) are composed of only governments, and the rest open participation to NSAs.

In most cases, the initiatives have been conceived by one or more governments, generally in the context of an upcoming summit, meetings of the UN Climate Change Conference of the Parties (COP) or of the frameworks listed in Box 1. A few have emerged from forums such as the Major Economies Forum or have been proposed by an international organization.

As shown in Figure 2, most initiatives (85 percent) have been established in the last eight years, likely motivated by the adoption of the Paris Agreement. A few have been in place for over eight years and mostly correspond to well-established knowledge-based initiatives that target specific technologies or activities, such as clean hydrogen, carbon capture and storage (CCS), or gas flaring.

Cooperation is active in all sectors (see Figure 3), with most initiatives targeting energy supply (28 percent), followed by transport (18 percent) and industry (15 percent). Initiatives that target CCS, clean hydrogen, and biofuels are relevant for energy supply, industry, transport, and buildings.

Figure 2 | **Distribution of initiatives according to their lifetime**



Source: WRI authors.

Overview of features

Participation

Participation[7] is widespread: only three countries in the world are not members of at least one initiative. The median number of memberships per country is 8, and the maximum for a single country is 71 (United Kingdom). Except for those initiatives established by and for the members of a given forum (e.g., the Group of Seven [G7]), initiatives are open to all governments and enjoy wide geographical participation. Developed countries dominate the landscape—the 13 countries with the most memberships belong to this group (see Figure 4)—although several emerging economies feature in the top 25 and are well above the median number of memberships. Figure 4 also illustrates a disparity between membership and GHG contribution, wherein not all larger emitters feature at the top of the ranking.

Regional differences are, however, stark. Figure 5 presents values for the maximum and median memberships per group and illustrates that, except for Asia and Latin America, all other regions exhibit values 50 percent below those of developed countries.

Box 1 | Overarching processes

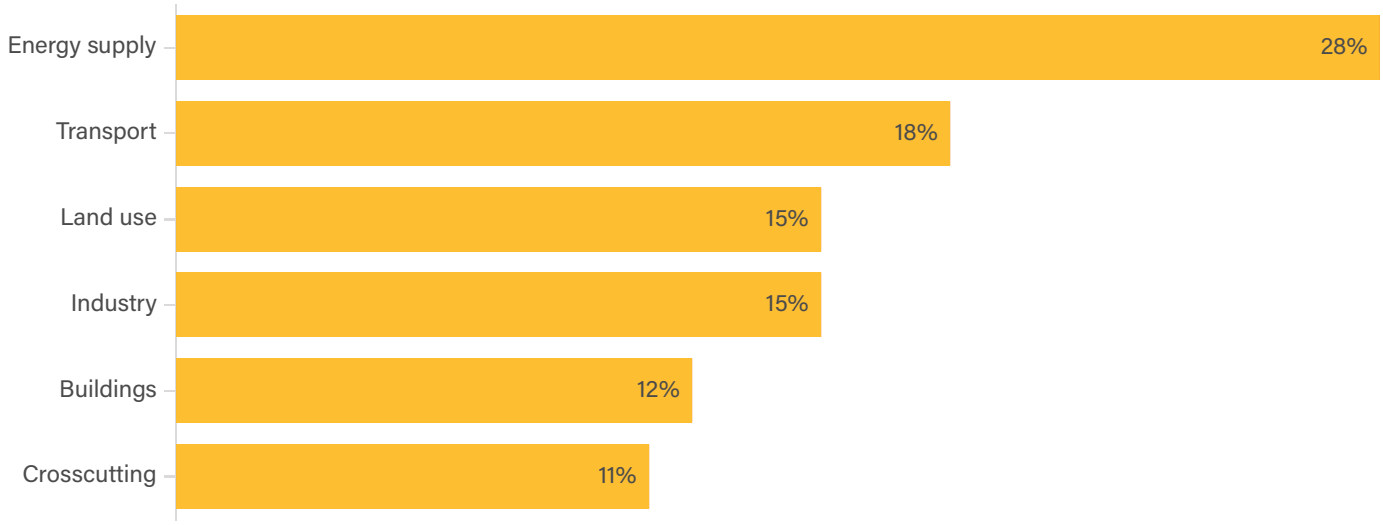
Clean Energy Ministerial (CEM). The CEM[a] aims to "accelerate the global clean energy transition through a voluntary, efficient, global partnership of the world's largest and most forward leaning economies." It operates through *initiatives*, which are collaborative efforts, and *campaigns*, which are short-term efforts to elevate initiatives or components thereof.[b] This working paper considers 24 initiatives from the CEM.[c]

Mission Innovation (MI). MI[d] is an action-oriented platform to deliver the technologies needed to reduce emissions in sectors responsible for over half of global emissions. It works through public-private alliances that target, among others, clean hydrogen, carbon dioxide removal, net zero industries, and clean power. This working paper considers six missions from MI.

Breakthrough Agenda (BA). The BA[e] is an international plan to keep global warming below 1.5°C. The "Glasgow Breakthroughs" provide a framework for countries, businesses, and civil society to strengthen their actions for 2030 and play a key role in coordinating existing initiatives. This working paper considers six initiatives from the BA.

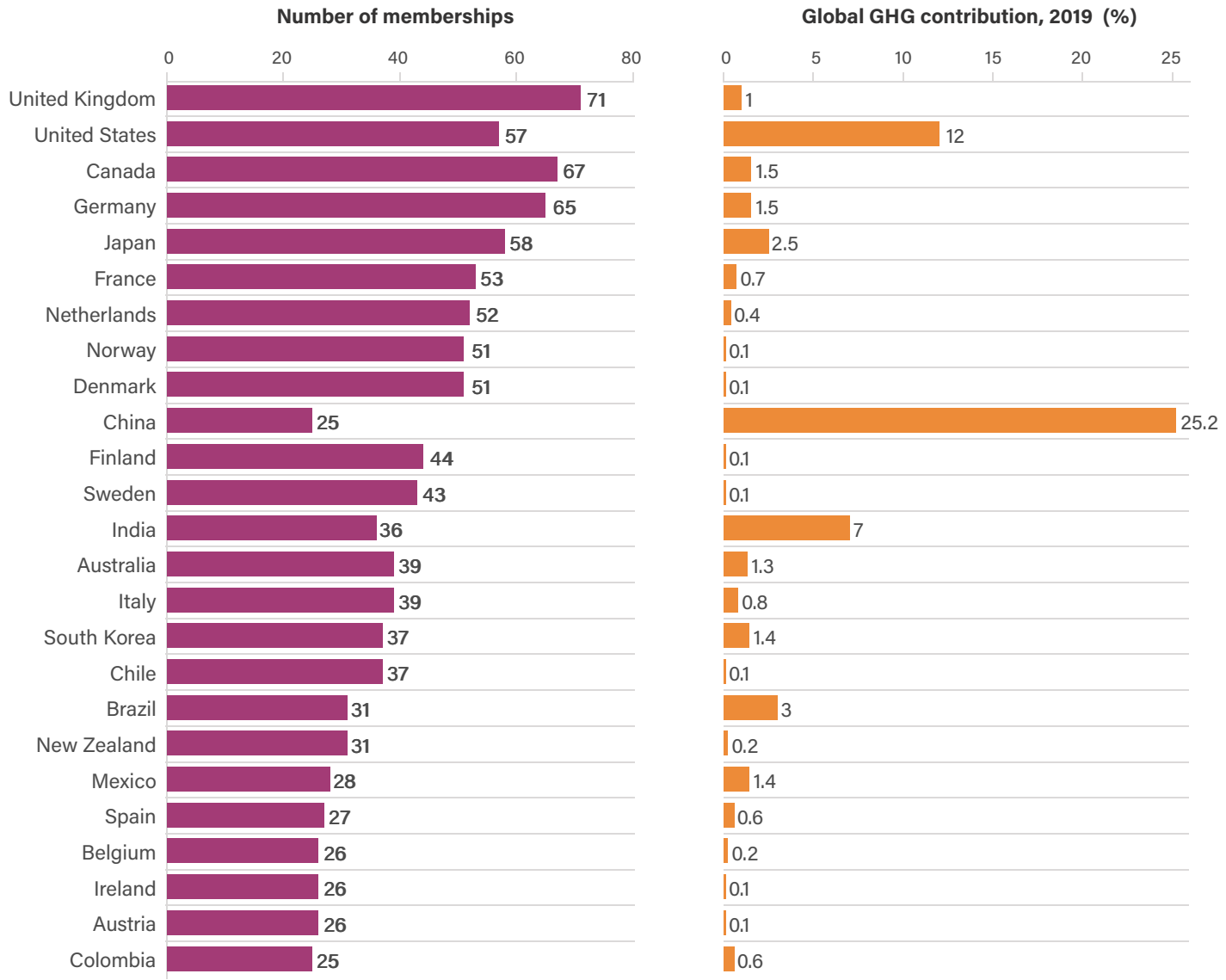
Notes and Sources: a. More information is available on the CEM website, https://www.cleanenergyministerial.org/; b. CEM 2016; c. Two such initiatives are campaigns launched by a broader initiative and, therefore, are analyzed separately because they do not share the same membership or specific objectives; d. More information is available on the MI website, http://mission-innovation.net/; e. More information is available on the BA website, https://racetozero.unfccc.int/system/breakthrough-agenda/.

Figure 3 | Overview of the sectoral distribution of initiatives



Source: WRI authors.

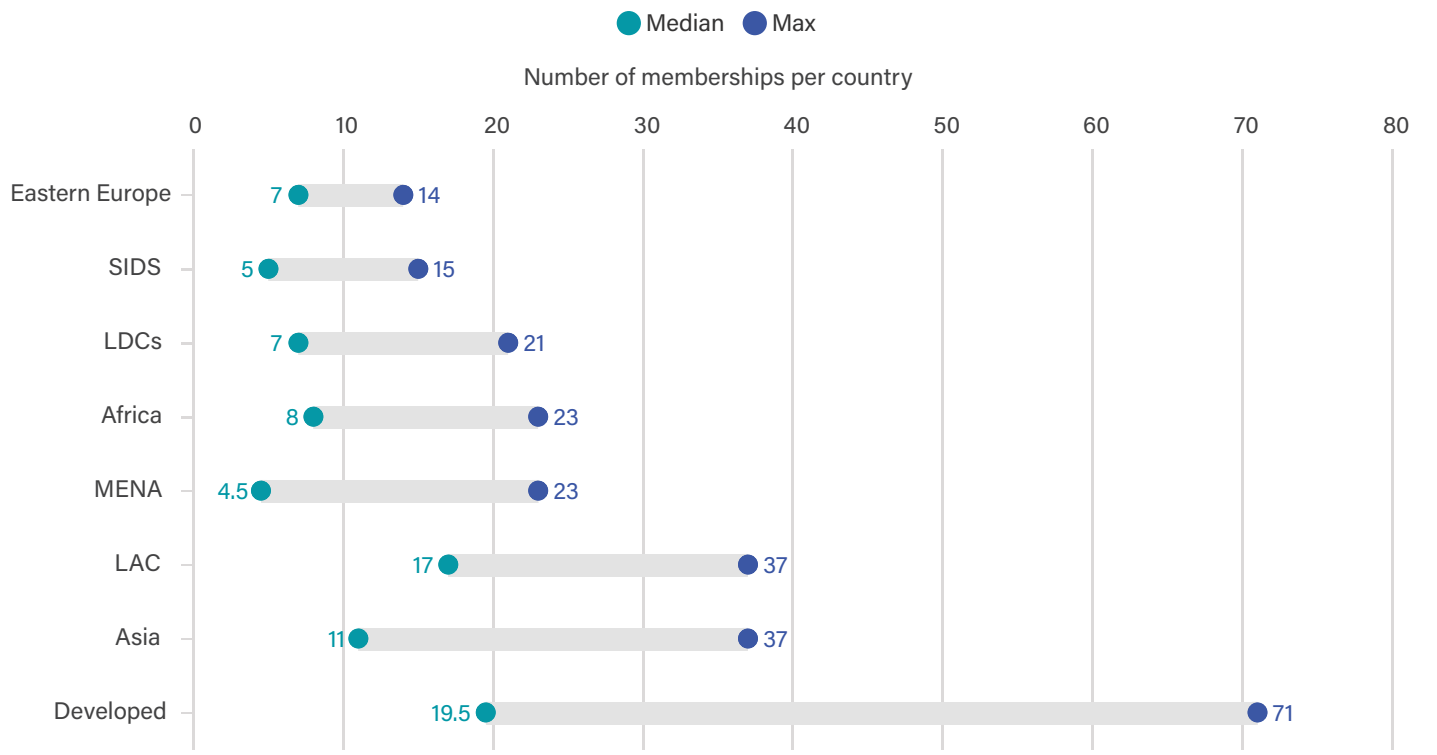
Figure 4 | **Countries with the most memberships in cooperative initiatives, top 25**



Note: GHG = greenhouse gas.

Source: WRI authors; for emissions, see Appendix A.

Figure 5 | **Regional differences in terms of membership per country**

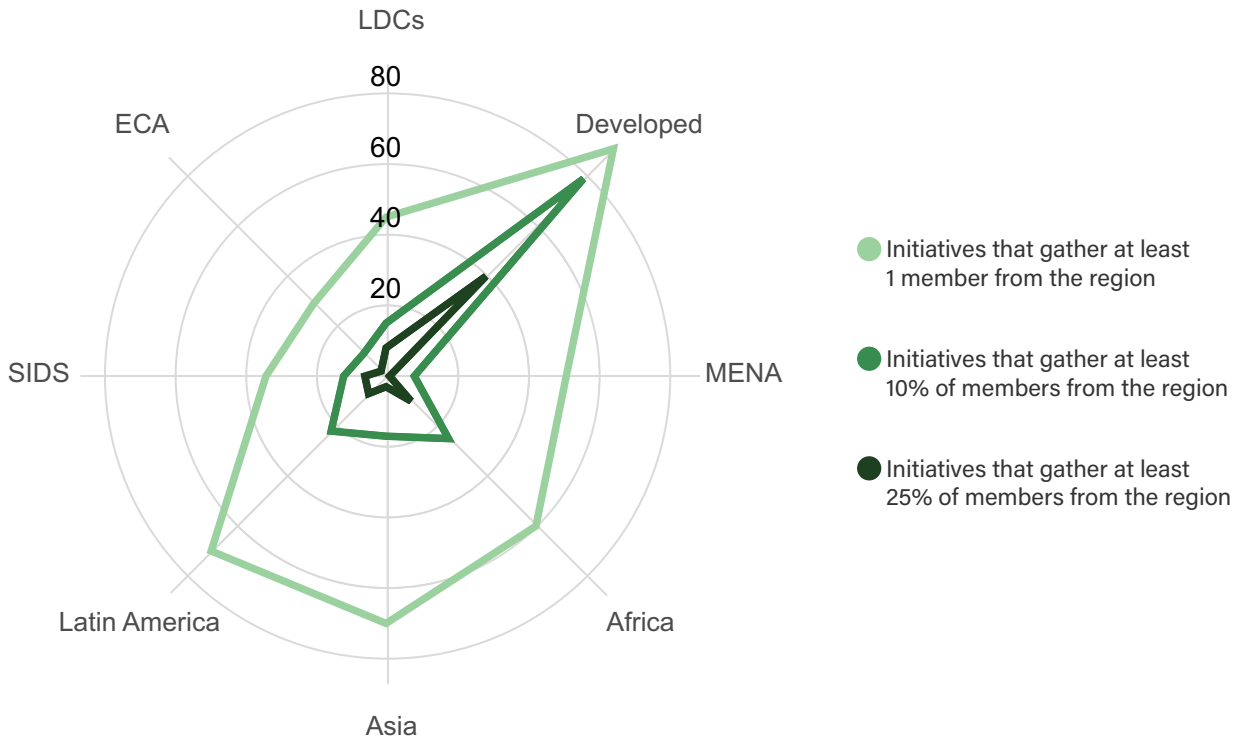


Note: LAC = Latin America and the Caribbean; LDCs = Least Developed Countries; MENA = Middle East and North Africa; SIDS = Small Island Developing States.
Source: WRI authors.

Initiatives that enjoy the highest membership include pledges, such as the Global Methane Pledge (149 members[8]) or the Glasgow Leaders' Declaration on Forests and Land Use (140 members), or knowledge-sharing initiatives, such as the International Solar Alliance (ISA; 89 members). Overall, high participation is rather the exception, with the median being about 15 members per initiative. As will be discussed later, initiatives that specify country-level actions tend to involve fewer countries, although the level of coverage depends on the weight of members in relation to the relevant indicators. Whereas small coalitions may enjoy flexibility and influence, larger ones are important for representation and inclusiveness. Our analysis indicates that most initiatives (45) exhibit membership below the median, and over 80 percent have 40 members or less.

Our analysis also shows stark regional differences in terms of representation. Figure 6 provides an overview of the number of initiatives that cover different percentages of countries from different regions and groups. It illustrates the low representation of Least Developed Countries, the Middle East and North Africa, Small Island Developing States, and Eastern Europe and Central Asia. Furthermore, the number of initiatives drops appreciably as the percentage representation increases in all regions except for developed countries.

Figure 6 | **Number of initiatives that gather different levels of regional participation**

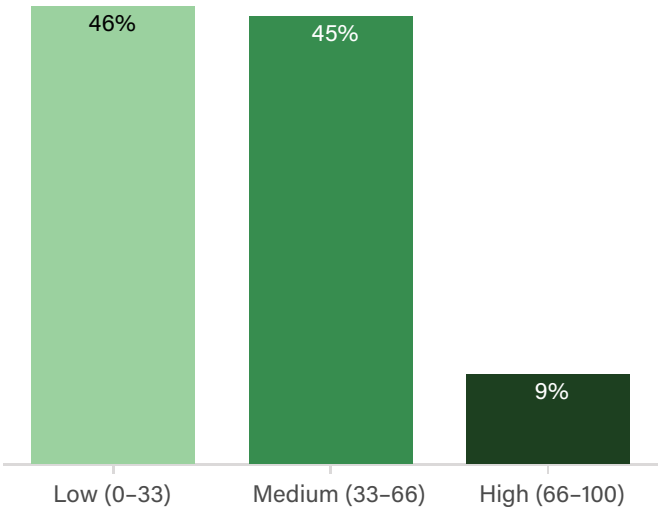


Note: ECA= Eastern Europe and Central Asia; LDCs = Least Developed Countries; MENA = Middle East and North Africa; SIDS = Small Island Developing States.
Source: WRI authors.

Coverage

Participation alone is a poor measure of "critical mass" due to asymmetries regarding the size of the economy and the importance of different sectors; hence, for the present working paper we also evaluate coverage. Values for this metric have been categorized as high (66–100 percent), medium (33–66 percent), and low (0–33 percent). Based on the indicators summarized in Appendix A, Figure 7 presents the distribution of initiatives along three levels of coverage and indicates an even split of initiatives between the low (46 percent) and medium (45 percent) levels. A rather small percentage (9 percent) enjoys high levels of coverage, which indicates that most initiatives do not bring all the countries that matter the most in terms of emissions.

Figure 7 | **Distribution of initiatives in different ranges of coverage**



Sources: See Appendix A.

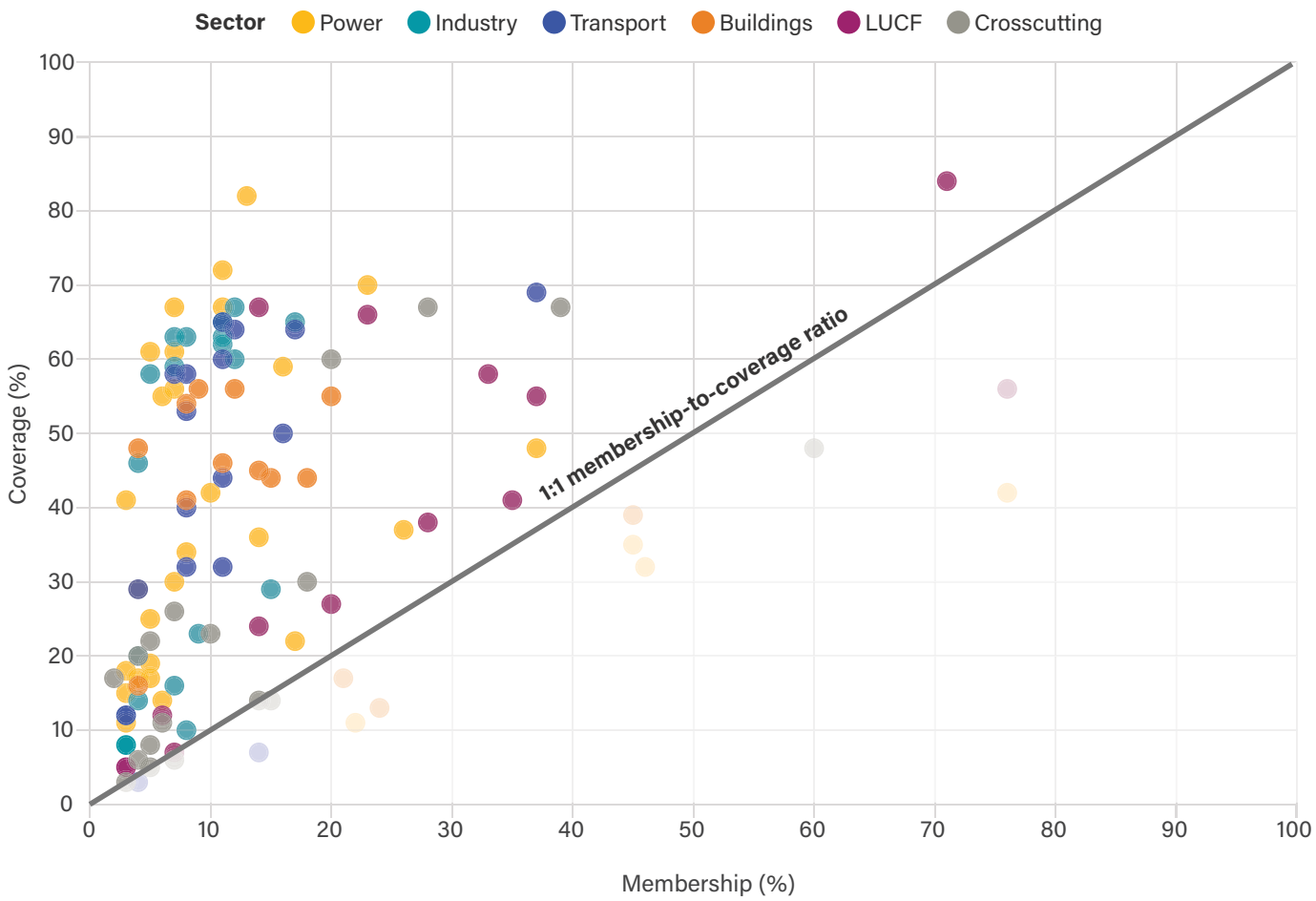
Membership vs. coverage

Most initiatives (88 percent) consist of small coalitions with a relatively high level of coverage (e.g., a ratio of membership to coverage below 1) (see Figure 8). This reality is explained by the fact that a few large economies take part in most and that membership, as described above, is limited. The values of the ratio vary between 0.07 for the MI's Clean Hydrogen (4 percent of countries, covering 48 percent of buildings sector GHGs) and 45.9 for the Beyond Oil and Gas Alliance (or BOGA, 5 percent of countries, covering a negligible percentage of oil and gas reserves). Figure 8 also illustrates that most initiatives (70 percent) fall below a ratio of 1, which indicates a potential for flexibility and influence. At the sectoral level, we also identify those initiatives that enjoy both high coverage and a low membership-to-coverage ratio.

Activity features

Values for the activity index have been divided into high (2.6–4.0), medium (1.3–2.6), and low (0.0–1.3). The sectors exhibit a wide variability of activity features, with most initiatives (44 percent) falling within the low category (see Figure 9), followed by the medium (38 percent). The relatively low percentage of initiatives in the high range (18 percent) results from the scarcity of country-level agreements, the level of targets, and the mixed support to members (see below).

Figure 8 | **Relationship between global membership and coverage for all initiatives**



Note: Excludes outliers above a ratio of 5.

Sources: See Appendix A.

To better understand activity, further detail is provided on three of its key features because they account for the largest variability of the index. For the first feature, *aim* (see Figure 10), our analysis shows that most initiatives (68 percent) pursue the sharing of knowledge, arguably due to the low costs of joining (Martin, de Preux, and Wagner 2014), followed by collective agreements (26 percent). The least common aim corresponds to country-level agreements (6 percent), which commit individual countries to adopt policies or standards or achieve a target.

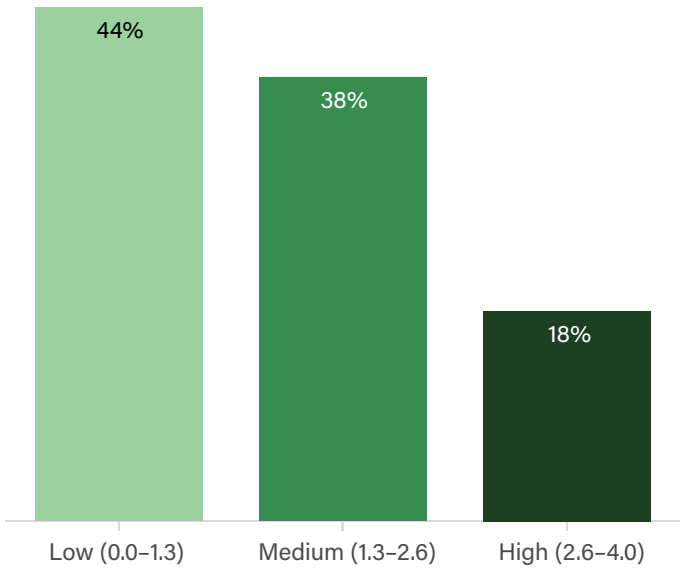
The second feature, *targets*, guides action and provides benchmarks for evaluating effectiveness (Stern 2018). A total of 70 targets were identified across 37 initiatives (see Appendix D for an inventory). Figure 11 shows that most targets have been set for energy supply (39 percent), followed by energy technologies[9] (17 percent) and land use and transport (13 percent each). A detailed comparative analysis falls outside the scope of this working paper, but a quick scan reveals a wide variety: about 37 percent apply to a sector or gas,[10] 40 percent to a specific technology or practice, and 23 percent to projects or products. Targets can be as specific as "reducing the costs of green hydrogen to two dollars per kilogram" or as general as "reversing forest loss by 2030." Most targets (64 percent) have been set for the medium term (e.g., 2030), followed by the short term (19 percent; by 2025) and long term (13 percent; by 2050), and 4 percent are undefined.

Finally, for the third feature, *support*, our analysis shows that 27 percent of the initiatives do not have any support arrangements, but 60 percent provide either technical expertise or finance. Only 13 percent provide both forms. In general terms, the resources seek to enable participation or advance in-country work. In the case of the Just Energy Transition Partnerships and the Global Forest Finance Pledge, financial resources are also provided for the actual delivery of national ambition.

Operational features

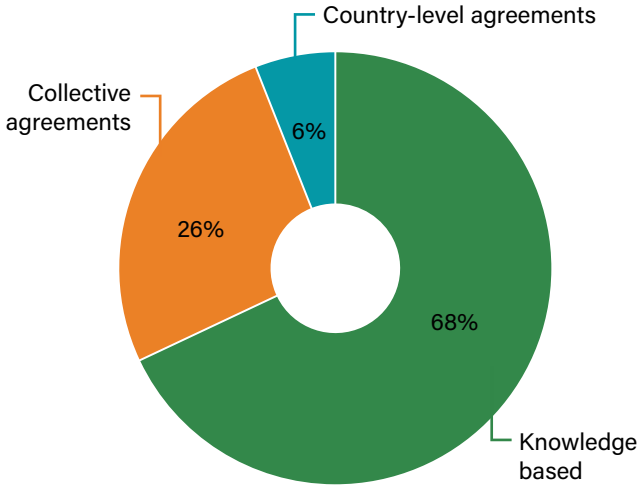
Values for the operational index have been divided into high (2–3), medium (1–2), and low (0–1). Most initiatives (61 percent) fall within the high level, and only 11 percent fall within the low (see Figure 12). Champions are widely used, and most initiatives have administrative arrangements. Multifaceted coalitions such as the CEM are supported by established secretariats and have in place well-developed transparency mechanisms, whereas smaller ones are supported by single coordinators. As will be described under each sector, transparency is identified as a key weakness: proper monitoring and evaluation frameworks are present in about 10 percent of initiatives, primarily because very few specify country-level actions. About 44 percent rely on centralized reports, generally on the status of a particu-

Figure 9 | **Distribution of initiatives according to the activity index**



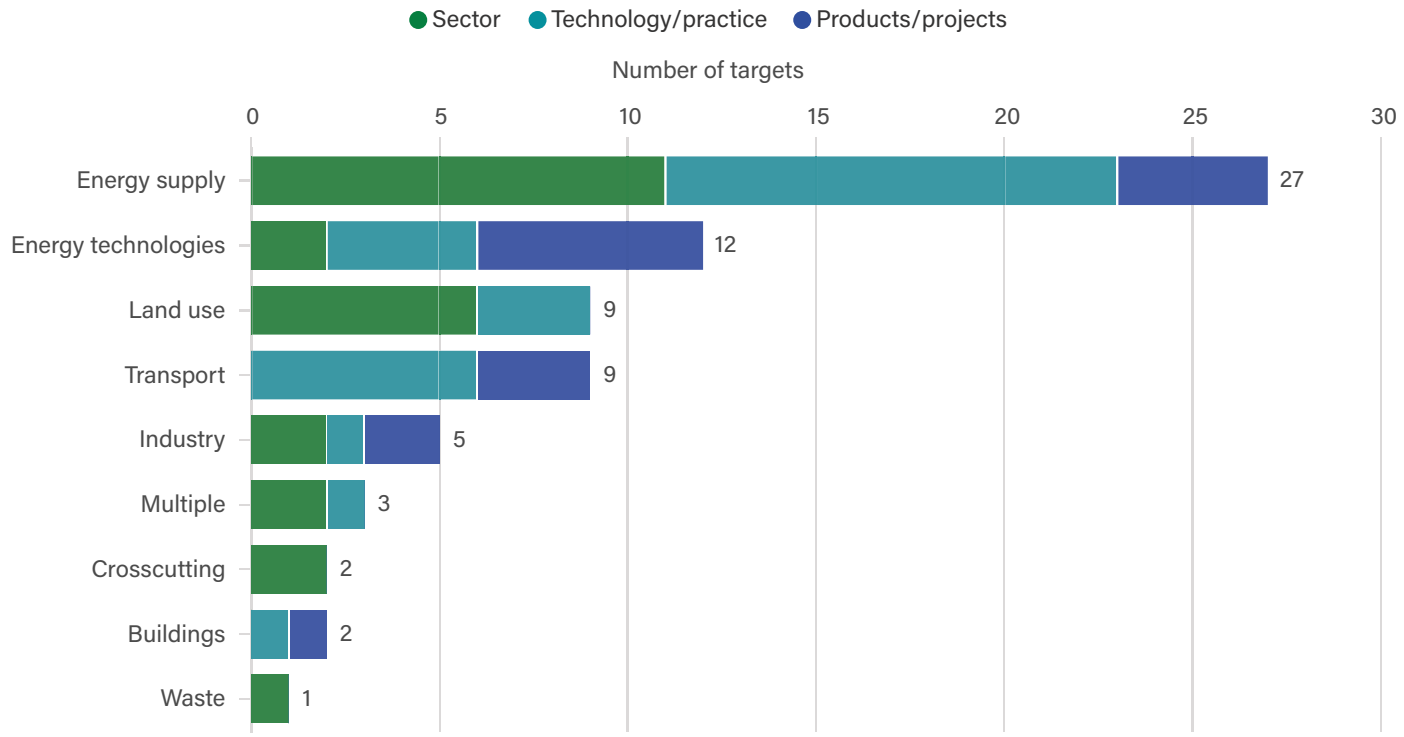
Source: WRI authors.

Figure 10 | **Distribution of initiatives according to their aim**



Source: WRI authors.

Figure 11 | **Overview of identified targets per sector and their level**



Source: WRI authors.

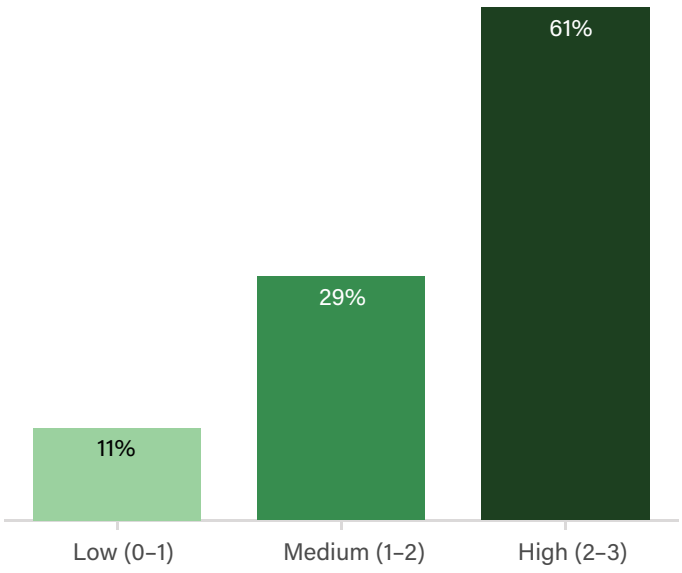
lar sector or technology. Finally, for about 46 percent of the initiatives, no reporting arrangements were identified in the sources consulted.[11]

The following sections analyze the cooperation landscape at the sectoral level.

Energy supply

Electricity and heating account for 23 percent of global GHG emissions (Minx et al. 2021), of which coal burning represents 74 percent (IEA 2021a). Limiting global warming to well below 1.5°C entails decarbonizing power generation through renewable energy, flexible grids, and the decommissioning of coal plants. Related indicators of progress include the carbon intensity of power, the share of renewable sources in the energy mix, and the share of unabated fossil fuels (CAT 2020; Boehm et al. 2022). Recent estimates suggest that global efforts are off track or well off track from established benchmarks,[12] and, specifically, unabated gas emissions are heading in the wrong direction (Boehm et al. 2022).

Figure 12 | **Distribution of initiatives according to the operational index**



Source: WRI authors.

Energy supply is the subject of most initiatives considered in this working paper. The analysis comprised 34 initiatives, categorized as follows:

- *Sector-wide:* 3 initiatives on the power sector transition
- *Coal*: 2 initiatives on phasing out coal as an energy source
- *Oil and gas*: 6 initiatives on reducing methane emissions and 1 on phasing out these fuels
- *Generation*: 19 initiatives on renewable energy and zero-emission power generation technologies
- *Grid infrastructure*: 4 initiatives on addressing technical aspects of integrating renewables

Table 1 summarizes the features of energy supply initiatives.

Participation and coverage

Initiatives present a wide variability because membership varies from 5 to 149, with a median of 14. The largest initiatives are the Global Methane Pledge (149 members)[13] and the Green Grids Initiative (90 members). The sector is characterized by an even distribution of initiatives between low and medium levels of coverage (44 percent and 41 percent, respectively), with a small percentage (15 percent) falling in the high level. Global initiatives targeting methane, CCS, and green hydrogen present the highest levels of coverage, whereas those with specific and ambitious objectives, such as phasing out fossil fuels, present the lowest levels. Finally, all but 5 initiatives show a low ratio of global membership to coverage, indicating flexibility and potential for influence. Initiatives that exhibit a combination of high coverage and a low membership-to-coverage ratio include MI's Clean Hydrogen initiative (67 percent; 0.11), the Carbon Sequestration Leadership Forum (82 percent; 0.16), and the International Partnership for Hydrogen and Fuel Cells in the Economy (IPHE) (72 percent; 0.15).

Activity

Most initiatives are equally distributed between the low (38 percent) and medium (35 percent) range of the index. Most initiatives aim to share knowledge on individual renewable energy technologies, CCS, hydrogen, or nuclear energy, and they have also established mechanisms to support their members, with about half providing both technical and financial assistance.

Operational

Over half of initiatives fall within the high range of the index. Champions are common, and administrative arrangements are mostly present and adapted to the complexity of each initiative. For example, smaller initiatives and campaigns are supported by single coordinators, and larger ones are supported by structured secretariats (e.g., the CEM). Despite the high scoring of the sector, about half of the initiatives were found to have weak or no transparency mechanisms, arguably due to the lack of country-level commitments.

Table 1 | **Overview of features for energy supply**

RANGE OF THE INDEX		PERCENTAGE OF INITIATIVES
Coverage	High (66–100)	15
	Medium (33–66)	41
	Low (0–33)	44
Activity	High (2.6–4.0)	26
	Medium (1.3–2.6)	35
	Low (0.0–1.3)	38
Operational	High (2–3)	62
	Medium (1–2)	29
	Low (0–1)	9

Source: WRI authors.

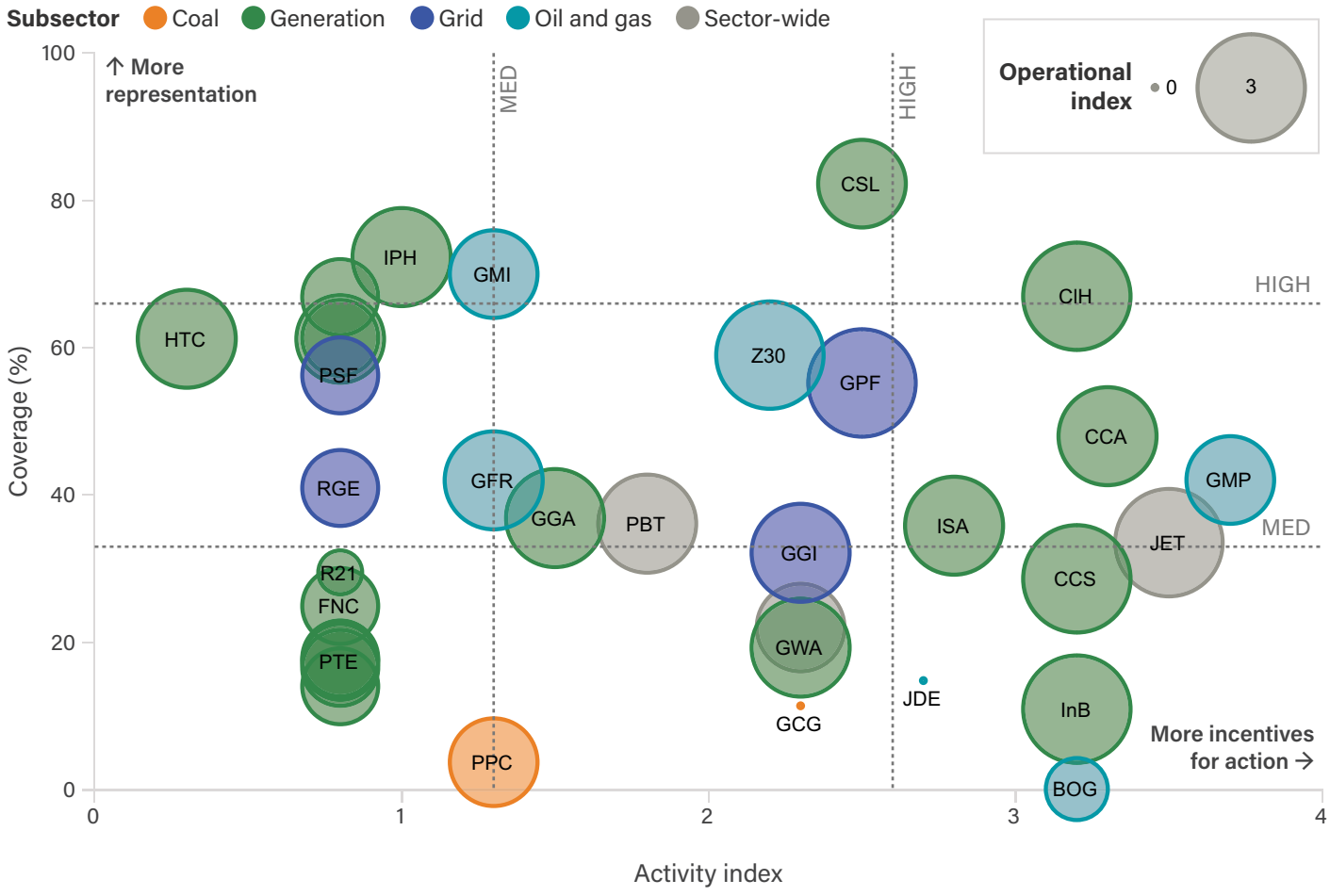
Box 2 | Just Energy Transition Partnerships

Just Energy Transition Partnerships (JETPs) are a recent model to support transition in coal-dependent countries. They consist of an agreement between the International Partners Group—a group of donors—and a recipient country around quantifiable objectives and predetermined financial resources. Central to the partnership is the social dimension, which considers issues such as impacts on the workforce and/or energy access and costs. So far, JETPs have been established for Indonesia,[a] South Africa,[b] Vietnam,[c] and Senegal.[d] Examples of agreed targets include Indonesia's aim to peak power sector emissions by 2030 at 290 metric tons of carbon dioxide equivalent ($MtCO_2e$) and Vietnam's goal to peak electricity emissions at 170 $MtCO_2e$ by 2030. Experiences have shown that negotiations are slow and resource intensive, and the "just" elements are hard to define and agree on.[e]

Notes and Sources: a. European Commission 2022a; b. GoSA 2021; c. European Commission 2022b; d. European Commission 2023; e. Hadley 2022.

The landscape of cooperation on energy supply is presented in Figure 13, which shows a spread along the coverage and activity indexes. Most initiatives are new (less than eight years old), particularly alliances on wind, solar, and geothermal sources, but those initiatives targeting hydrogen, CCS, and gas flaring have been in place for longer. Fourteen initiatives are grouped toward the left (e.g., low activity), with varying degrees of coverage. They correspond to a group of knowledge-sharing initiatives and campaigns with narrow objectives on technology, most relating to generation. On the right-hand side (e.g., high activity), the graph gathers a few initiatives on generation with varying levels of coverage. Initiatives to highlight in this area include the Global Methane Pledge—which covers methane from power-related activities, specifies a global target, and provides support to its members—the JETPs (see Box 2), and BOGA, which are a few examples of country-level agreements with set targets. Also noteworthy is the ISA, which is one of the few initiatives championed by a developing country. Targets are sometimes broad; for example, the phasing out of coal in Organisation for Economic Co-operation and Development (OECD) member countries by 2030 and elsewhere by 2050 Powering Past Coal Alliance (PPCA) and an end to new concessions for oil and gas production (BOGA). Technology-related targets include a US$1 trillion investment in solar (ISA), a fivefold increase in geothermal energy (Global Geothermal Alliance), and 380 gigawatts (GW) of offshore wind installed capacity (Global Offshore Wind Alliance), all by 2030.

Figure 13 | **Landscape of cooperation on energy supply**



Note: See Appendix C for list of initiatives and their codes.

Sources: WRI authors; see Appendix A.

Enabling conditions for enhanced action include coal phaseout and renewable energy targets; scaled-up investments in grid infrastructure; scaled-up government-funded research and development (R&D), particularly on power system flexibility, storage, and interconnectedness; and policies to scale up renewable energy and energy efficiency (Rayner, Oberthür, and Hermwille 2021; Boehm et al. 2022). These enablers are partly being addressed; however, to promote the phasing out of fossil fuels, more engagement is required given the low coverage. Efforts to reduce the cost of capital and eliminate barriers to renewable energy investments at large scale are currently weak (Victor, Geels, and Sharpe 2019), and joint R&D initiatives are scarce and could be expanded in scope (e.g., to include storage, standardization, or interoperability).

Industry

The industry sector includes a heterogeneous collection of manufacturing processes accounting for about 19 percent of global GHGs, with iron, steel, and cement production representing about 7.8 percent. Indirect emissions from industrial energy use add an additional 10 percent (Minx et al. 2021). Key to limiting global warming to 1.5°C is the decarbonization of so-called hard-to-abate activities such as the production of cement, steel, and petrochemicals. Concerns with leakage and competitiveness have led some governments to resort to trading measures or industrial policy.[14]

Indicators to evaluate progress in this sector include the share of electricity in the sector's final energy demand, the carbon intensity of steel and cement production, the number of low-carbon steel facilities, and the level of green hydrogen production (CAT 2020; Boehm et al. 2022). Recent estimates suggest that global efforts are off track or well off track and that the carbon intensity of global steel production is moving in the wrong direction (Boehm et al. 2022). Equally important is steel overcapacity, whereby global production as a share of capacity decreased from 78.5 percent to 77.1 percent in 2022 (Hijikata 2022).

A total of 22 initiatives were found to be relevant to the industry, categorized as follows:

- *Steel:* 1 initiative focused on net zero steel
- *Sector-wide:* 5 initiatives aimed at decarbonizing the industry sector, all focusing on hard-to-abate sectors
- *Emissions*: 2 initiatives on CCS
- *Efficiency*: 4 initiatives aimed at lowering energy use and emissions intensity
- *Energy sources*: 10 initiatives aimed at green hydrogen and biofuels for industrial applications

Table 2 summarizes the features of industrial initiatives.

Participation and coverage

Variability in participation—from 5 members (Integrated Biorefineries) to 34 (Hydrogen Breakthrough)—is narrower than for energy supply, arguably because of the geographical concentration of the sector, especially cement and steel production.[15] Most initiatives (55 percent) fall within the medium level of coverage, followed by the low level (43 percent). No initiatives were found to exhibit high levels of coverage, although those focused on hydrogen, efficiency, and CCS are on the high end of the medium range. All initiatives present a ratio of global membership to coverage below 1, which could signal a potential for flexibility and influence. A combination of high coverage and a low membership-to-coverage ratio is exhibited by the IPHE (65 percent; 0.6) and the Super-Efficient Equipment and Appliance Deployment initiative (65 percent; 0.17).

Activity

Most initiatives (45 percent) received low index values owing to the scarcity of country-level agreements and set targets. With few exceptions, all initiatives provide technical or financial support to their members. The initiatives exhibiting the highest index values involve energy technologies (CCS and hydrogen), policy coordination agreements such as the G7 Industrial Decarbonisation Agenda, and the CEM's Green Public Procurement (GPP) campaign (see Box 3).

Table 2 | **Overview of features for the industrial sector**

RANGE OF THE INDEX		PERCENTAGE OF INITIATIVES
Coverage	High (66–100)	0
	Medium (33–66)	55
	Low (0–33)	45
Activity	High (2.6–-4.0)	23
	Medium (1.3–2.6)	32
	Low (0.0–1.3)	45
Operational	High (2–3)	68
	Medium (1–2)	27
	Low (0–1)	5

Source: WRI authors.

Operational

Most initiatives (68 percent) fall within the high range of the index, with only 5 percent of the initiatives falling in the low range. Champions are generally present, and most initiatives have underlying administrative arrangements. A key weakness identified is the absence of transparency arrangements; no transparency arrangements were found in the sources consulted for nine initiatives.

Figure 14 presents the cooperative efforts for the industry sector. Except for the IPHE, all initiatives have been set up in the last five years, making cooperation on industrial transition relatively nascent. The figure shows a concentration of initiatives in the upper left and lower middle quadrants, which signals an inverse relationship between coverage and activity. The first group corresponds to knowledge initiatives that target energy sources, and the second corresponds to industry-specific initiatives with identified targets. Two initiatives feature in the upper right quadrant, corresponding to Net-Zero Industries (code *NZI* in the figure) and Clean Hydrogen (code *ClH*), both of which are part of MI. These initiatives involve, respectively, pledges to reduce the capital costs of green technologies by 15 percent and deliver a portfolio of at least 50 demonstration projects as well as to reduce hydrogen end-to-end costs to two dollars per kilogram and establish at least 100 large-scale, integrated clean hydrogen valleys. The GPP, shown in the lower right quadrant, exhibits low coverage but has set targets for low-carbon cement and steel in public construction projects, complemented by disclosure requirements.

Enablers of climate action include electrification, investments in decarbonization technologies, the adoption of stricter regulations and standards (e.g., linked to reducing coal use), and addressing carbon leakage related to trade. The analysis shows that cooperation is progressing on technology development, such as the various efforts on hydrogen and CCS. Although the cooperation is focused on the development of regulations and standards, less is being done to promote their actual adoption, particularly as regards shifting away from coal. Efforts by private actors are advancing around reporting, benchmarks, and road maps as well as knowledge on technologies and processes.[16] Opportunities exist for strengthening cooperation on hard-to-abate sectors, such as by establishing forums where governments and private actors agree on political goals for decarbonization, adoption of standards, and enhance technology cooperation (see Victor, Geels, and Sharpe 2019).

Box 3 | The Industrial Deep Decarbonisation Initiative

Launched under the Clean Energy Ministerial (CEM), the Industrial Deep Decarbonisation Initiative (IDDI)[a] is a coalition of public and private organizations that aims to stimulate low-carbon industrial materials by encouraging the purchase of low-carbon steel and cement and advancing work on common standards. As part of the IDDI, the Green Public Procurement (GPP) campaign asks its members to purchase low-emission cement and steel in all public construction projects by 2030.[b]

Notes and Sources: a. For detailed information about the IDDI, see CEM (n.d.a); b. For detailed information about the GPP, see CEM (2021).

Transport

Transport accounts for about 14 percent of global GHG emissions, with road transport alone contributing about 10 percent (Minx et al. 2021). The sector is characterized by the ubiquity of the internal combustion engine and reliance on fossil fuels.[17]

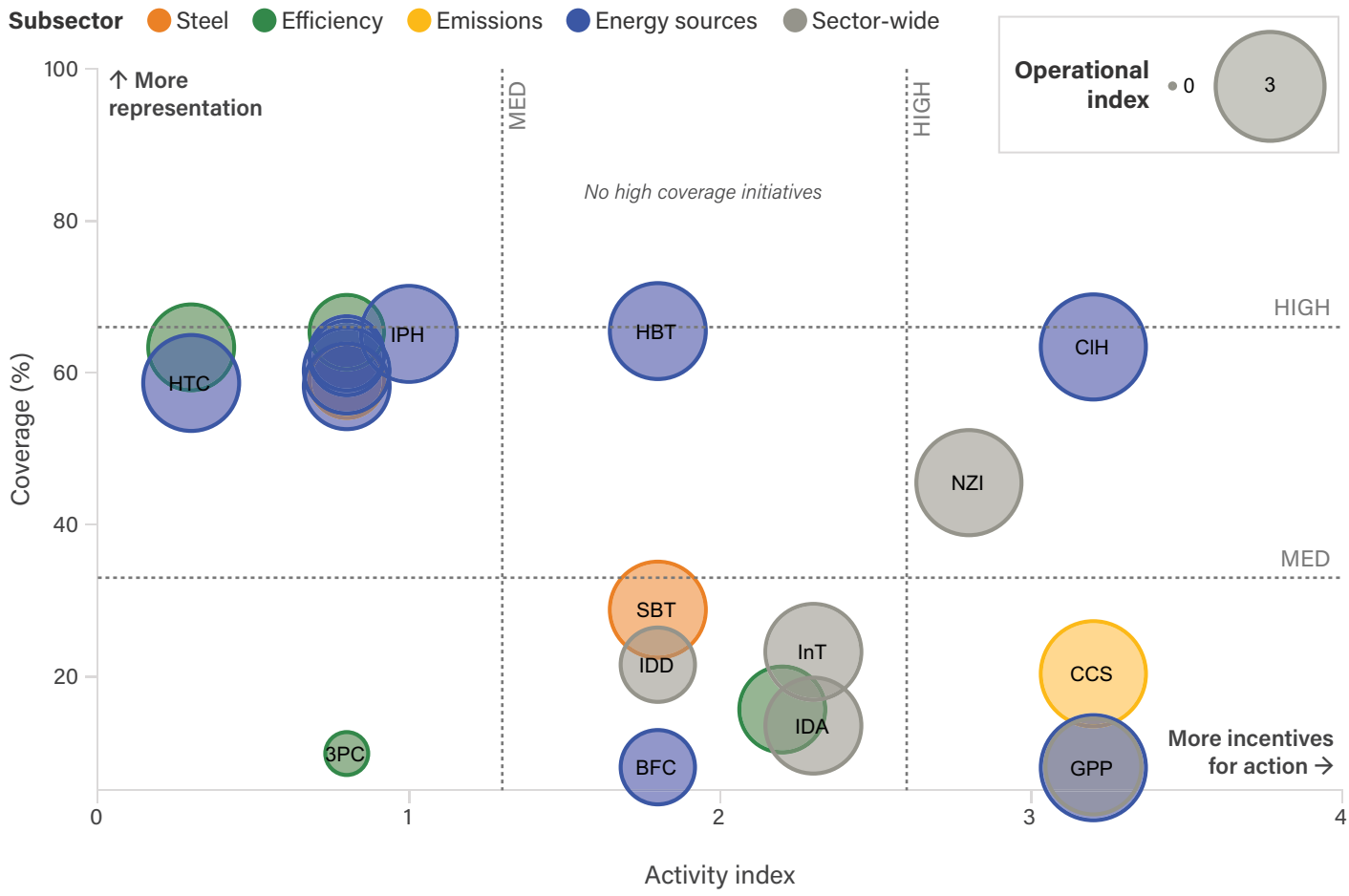
Key indicators to evaluate progress include the carbon intensity of land-based transport, the share of kilometers traveled by private passenger cars, the number of kilometers of rapid transit and bike lanes relative to population, and the share of various types of electric and fuel cell vehicles (CAT 2020; Boehm et al. 2022). Recent analysis suggests that benchmarks are off track or well off track and the share of kilometers traveled by passenger cars is moving in the wrong direction (Boehm et al. 2022).

The analysis comprised 19 initiatives, categorized into the following types:

- *Sector-wide:* 1 initiative to advance work on mobility and infrastructure
- *Vehicles:* 9 initiatives on zero-emission vehicles (ZEVs)
- *Fuels*: 9 initiatives on green hydrogen and biofuels

Table 3 summarizes the features of transport initiatives.

Figure 14 | **Landscape of cooperation on industry**



Note: See Appendix C for list of initiatives and their codes.

Sources: WRI authors; see Appendix A.

Participation and coverage

Initiatives specific to transport are characterized by low membership (7 members for the Transport Decarbonisation Alliance [see Box 4] and between 7 and 22 for ZEV-related initiatives). Most initiatives present medium and low coverage (58 percent and 37 percent, respectively). High coverage is exhibited by initiatives not exclusive to transport. The ZEV Transition Council and the CEM's Electric Vehicles Initiative cover about 50 percent of the global vehicle fleet. Finally, all but two initiatives present a low ratio of global membership to coverage, which indicates a potential for flexibility and influence. A combination of high coverage and a low membership-to-coverage ratio is exhibited by the Climate and Clean Air Coalition (CCAC) (69 percent; 0.54) and the CEM's Electric Vehicle Initiative (58 percent; 0.14)

Activity

Most initiatives are equally distributed between the low and medium levels of the index (42 percent each). Most initiatives aim to share knowledge and provide support to their members. There is also a relatively high presence of ZEV targets, including for the governments' own fleets.

Operational

Most initiatives (74 percent) fall within the high range of the index and only 5 percent within the low range. Champions and lead countries are used to promote action and increase coverage. As the main mechanism for transparency, all vehicle-related initiatives use sector-wide reports prepared centrally by an organization or the relevant secretariat.

Table 3 | **Overview of features for the transport sector**

RANGE OF THE INDEX		PERCENTAGE OF INITIATIVES
Coverage	High (66–100)	5
	Medium (33–66)	58
	Low (0–33)	37
Activity	High (2.6–4.0)	16
	Medium (1.3–2.6)	42
	Low (0.0–1.3)	42
Operational	High (2–3)	74
	Medium (1–2)	21
	Low (0–1)	5

Source: WRI authors.

Box 4 | **The Transport Decarbonisation Alliance**

The Transport Decarbonisation Alliance (TDA) aims to accelerate the transport sector transformation toward net zero emissions mobility by 2050. Its members include seven governments, and it advances work through various streams, including active mobility, charging infrastructure, education, and urban freight. The alliance is part of a set of 12 commitments made at the 2017 One Planet Summit in France.

Note: For more information on the TDA, see TDA n.d.

The cooperative efforts for the transport sector are presented in Figure 15, where initiatives are spread along coverage and activity. Except for the IPHE and the CCAC, all initiatives have been established in the last five years, which makes cooperation on ZEVs relatively new. In the figure, most vehicle-related initiatives feature toward the right-hand side (higher activity) with varying degrees of coverage, whereas the rest appear scattered. As noted above, the relatively high activity index of some initiatives results from ZEV-related targets. These include 100 percent ZEVs in government-owned fleets (aspirational for medium- and heavy-duty vehicles) by 2035 (2023 Zero-Emission Government Fleet Declaration), a 30 percent ZEV share of all new car sales by 2030 (the CEM's EV30@30 campaign), 100 percent ZEV truck and bus sales by 2040 (the CEM's commercial drive to net zero), and limiting car sales to only ZEVs by 2040 (2035 in leading markets) by the Zero Emissions Cars and Vans Declaration.

Options to enhance ambition in transport include the adoption of road maps and targets; shifting investments and financial support toward mass transport, urban concentration and urban planning, and electric vehicle infrastructure; policies to reduce dependency on private vehicles and increase ZEV uptake; the adoption of common standards; and enhanced R&D on batteries, fuel cells, and other ZEV-related technologies. Current cooperation is mostly concentrated around ZEVs and fuels; therefore, opportunities are found in expanding participation in ZEV targets, coordination of transport-related policies and standards, and increased R&D on ZEV-related technologies. The scarcity of sector-wide initiatives (i.e., relating to land planning and public transport) could be explained by the fact that these may be better suited to actors engaged at the subnational level, such as cities and states, which fall outside the scope of this working paper.

Buildings (residential and commercial sector)

Direct emissions from buildings (e.g., on-site fuel combustion and refrigerant leaks) account for roughly 5 percent of global emissions, a percentage that increases to 17 percent if indirect emissions from heating, cooling, and other energy use are added. The residential sector contributes about 70 percent of these emissions (Minx et al. 2021).

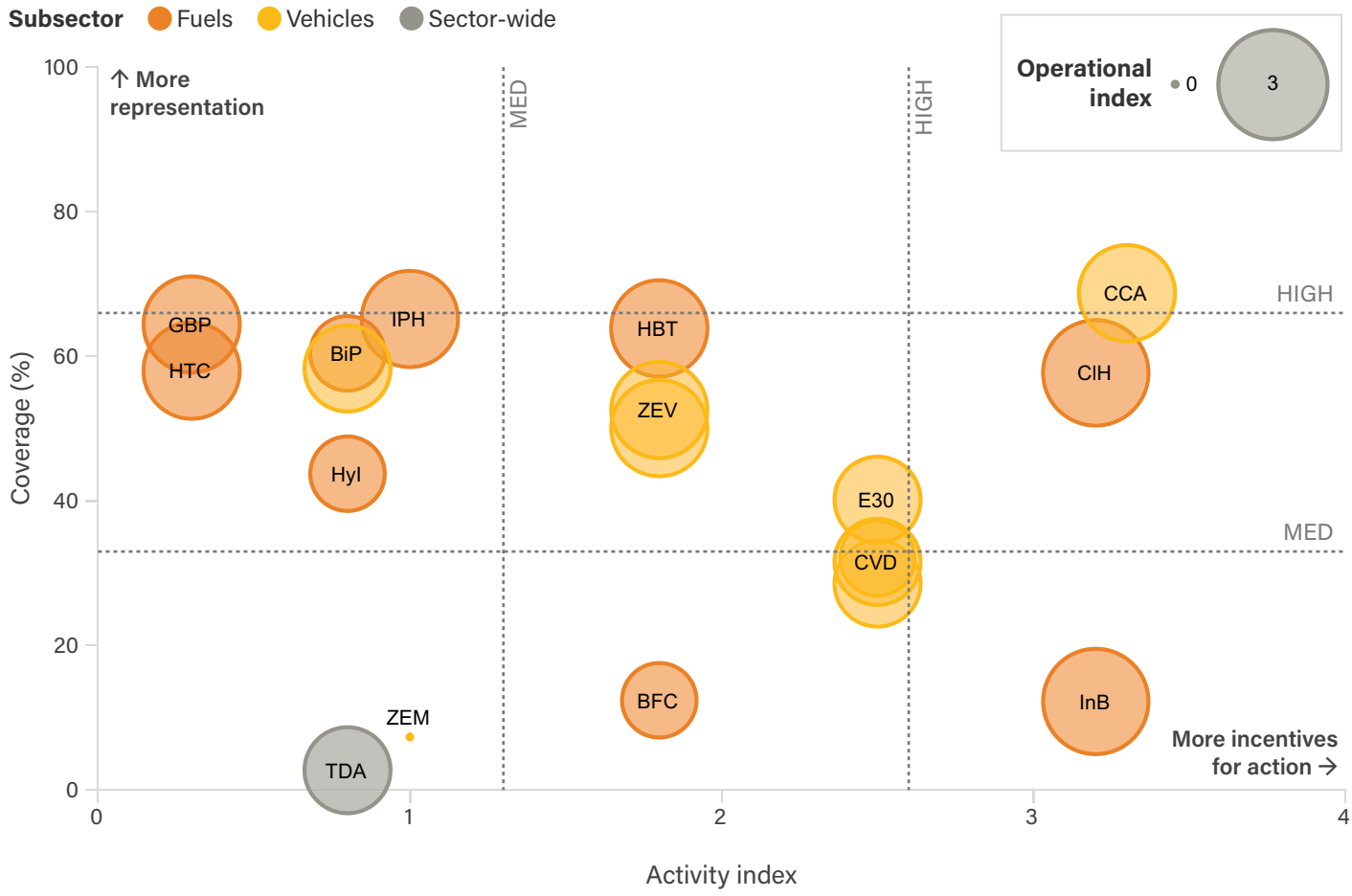
Indicators to evaluate progress include the carbon and energy intensity of buildings and the rate of building retrofitting. Although improvements in energy efficiency are currently off track, data to evaluate overall progress in the sector is insufficient (Boehm et al. 2022). However, demand for energy is increasing at a faster rate than efficiency improvement, and the use of gas in emerging economies is a major factor in rising emissions (IEA 2022a).

The analysis comprised 15 initiatives, categorized as follows:

- *Sector-wide:* 3 initiatives aimed at decarbonizing buildings
- *Efficiency:* 7 initiatives to advance work on energy efficiency
- *Energy sources*: 5 initiatives on biofuels, hydrogen, and geothermal energy

Table 4 summarizes the features of initiatives for the buildings sector.

Figure 15 | **Landscape of cooperation on transport**



Note: See Appendix C for list of initiatives and their codes.

Sources: WRI authors; see Appendix A.

Participation and coverage

The sector exhibits a large variability in membership of between 7 members (Product Efficiency Call to Action [PEC]) and 92 (21st Century Power Partnership), with a median of 23. Most initiatives (71 percent) fall within medium levels of coverage, with no initiatives exhibiting high levels. About 66 percent exhibit a ratio of global membership to coverage below one, which indicates flexibility and a potential for influence. No initiatives were found to combine both high coverage with a low membership-to-coverage ratio.

Activity

A large percentage of initiatives (64 percent) fall within the low range of the index because most are forums for knowledge-sharing, with a few providing technical and financial assistance. Higher index values for sector-wide and efficiency initiatives are found in the Buildings Breakthrough and the CEM's PEC (see Box 5).

Operational

Most initiatives (74 percent) fall within the high level of the index because most make use of champions and are supported by established secretariats. Transparency arrangements,

Table 4 | **Overview of features for the buildings sector**

RANGE OF THE INDEX		PERCENTAGE OF INITIATIVES
Coverage	High (66–100)	0
	Medium (33–66)	71
	Low (0–33)	29
Activity	High (2.6–4.0)	14
	Medium (1.3–2.6)	21
	Low (0.0–1.3)	64
Operational	High (2–3)	74
	Medium (1–2)	11
	Low (0–1)	5

Source: WRI authors.

however, are either absent or limited to centralized technical reports: for seven initiatives, no arrangements were found in the sources consulted.

Figure 16 provides an overview of cooperative initiatives for the buildings sector. Except for the IPHE, the CCAC, and the Global Bioenergy Partnership, all initiatives have been established in the last eight years. The figure shows a concentration of initiatives toward the left-hand side (i.e., low activity), with coverage below 60 percent. These correspond to efficiency-related forums that target knowledge and technology cooperation on appliances. Initiatives toward the center and right of the figure (i.e., medium to high activity) correspond to broader energy-related initiatives that are not exclusive to buildings. Higher index values are exhibited by PEC, albeit with low coverage, and broader ones on energy, including the CCAC (code *CCA*) and MI's Clean Hydrogen Mission (code *ClH*). Quantified targets include doubling the energy efficiency of indoor lighting, residential air conditioners, and refrigerators by 2030 (PEC) as well as a 3 percent annual increase in energy efficiency (Three Per Cent Club, 3PC). Otherwise, most work is centered on knowledge-sharing around technologies, evaluations of specific segments (e.g., indoor cooling), or regional or country-level reports on emissions and efficiency.

Options to promote the energy transition of buildings include adopting efficiency standards for construction, appliances, and heating as well as incentives to increase retrofitting rates. Cooperation initiatives are currently exploiting the potential of information exchange and technological cooperation as avenues for governments to acquire the knowledge necessary to set standards and regulations. With enhanced cooperation, governments could pursue the harmonization and adoption of standards; financial and technical mechanisms to support retrofitting, building modernization, and efficiency of appliances, including heating and cooling systems; and targets or bans for gas heating systems in new buildings (IEA 2022b).

Box 5 | **The Product Efficiency Call to Action**

Launched under the Clean Energy Ministerial's Super-Efficient Equipment and Appliance Deployment (SEAD) initiative in 2021, the Product Efficiency Call to Action (PEC) has the objective of doubling the energy efficiency of key products, including indoor lighting and residential air conditioners and refrigerators, by 2030. The campaign brings together participating governments, manufacturers, and financers to achieve this goal through policy, investment, aid, and diplomacy.

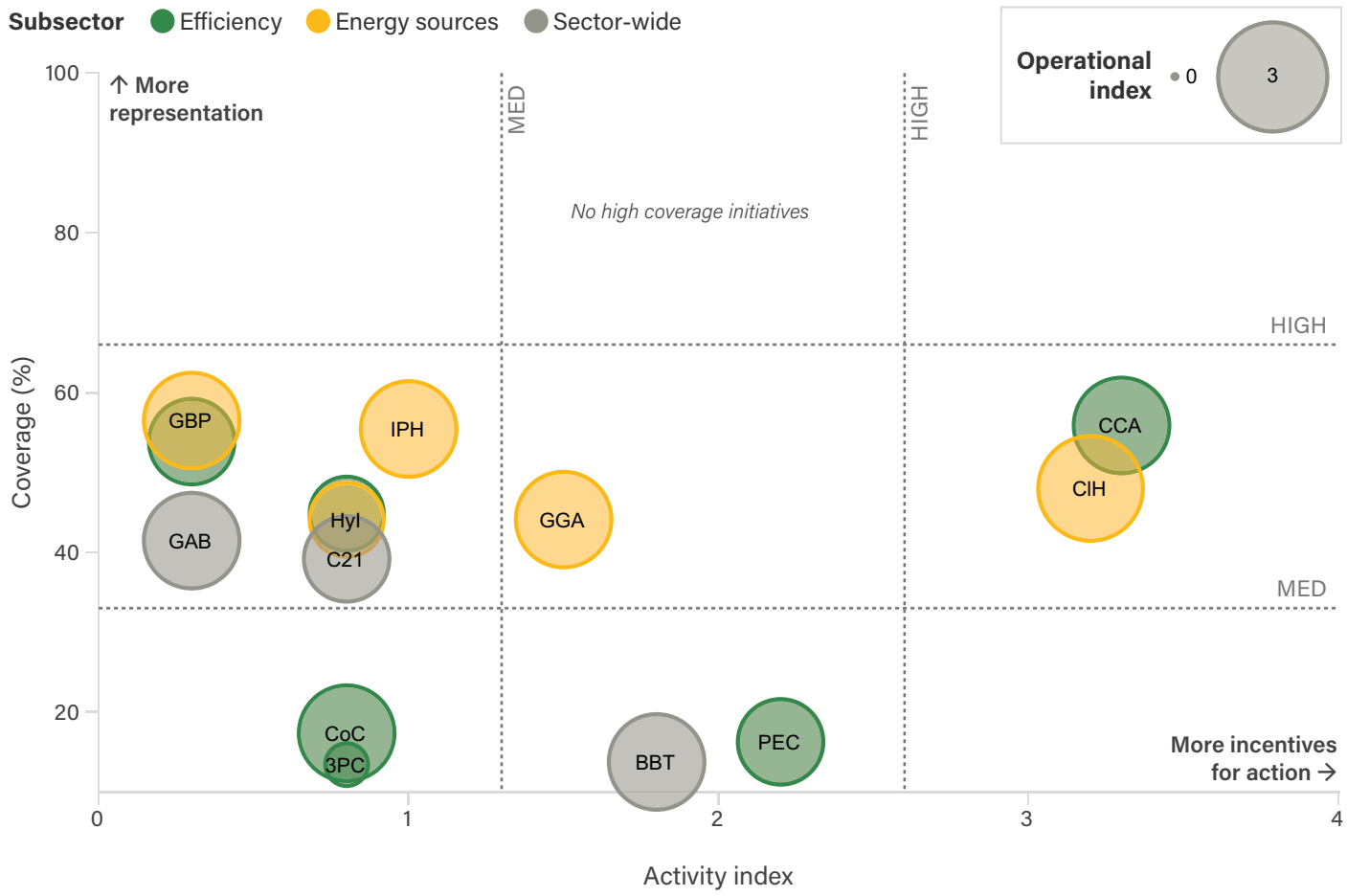
Note: For further information on SEAD and PEC, see CEM n.d.b.

Land use (forestry and agriculture)

Land use contributes about 22 percent of global GHG emissions, distributed roughly equally between agriculture and forestry. Within the sector, a substantial amount of emissions is offset by the uptake from existing forests; however, deforestation and land-use change account for about 6 percent of GHGs, with an additional 2 percent from croplands and burning biomass (Minx et al. 2021). In the last two decades, about 2.4 percent of global forest cover has been lost as a consequence of wildfires, shifting agriculture, and forest exploitation (Global Forest Watch 2023). Emissions from agriculture—a key source of global methane emissions—contribute about 9 percent of global emissions (Minx et al. 2021).

Indicators to evaluate progress include rates of deforestation and forest degradation as well as restoration of peatlands and mangrove areas. In the case of agriculture, they include the GHG intensity of agricultural production, the productivity of crops and meat, and behavioral indicators such as meat consumption and food loss and waste (CAT 2020; Boehm et al. 2022). As with other sectors, indicators show that, at best, progress in land use is stagnant, and the loss of coastal forested areas and the GHG intensity of agricultural production are moving in the wrong direction (Boehm et al. 2022).

Figure 16 | **Landscape of cooperation on buildings**



Note: See Appendix C for list of initiatives and their codes.

Sources: WRI authors; see Appendix A.

A complex set of interactions take place between natural systems and populations that go far beyond concerns with climate. Intergovernmental cooperation on forestry and agriculture is therefore complex and has been pursued for decades by bilateral and international organizations outside of the climate sphere. This paper considers only initiatives established by governments to pursue climate mitigation in land use. The analysis comprised 14 initiatives, categorized as follows:

- *Sector-wide:* 1 initiative on agricultural commodities and forest protection
- *Forestry:* 8 initiatives on deforestation and sustainable forest management
- *Agriculture:* 5 initiatives to reduce agricultural emissions

Table 5 summarizes the features of land-use initiatives.

Participation and coverage

Most initiatives gather a large number of members because they are global or regional pledges around deforestation and methane. The median membership is the highest of all the sectors at 42, with the largest initiatives being the Global Methane Pledge (149) and the Glasgow Leaders' Declaration on Forest and Land Use (140) (see Box 6). As regards coverage, most initiatives are equally distributed between the medium and low levels (36 percent and 43 percent, respectively). Except for one, all initiatives exhibit a ratio of membership to coverage below 1; however, large membership may reduce flexibility. A combination of high

coverage and a low membership-to-coverage ratio is only exhibited by the Forest, Agriculture, and Commodity Trade Dialogue (67 percent; 0.21).

Activity

About half of the initiatives fall within the medium range of the index, owing to the presence of collective agreements with global targets (five in total). The rest are distributed between the low and high levels.

Operational

About half of the initiatives fall within the higher levels of the index. However, forestry stands out as the category with the highest percentage of initiatives in the lower range. This is primarily due to the limited use of champions or well-established secretariats and weak or nonexistent transparency mechanisms.

Figure 17 provides an overview of cooperation on land use. Initiatives on forestry and agriculture are among the most established, with the Coalition for Rainforest Nations and the Global Methane Initiative having been in place for over 19 years. The sector is characterized by a wide variability of initiatives in terms of the three dimensions, so initiatives appear scattered in the figure. Three initiatives appear to the right (high activity), which include two pledges on methane emissions (the Global Methane Pledge and the CCAC) and one on deforestation (the recently established Forest and Climate Leaders' Partnership). Seven initiatives feature in the middle, most relating to forests and exhibiting varying levels of coverage, and two presenting very low values on the operational index. The last five initiatives, grouped on the left-hand side of the figure, correspond to knowledge and technical cooperation initiatives on all categories with relatively high levels of coverage. Worth highlighting in the sector is the presence of ambitious global targets: halting and reversing forest loss (see Box 6); ending the loss and degradation of natural forests by 2030; and eliminating or reducing deforestation linked to agriculture, infrastructure, and extracting industries well before 2030 (New York Declaration on Forests; code *NYF*) as well as those relating to methane, referred to earlier.

Options to enhance cooperation on land use include strengthening conservation policies and their enforcement,[18] particularly at the subnational level; boosting public and private finance for forests and other ecosystems in line with set targets; improving supply chain interventions (e.g., around soy and palm oil); increasing and redirecting support toward agricultural productivity and efficiency and pairing these efforts with those to protect and enhance carbon-rich ecosystems; and enhancing R&D investments—for example, in alternative proteins, breeding, reducing methane emissions from livestock, and fertilizers, among others. In view of their wide scope, these options are, in principle, captured by the initiatives evaluated; however, further research, including cooperation beyond climate change, is required to better understand the extent to which these options are being fully exploited. Although shared global pledges on deforestation and methane may constitute limited incentives

Table 5 | **Overview of features for the land-use sector**

RANGE OF THE INDEX		PERCENTAGE OF INITIATIVES
Coverage	High (66–100)	21
	Medium (33–66)	36
	Low (0–33)	43
Activity	High (2.6–4.0)	21
	Medium (1.3–2.6)	50
	Low (0.0–1.3)	29
Operational	High (2–3)	50
	Medium (1–2)	29
	Low (0–1)	21

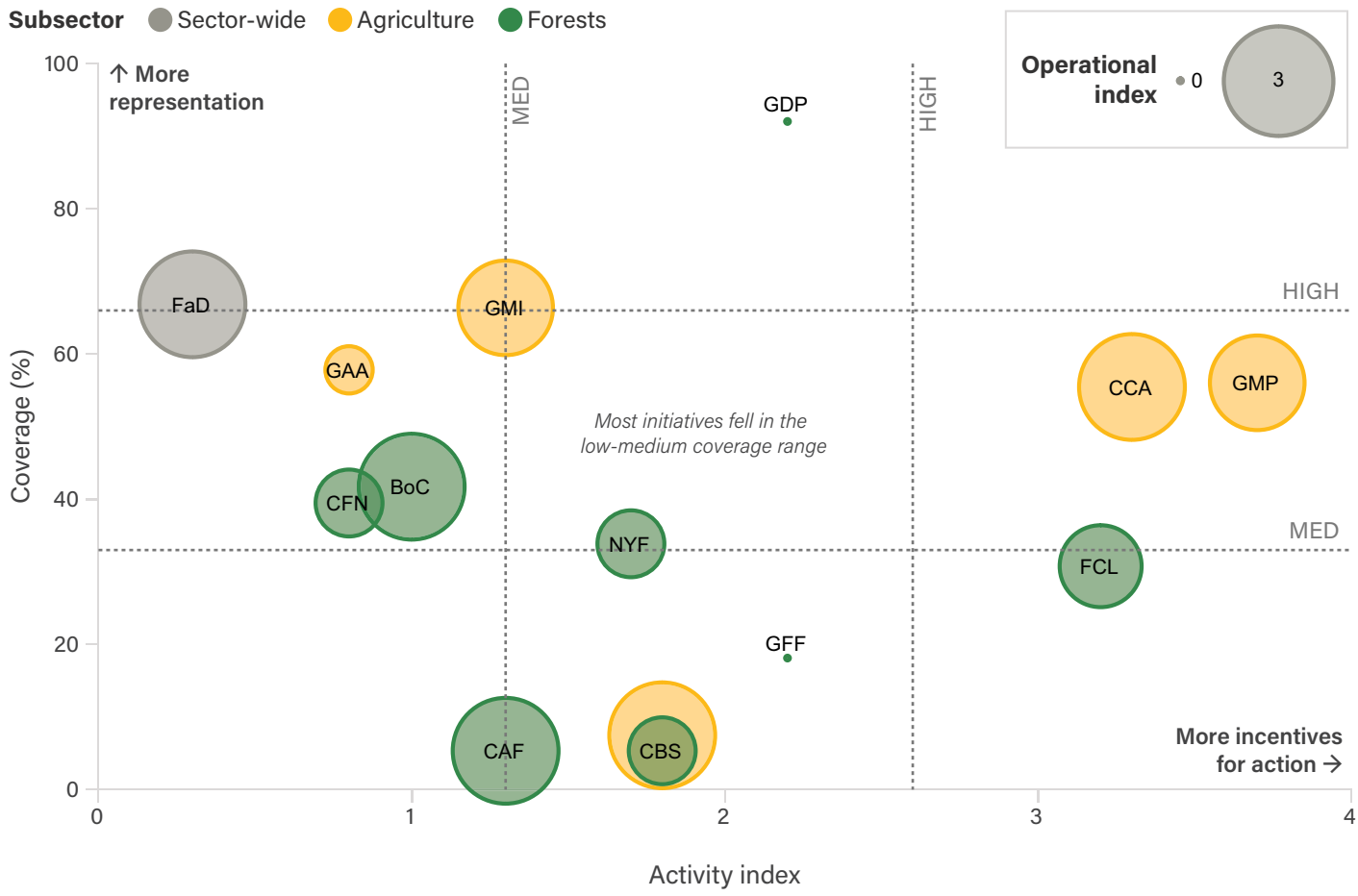
Source: WRI authors.

Box 6 | **The Glasgow Leaders' Declaration on Forest and Land Use**

At the 26th Conference of the Parties (COP26), 145 countries—representing 90.9 percent of global forest cover—pledged "to halt and reverse forest loss and land degradation by 2030."[a] In support of this pledge, 10 countries plus the European Union agreed to provide US$12 billion of public finance during 2021–25 under the Global Forest Finance Pledge.[b] As a further development, the Forest and Climate Leaders' Partnership was launched at COP27, through which 26 countries and the European Union have committed to play a leadership role in delivering the Glasgow declaration.[c] To achieve the pledge, recent studies suggest that the annual rate of deforestation must be reduced by more than 10 percent; however, in 2021 only a modest 6.3 percent was achieved.[d]

Sources: a. National Archives 2021a; b. National Archives 2021a; c. Cabinet Office and Sharma 2022; d. Forest Declaration Assessment Partners 2022.

Figure 17 | **Landscape of cooperation on land use**



Note: See Appendix C for list of initiatives and their codes.

Sources: WRI authors; see Appendix A.

for national action, these could be taken as political directions to guide cooperation on forests and agriculture outside the climate sphere.

Crosscutting (including finance)

Annual investments to enable global decarbonization of energy amount to trillions of dollars (IEA 2021b), with a large share required in the global South (IEA 2021a). In addition to the challenge of mobilizing capital, the transition will have significant distributional implications for economic actors, particularly workers whose living depends on high-emitting activities. How these issues are considered and managed will be a major determinant of the transition.

Initiatives that cut across sectors include those relating to general climate ambition, finance, and just transition. For climate ambition, benchmarks identified to evaluate progress include the aggregate effect of nationally determined contributions (NDCs), long-term strategies, and decarbonization road maps. For finance, benchmarks include total amounts of climate finance, the percentage of emissions covered by a carbon price (and the price level), and the level of fossil fuel subsidies. For just transition, these include the existence of relevant plans and policies, dialogue with workers, and reskilling plans (World Benchmarking Alliance 2021). The latest assessments indicate that benchmarks are off track or well off track. Lack of progress is manifested in the sizable shortfall in ambition in current NDCs (UNFCCC 2022); the design failings of net zero targets (CAT 2022); the low levels of climate finance, which reached

US$850 billion in 2021 (Naran et al. 2022); and the percentage of GHGs covered by carbon pricing instruments (25 percent) together with low carbon prices (World Bank 2022).

The analysis comprised 19 initiatives, categorized as follows:

- *Global ambition:* 6 initiatives addressing NDCs and long-term decarbonization
- *Finance and trade:* 8 initiatives on financial policy, trade,[19] procurement, and carbon pricing
- *Social:* 4 initiatives focused on gender and equity[20]
- *Other:* 1 initiative on critical minerals

Table 6 summarizes the features of crosscutting initiatives.

Participation and coverage

Owing to the variety of issues dealt with, crosscutting initiatives show wide variability in terms of membership, from 4 (Empowering People and the CEM) to 117 (NDC Partnership), with a median of 13.5. Overall, the sector is characterized by its low coverage because 76 percent of initiatives fall within the low levels. Medium to high coverage is exhibited by initiatives on finance, trade, and ambition, which have attracted a relatively high number of governments (each category gathers about 11 percent of initiatives). Finally, all but 5 initiatives exhibit a ratio of membership to coverage below 1, which could indicate flexibility and a potential for influence. A combination of high coverage and a low ratio of membership to coverage is exhibited by the Coalition of Trade Ministers on Climate Change (67 percent; 0.41) and the Greening Government Initiative (60 percent; 0.33).

Activity

Crosscutting initiatives fall within the low levels of the activity index owing to a combination of lack of targets and prevalence of knowledge-sharing as the main aim. In fact, about half of initiatives fall within the low range, and no initiatives fall within the high range.

Operational

Over 80 percent of the initiatives fall within the medium to high range of the index. Champions and secretariats are widely used. However, as with other sectors, transparency arrangements were found to be weak, and for over half of the initiatives, no evidence of transparency mechanisms was found in the sources consulted.

Figure 18 provides an overview of intergovernmental cooperation on finance and other crosscutting issues. Initiatives that have been in place for over 10 years include the International Carbon Action Partnership (code *ICA*) and the Friends of Fossil Fuel Subsidy Reform (code *FFS*); all other initiatives are relatively recent. Figure 18 shows that, except for four, all initiatives are grouped in the lower portion of the quadrant (low values for coverage and low to medium values on the activity index). Most correspond to small campaigns; knowledge-sharing initiatives; and initiatives on net zero targets, trade, and government operations. Initiatives exhibiting higher coverage and medium to low values on the activity index consist of one global initiative

Table 6 | **Overview of features for crosscutting initiatives**

RANGE OF THE INDEX		PERCENTAGE OF INITIATIVES
Coverage	High (66–100)	11
	Medium (33–66)	11
	Low (0–33)	78
Activity	High (2.6–4.0)	0
	Medium (1.3–2.6)	47
	Low (0.0–1.3)	53
Operational	High (2–3)	32
	Medium (1–2)	47
	Low (0–1)	21

Source: WRI authors.

Box 7 | The Coalition of Finance Ministers for Climate Action

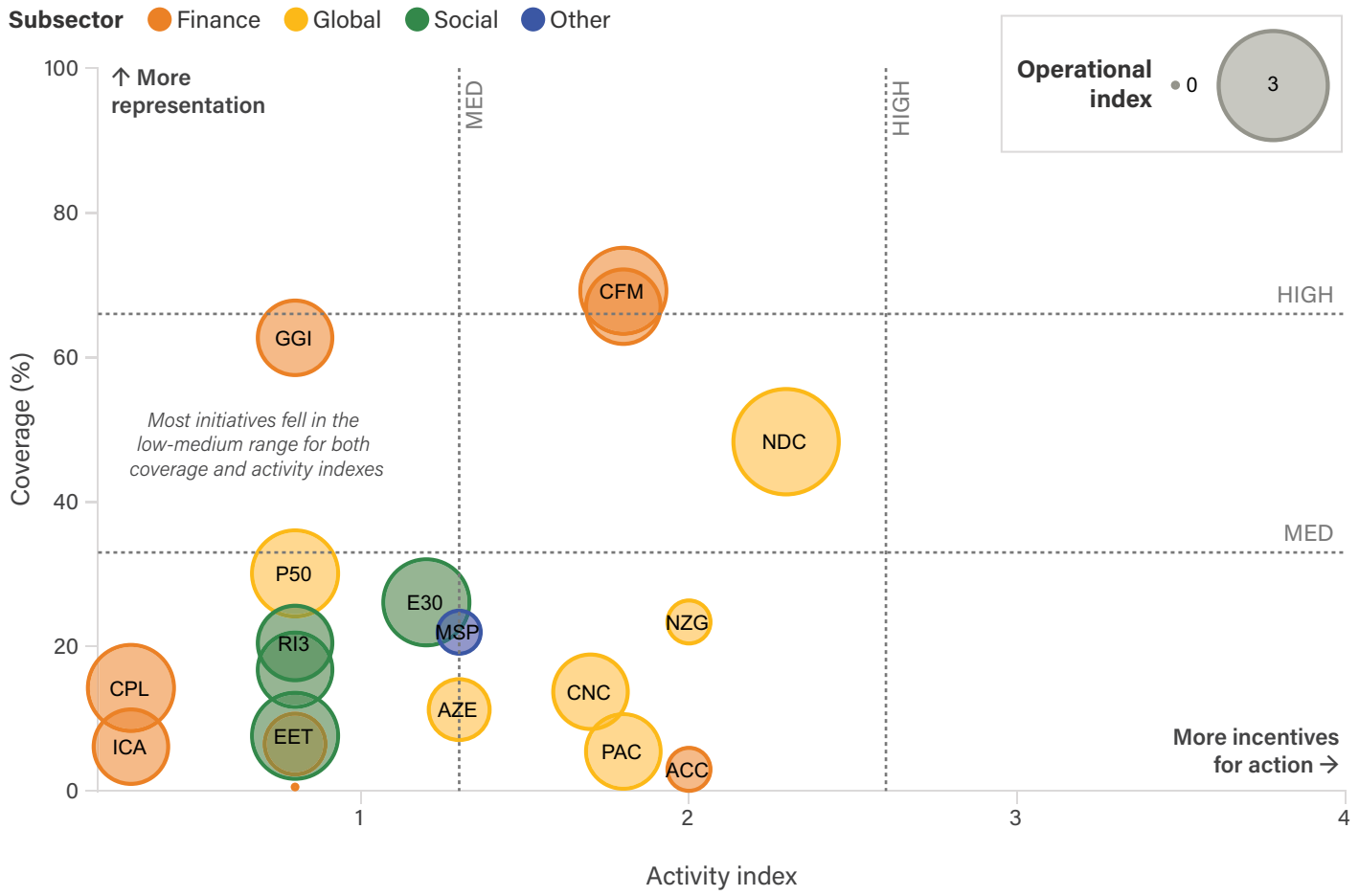
Economic and finance policymakers from 88 countries, representing 67 percent of global public spending and 28 percent of global fossil fuel subsidies, use the Coalition of Finance Ministers for Climate Action to share experiences and facilitate the adoption of best practices and policies for low-carbon and climate-resilient growth. The coalition follows six principles,[a] which include aligning policies with the Paris Agreement; sharing experiences and expertise; working toward measures for carbon pricing; and taking climate into account in macroeconomic policy, fiscal planning and public procurement, and investment. It serves primarily as a forum for the exchange of information, whereby institutional partners share their knowledge and technical capacity on the links between economic policy and climate change with governments.

Note: a. For a description of the principles, see the Coalition of Finance Ministers for Climate Action n.d.

(NDC Partnership); one relating to government operations; and two ministerial, one on trade and one on finance (see Box 7). The only country-based agreement is the Agreement on Climate Change, Trade and Sustainability (code *ACC*), which features toward the right, albeit exhibiting low coverage. Only one quantitative target has been identified: the CEM's Equal by 30 campaign, which aims to achieve equal pay, equal leadership, and equal opportunities for women in the clean energy sector by 2030.

Governments can enhance cooperation on crosscutting issues by improving the benchmarks referred to at the beginning of the section, for example, more engagement in long-term strategies and decarbonization maps or increasing the level of climate finance and the adoption of carbon pricing instruments. A great deal of action in scaling up climate finance and ambition is taking place through bilateral means, such as sector-specific cooperation (i.e., JEPTs), or international and regional development banks and recent processes to scale-up climate finance (e.g., the World Bank's Evolution Roadmap[21] or the Bridgetown Initiative[22]). Beyond these, the principles agreed under the Coalition of Finance Ministers for Climate Action suggest pursuing "whole-of-economy" policies, such as green procurement; fiscal measures, such as setting a floor price for carbon (Chateau, Jaumotte, and Schwerhoff 2022); or repurposing fossil fuel subsidies.[23] Scaling up climate finance to support the global South will also be key for dealing with debt and tight fiscal positions and ensuring a just transition for the workforce and disadvantaged communities.

Figure 18 | **Landscape of cooperation on crosscutting issues**



Note: See Appendix C for list of initiatives and their codes.

Sources: WRI authors; see Appendix A.

Overview across sectors

Table 7 summarizes the landscape of features across the sectors evaluated in this working paper, where the highest values appear in a darker shade. The table shows the following:

- Participation and coverage vary significantly from sector to sector and initiative to initiative, with most gathering members that account for about half of the values of the indicators used to evaluate coverage. No initiatives on industry and buildings were found to bring a sizable group of members in terms of the relevant emissions, and most crosscutting initiatives cover only a small portion of the relevant indicator.
- As stated in the introduction, most initiatives aim to share knowledge, which, according to our methodology, is an important factor behind the rather low values of the index. Over half of all crosscutting and buildings initiatives present low index values.
- Finally, the landscape of cooperation seems to enjoy an adequate level of operational features because secretariats and champions are widely present. This is reflected in the fact that, except for crosscutting, most enjoy high index values. As noted throughout the document, transparency is a weak spot.

An important caveat is that initiatives may evolve over time by, for example, increasing membership and/or strengthening design. Initiatives such as the Global Methane Pledge were established with set targets, but others, such as the CEM, launch campaigns that may include targets. Furthermore, recent initiatives are yet to specify many of their features. These dynamics fall outside the scope of the working paper and could be the subject of further updates.

CONCLUSIONS AND RECOMMENDATIONS

Addressing climate change is a complex and multifaceted challenge, leading to a diverse array of cooperative efforts. This has resulted in a fragmented landscape characterized by varying scopes, objectives, and approaches and described as an "ungodly mess" (Patrick 2015). Although participation in these initiatives is widespread, developed countries and some emerging economies dominate the arena. However, at the initiative level, only a handful of initiatives manage to pull together a representative group of governments capable of driving transformative change across most sectors.

Several authors have noted the risk of existing platforms becoming stuck in incremental (Mourier 2020) or symbolic action (Falkner, Nasiritousi, and Reischl 2022). This working paper illustrates that most initiatives are tilted toward the sharing of knowledge, with only a few identifying targets, setting reciprocal obligations to implement policy, and/or making available robust mechanisms of support and transparency.

Table 7 | **Overview of features across all sectors**

	Coverage (%)			Activity index (%)			Operational index (%)		
Sector	High (66–100)	Medium (33–66)	Low (0–33)	High (2.6–4.0)	Medium (1.3–2.6)	Low (0.0–1.3)	High (2–3)	Medium (1–2)	Low (0–1)
Energy supply	15	41	44	26	35	38	62	29	9
Industry	0	55	45	23	32	45	68	27	5
Transport	5	58	37	16	42	42	74	21	5
Buildings	0	71	29	14	21	64	79	14	7
Land use	21	43	36	21	50	29	50	29	21
Crosscutting	11	11	79	0	47	53	32	47	21

Source: WRI authors.

The current failure of global efforts to limit global warming signals that national and cooperative action are not delivering and that both must be strengthened. This is further confirmed by efforts at the sectoral level, where progress is inadequate or, in some cases, going in the wrong direction.

Cooperation between governments, including with the participation of NSAs, will continue to be a key component of global climate action. The current infrastructure provides a good basis because it brings many governments to the table, covers all sectors, and—in very broad terms—addresses the right issues. From a design point of view, the following are some of the proposals to make intergovernmental cooperation more effective:

- Take a bold step into action-oriented cooperation or, in other words, move from exchanging knowledge or "shallow coordination" toward "deeper cooperation" (Keohane and Victor 2016) through reciprocal agreements to design and implement policies, increase investment, deepen financial cooperation, and/or expand technology development and transfer.
- Agree on political goals for sectoral and technology decarbonization, identify benchmarks, adopt science-based targets, and develop road maps to guide sectoral transformation.
- Strengthen mechanisms to provide technical and financial assistance to members, as well as the operational infrastructure, particularly mechanisms for transparency because they are the basis for accountability.
- Actively seek and provide funding for the participation of a critical mass of governments, with a strong emphasis on the global South. For the latter, the right incentives for participation should be developed based on their priorities and limitations. Equally important would be supporting the development and establishment of proposals for cooperative arrangements coming from these countries.

FURTHER WORK

This working paper has provided an initial description of intergovernmental cooperation, aiming to develop baseline information and approaches to enable understanding of the effectiveness of intergovernmental cooperation. Its preparation has revealed that little is understood of this landscape. The following are some proposals for further research:

- Expand the landscape to cover adaptation and resilience.
- Explore in more detail regional engagement, in particular the engagement of major emitters and other developing countries and the factors that limit or incentivize their engagement.
- Deepen the analysis of sectors by, for example, undertaking a comparative and gap analysis of objectives, issues, and targets and defining *critical mass* and factors that determine it.
- Develop and apply methods to evaluate the actual effectiveness and impact of features of cooperation and cooperative arrangements across sectors in terms of enhancing national ambition in relation to the aims of the Paris Agreement.

APPENDIX A. INDICATORS

Table A-1 provides an overview of the indicators used to estimate coverage of the different initiatives.

Table A-1 | **Indicators and data sources to evaluate coverage**

	INDICATORS	DATA YEAR	DATA SOURCE
Energy supply	Sector-wide: energy GHGs	2019	CAIT
	Generation: electricity/heat GHGs	2019	CAIT
	Coal: coal installed capacity	2022	Global Energy Monitor
	Gas flaring: gas flaring	2021	World Bank database
	Oil and gas: gas reserves	2020	EIA
	Oil and gas: oil reserves	2020	BP
	Industry: industrial processes GHGs	2019	CAIT
	Buildings: building GHGs	2018	CAIT
Transport	Fuels: transport GHGs	2019	CAIT
	Vehicles: total vehicle fleet	2015	OICA
Land use	Sector-wide: Land use GHGs	2019	CAIT
	Forests: forested lands	2021	World Bank database
	Agriculture: agricultural emissions	2019	CAIT
Crosscutting	Finance: fossil fuel subsidies	2018	IMF database
	Finance (trade): size of exports	2020	World Bank database
	Finance (trade): size of imports	2020	World Bank database
	Finance: government consumption	2020	World Bank database
	Social and global: total GHGs	2019	CAIT

Notes: CAIT = Climate Analysis Indicators Tool; EIA = Energy Information Administration; GHG = greenhouse gas; IMF = International Monetary Fund; OICA = Organisation Internationale des Constructeurs d'Automobiles (International Organization of Motor Vehicle Manufacturers).

APPENDIX B. ANALYTICAL APPROACH

To characterize the intergovernmental cooperation ecosystem, the authors extracted a set of features from analyses and arrangements proposed in the literature and classified them as *action related, operational,* or *participatory*. The literature did not include a list of such features, so the selection was based on what the authors considered to be most important; also, the goal was to compile a small set for a simple analysis. The features were classified into three dimensions:

- Coverage: The extent to which the initiative brings a representative set of countries
- Activity: Elements that provide an incentive for countries to act
- Operational: The mechanisms in place to support action by members

Indexes were created to assign values to the different activity and operational features. These values reflect the expected impact, based on our judgment, that the details of each feature could have in promoting effective cooperation. They are not meant to evaluate the actual impact on the ground.

Coverage

The size and composition of cooperative initiatives are key determinants of impact and effectiveness (Hovi et al. 2019), also generally referred to as "critical mass" (see Unger, Mar, and Gurtler 2020; Stern and Lankes 2022). In this working paper, we use the term *coverage* as a proxy for *critical mass*. *Coverage* refers to the share that members of a given initiative represent of global levels of a given indicator. The indicators were chosen based on the relevant sector and the aim of the initiative (see Appendix A). For example, in the case of the energy supply sector, the electricity/heat emissions indicator was selected for renewable energy initiatives. Coverage for this example is evaluated according to the following formula:

$$Cov = \frac{Sum\ of\ each\ member's\ share\ of\ the\ relevant\ indicator\ (e.g., transport\ emissions)}{Global\ total\ of\ the\ relevant\ indicator\ (e.g., global\ transport\ emissions)}$$

Activity index

The index is composed of four features, with no weights assigned and all normalized to 1 (e.g., maximum value is 4) in accordance with the following equation:

$$DC_i = \frac{Aim}{3} + \frac{Targets}{3} + support + \frac{Level}{2}$$

The tables below describe the assignment of values to each feature.

As noted above, the set of features were identified based on proposals for cooperative arrangements found in the literature. The scoring refers to the *potential impact* and not *actual impact*. Higher values imply higher incentives for individual members to act. By design, country-level agreements commit individual members to achieve predetermined outcomes, whereas collective ones do the same for the group, thereby limiting the incentive for each member. Knowledge-based initiatives, in contrast, do not commit members to deliver any outcomes. The hierarchy has been adapted from Keohane and Victor (2016), who categorize different types of arrangements according to their potential for impact, whether they establish universal agreements with individual targets and deadlines, promote the coordination of policy, or focus on information exchange. It also

Table B-1 | **Aim**

OVERALL AIM[a]	MAIN OBJECTIVE/FOCUS OF WORK	INDEX POINTS
Knowledge-based agreements	A group of countries that develop or share knowledge, experiences, and lessons learned on policies and other measures	1
Collective agreements	A group of countries that join under a shared commitment through the signature of a document or some other formality, such as a memorandum of understanding (MoU) or a declaration; individual country contributions are not specified	2
Country-level agreements	A group of countries that agree to country-level commitments, such as policies or targets, through the signature of a document of some other formality, such as an MoU or a declaration	3

Note: a. In most cases, higher-level initiatives may include those below (e.g., collective agreements may also include efforts to share knowledge).

Source: WRI authors.

considers the functions of climate governance listed in Oberthür, Hermwille, and Rayner (2021). It should be noted, that, in practice, knowledge-based initiatives could provide incentives for action if governments are represented by people with the capacity to absorb information and the authority to apply it at home. In contrast, governments may decide not to deliver on a promised pledge or find difficulties in achieving an agreed target. In this context, further work would be needed to understand the actual impact of the features proposed in this working paper.

The adoption of targets could promote action by the initiative and its members to the extent that these are additional to existing commitments (see Widerberg and Pattberg 2015). This feature is not meant to judge the value or level of the target against a set benchmark because the analysis of impact is outside of the scope of the working paper. Rather, it aims to capture a design element of the target itself, which is the "level or resolution" of the target. A higher value is attributed to broader targets because it is implied that the incentive for action is also broader; for example, a project-related target that constrains the incentive to a project as opposed to a target that is applied to a technology or a sector. In principle, it would be possible for a target pertaining to a single gas (e.g., sulfur hexafluoride) to encompass fewer emissions than one pertaining to a high-emitting technology (e.g., coal), but this is not the case within the inventory of initiatives we compiled. The only gas-specific target in the initiatives we sampled pertains to methane. The categories used were derived from the inventory of targets and are not based on the literature.

This feature corresponds to support that can be deployed for the members of an initiative to participate or undertake work relating to the objectives of the initiative, also referred to as "means of implementation" (see Oberthür, Hermwille, and Rayner 2021). Such support generally takes the form of dedicated funds or a devoted team of experts able to provide technical inputs as requested under the initiative.

Level of engagement was identified as a feature after sampling initiatives and was not based on the literature consulted.

Table B-2 | **Targets**

SCOPE OF TARGET	DESCRIPTION	INDEX POINTS
None	No evidence of targets was found	0
Products/ projects	The initiative has identified a target that is applicable to a particular product (e.g., efficiency of air conditioners) or is expressed in terms of projects	1
Technology/ practice	The initiative has identified a target that is applicable to a source, technology, or practice (e.g., coal, solar energy, or reforestation)	2
Sector/gas	The initiative has identified a target that is applicable to a whole sector (e.g., peak emissions from electricity/heat) or a gas (e.g., methane emissions)	3

Source: WRI authors.

Table B-3 | **Support to members**

TYPE OF SUPPORT AVAILABLE	DESCRIPTION	INDEX POINTS
None	No evidence was found of dedicated financial or technical support to members	0
Financial or technical support	The initiative has established *either* a set of funds or a dedicated pool of experts to support members	0.5
Financial and technical support	The initiative has established *both* a set of funds and a dedicated pool of experts to support members	1

Source: WRI authors.

Table B-4 | **Level of engagement**

TYPE	DESCRIPTION	INDEX POINTS
Open	Activities are set from the outset and do not require recurrent high-level engagement	0
Director and above	Activities are set from the outset but require high-level engagement, at least at the director level	1
Ministerial and above	Activities are primarily advanced through the guidance of ministers and above	2

Source: WRI authors.

Operational index

The index is composed of three features based on Widerberg and Pattberg (2015), with no weights assigned and all normalized to 1 (e.g., maximum value is 3) in accordance with the following equation:

$$OI_i = \frac{Admin.\,support}{2} + \frac{Transparency\ mech.}{2} + Champions$$

The tables below describe the assignment of values to each feature.

Table B-5 | **Administrative support**

TYPE	DESCRIPTION	INDEX POINTS
None	No evidence of arrangements was found	0
Single coordinator	Staff provided by an organization in the form of a full-time or part-time coordinator and/or other staff on a part-time basis	1
Dedicated secretariat	Dedicated full-time staff with an administrative structure, steering committees, and other related bodies	2

Source: WRI authors.

Table B-6 | **Transparency mechanisms**

TYPE	DESCRIPTION	INDEX POINTS
None	No evidence of mechanisms was found	0
Centralized reports	Centralized reports prepared by an organization that provide an overview of the landscape relevant to the initiative, with or without information from the members	1
Monitoring and evaluation (M&E)	Well-developed M&E frameworks with theories of change, results frameworks, and reporting processes	2

Source: WRI authors.

Table B-7 | **Champions**

TYPE	DESCRIPTION	INDEX POINTS
None	No evidence of champions was found	0
Champions	An identified figure(s) with leadership responsibilities in the form of a champion, coordinator, or chair, and charged with mobilizing action internally and expanding activity and coverage	1

Source: WRI authors.

APPENDIX C. LIST OF INITIATIVES AND CODES USED

Stand-alone initiatives

- Agreement on Climate Change, Trade and Sustainability (ACC)
- Asia Zero Emission Community (AZE)
- Beyond Oil and Gas Alliance (BOG)
- Bonn Challenge (BoC)
- Carbon Neutrality Coalition (CNC)
- Carbon Pricing Leadership Coalition (CPL)
- Carbon Sequestration Leadership Forum (CSL)
- Central African Forest Initiative (CAF)
- Climate and Clean Air Coalition (CCA)
- Coalition for Rainforest Nations (CFN)
- Coalition of Finance Ministers for Climate Action (CFM)
- Coalition of Trade Ministers on Climate (TrM)
- Congo Basin Joint Donor Statement (CBS)
- Cool Coalition (CoC)
- Energy Efficiency Hub (IEE)
- Energy Transition Council (ETC)
- Forest, Agriculture and Commodity Trade Dialogue (FaD)
- Forest and Climate Leaders' Partnership (FCL)
- Friends of Fossil Fuel Subsidy Reform (FFS)
- Global Alliance for Buildings and Construction (GAB)
- Global Bioenergy Partnership (GBP)
- Global Coal to Clean Power Transition Statement (GCG)
- Global Deforestation Pledge (GDP)
- Global Forest Finance Pledge (GFF)
- Global Gas Flaring Reduction Partnership (GFR)
- Global Geothermal Alliance (GGA)
- Global Methane Initiative (GMI)
- Global Methane Pledge (GMP)
- Global Offshore Wind Alliance (GWA)
- Global Research Alliance on Agricultural Greenhouse Gases (GAA)
- Green Grids Initiative (GGI)
- Greening Government Initiative (GGI)
- G7 2030 Nature Compact (G7N)
- Hydrogen TCP (HTC)
- Industrial Decarbonisation Agenda (G7) (IDA)
- Industry Transition (InT)
- International Carbon Action Partnership (ICA)
- International Partnership for Hydrogen and Fuel Cells in the Economy (IPH)
- International Solar Alliance (ISA)
- Joint Declaration of Energy Importers and Exporters on Reducing Greenhouse Gas Emissions from Fossil Fuels (JDE)
- Just Energy Transition Partnership (JET)
- Minerals Security Partnership (MSP)
- NDC Partnership (NDC)
- Net-Zero Government Initiative (NZG)
- New York Declaration on Forests (NYF)
- Partnering for Green Growth and the Global Goals 2030 (P4G)
- Partnership for Transatlantic Energy and Climate Cooperation (PTE)
- Platform for Accelerating the Circular Economy (PAC)
- Powering Past Coal Alliance (PPC)
- REN 21 (R21)
- Three Per Cent Club (3PC)
- Transport Decarbonisation Alliance (TDA)
- 2050 Pathways Platform (P50)
- Zero Emissions Cars and Vans (ZEM)
- Zero Routine Flaring by 2030 (Z30)
- ZEV Transition Council (ZEV)

CEM initiatives

- Biofuture Campaign (BFC)
- Biofuture Platform (BiP)
- Carbon Capture Utilization and Storage Initiative (CCU)
- Electric Vehicles Initiative (EVI)
- Empowering People (EmP)
- Equal by 30 campaign (E30)
- Equality in Energy Transitions (EET)

- EV30@30 (E30)
- Flexible Nuclear Campaign[24] (FNC)
- Hydrogen Initiative (HyI)
- Investment and Finance (InF)
- Global Commercial Vehicle Drive to Zero campaign (CVD)
- Global Memorandum of Understanding on Zero-Emission Medium- and Heavy-Duty Vehicles (MZE)
- Green Public Procurement Campaign (GPP), launched under IDD
- Industrial Deep Decarbonisation Initiative (IDD)
- Nuclear Innovation Clean Energy (NuI)
- Power System Flexibility Campaign[25] (PSF)
- Product Efficiency Call to Action (PEC), launched under SEE
- Regional and Global Energy Interconnection Initiative (RGE)
- Research Impacts on Social Equity and Economic Empowerment (RI3)
- Super-Efficient Equipment and Appliance Deployment (SEE)
- Transforming Solar Supply Chains (SSC)
- 21st Century Power Partnership (C21)
- 2023 Zero-Emission Government Fleet Declaration (Z23)

Mission Innovation initiatives

- Carbon Capture and Storage (CCS)
- Clean Hydrogen (ClH)
- Green Powered Future (GPF)
- Integrated Biorefineries (InB)
- Net-Zero Industries (NZI)

Breakthrough Agenda initiatives

- Agriculture Breakthrough (ABT)
- Buildings Breakthrough (BBT)
- Hydrogen Breakthrough (HBT)
- Power Breakthrough (PBT)
- Road Transport Breakthrough (RBT)
- Steel Breakthrough (SBT)

APPENDIX D. LIST OF QUANTITATIVE TARGETS

INITIATIVE	TARGET	LEVEL
Beyond Oil and Gas	End new concessions, licensing, or leasing rounds for oil and gas production and exploration	Sector
Biofuture Campaign (CEM)	Substitute bio- and waste-based fuels, chemicals, and materials for 10 percent of their fossil carbon equivalent in relevant sectors and products by 2030, relative to 2019	Sector
Bonn Challenge	Restore 150 million hectares of degraded and deforested landscapes by 2020 and 350 million hectares by 2030	Technology/ practice
Carbon Dioxide Removal (MI)	A collective goal of US$100 million for carbon dioxide removal pilots and demonstrations by 2025	Products/ projects
Carbon Dioxide Removal (MI)	Six countries to fund at least one project that removes 1,000+ $MtCO_2$ per year by 2025	Products/ projects
Carbon Dioxide Removal (MI)	Net reduction of 100 $MtCO_2$ per year globally by 2030	Technology/ practice
Carbon Sequestration Leadership Forum	Monitor achievement of IEA scenarios for CCS; by 2030, increase isolation by a factor of 10–15 from the 2020 level of 40 $MtCO_2$ per year; by 2050, increase isolation and storage by a factor of 100 or more from the 2020 level of 40 $MtCO_2$ per year	Technology/ practice
CCAC	Reach 10 parts per million of sulfur in fuels by 2025 globally	Products/ projects
CCAC	Reduce methane emissions 45 percent by 2025 and 60–75 percent by 2030	Sector
CCAC	Eliminate fine particle and black carbon emissions from new and existing heavy-duty diesel vehicles and engines	Technology/ practice
CCAC	Decrease black carbon emissions by preventing the open burning of waste and working to achieve universal waste collection by 2025	Sector
Clean Hydrogen (MI)	Deliver at least 100 large-scale, integrated clean hydrogen valleys worldwide by 2030	Products/ projects
Clean Hydrogen (MI)	Reduce end-to-end costs to two dollars per kilogram by 2030	Technology/ practice
Congo Basin Joint Donor Statement	Finance at least US$1.5 billion between 2021 and 2025 to support ambitious efforts and results in the region to protect and maintain the Congo Basin forests, peatlands, and other critical global carbon stores	Sector
Equal by 30 (CEM)	Achieve equal pay, equal leadership, and equal opportunities for women in the sector by 2030	Sector
EV30@30 (CEM)	Achieve 30 percent sales share for electric vehicles by 2030	Technology/ practice
Forest and Climate Leaders' Partnership	Halt and reverse forest loss and land degradation by 2030 (part of the forest pledge at COP26)	Sector
Global Coal to Clean Power Transition Statement	Transition away from unabated coal power generation in the 2030s for major economies	Technology/ practice
Global Coal to Clean Power Transition Statement	Transition away from unabated coal power generation in the 2040s for the world	Technology/ practice
Global Commercial Vehicle Drive to Zero (CEM)	Achieve 100 percent zero-emission new truck and bus sales and manufacturing by 2040	Technology/ practice
Global Deforestation Pledge	Halt and reverse forest loss and land degradation by 2030	Sector
Global Forest Finance Pledge	Provide US$12 billion by 2025	Sector
Global Geothermal Alliance	Over twofold growth in geothermal heating by 2030	Technology/ practice
Global Geothermal Alliance	Achieve fivefold growth in the installed capacity for geothermal energy by 2030	Technology/ practice
Global Methane Pledge	Reduce global methane emissions by 30 percent from 2020 levels by 2030	Sector
Global MoU on Zero-Emission Medium- and Heavy-Duty Vehicles	Achieve 100 percent zero-emission new truck and bus sales by 2040	Technology/ practice

INITIATIVE	TARGET	LEVEL
Global MoU on Zero-Emission Medium- and Heavy-Duty Vehicles	Achieve interim goal of 30 percent zero-emission vehicle sales by 2030	Technology/ practice
Global Offshore Wind Alliance	Increase wind capacity by at least 70 GW per year from 2030	Technology/ practice
Global Offshore Wind Alliance	Achieve wind capacity of a minimum of 380 GW by 2030	Technology/ practice
Green Powered Future (MI)	Tackle 20 of identified innovation priorities by 2023	Products/ projects
Green Powered Future (MI)	Five large-scale demonstration projects with up to 80 percent variable renewable energy	Products/ projects
Green Public Procurement campaign (IDDI)	Member governments to start (no later than 2030) requiring that steel, cement, and concrete used in all public construction projects are low emission—and that "signature projects" use near-zero emission materials	Technology/ practice
Industrial Deep Decarbonisation Initiative (IDDI)	Enable a minimum of 10 governments to pledge to reduce embodied carbon emissions of all major public construction projects by 2050 in line with a 1.5°C global warming trajectory	Sector
Industry Transition	Reach net-zero carbon emissions from industry by 2050	Sector
Integrated Biorefineries (MI)	Investment of US$2–$5 million per year by 2030	Products/ projects
Integrated Biorefineries (MI)	Support two to three pilots by 2030	Products/ projects
Integrated Biorefineries (MI)	Replace 10 percent of fossil-based fuels, chemicals, and materials with biobased alternatives by 2030	Technology/ practice
International Solar Alliance	Mobilize US$1,000 billion of investments in solar energy solutions by 2030	Technology/ practice
International Solar Alliance	Deliver energy access to 1,000 million people using clean energy solutions	Products/ projects
International Solar Alliance	Install 1,000 GW of solar energy capacity	Technology/ practice
IPHE	Achieve 10,000 refueling solutions within 10 years	Products/ projects
IPHE	Achieve 10 million mobility systems within 10 years	Products/ projects
JETP Indonesia	Freeze the existing pipeline of planned on-grid coal-fired power plants included in the current Rencana Usaha Penyediaan Tenaga Listrik for 2021–30	Products/ projects
JETP Indonesia	Peak power sector emissions by 2030 at an absolute value of no more than 290 $MtCO_2$ (down from a 2030 baseline value of 357 $MtCO_2$) and immediately decline thereafter on an ambitious trajectory and achieve net zero emissions in the power sector by 2050	Sector
JETP Indonesia	Mobilize US$20 billion over the next three to five years through the partnership, of which US$10 billion will be mobilized by the International Partners Group (IPG)	Sector
JETP Indonesia	Renewable energy composes at least 34 percent of all power generation by 2030	Technology/ practice
JETP South Africa	Mobilize an initial amount of approximately US$8.5 billion	Sector
JETP South Africa	Accelerate decarbonization of South Africa's electricity system to achieve the most ambitious target possible within South Africa's nationally determined contribution	Sector
JETP Vietnam	Accelerate the decarbonization of its electricity system from the current net zero planning peak of 240 $MtCO_2e$ by 2035 with international support (down from 280 $MtCO_2e$ before COP26) to reach a peak of no more than 170 $MtCO_2e$ emissions from electricity generation by 2030	Sector
JETP Vietnam	Move beyond the current planned figure of 36 percent to at least 47 percent of electricity generation coming from renewables, including wind, solar, and hydroelectricity power, by 2030	Sector
JETP Vietnam	Mobilize an initial amount of at least US$15.5 billion over the next three to five years (IPG members will mobilize US$7.75 billion of public sector finance)	Sector
JETP Vietnam	Reduce coal capacity peak of 37 GW to a peak of 30.2 GW	Technology/ practice
JETP Senegal	Increase the share of renewable energies in installed capacity to 40 percent of electricity mix by 2030	Sector

INITIATIVE	TARGET	LEVEL
JETP Senegal	Mobilize, for an initial period of three to five years from 2023, €2.5 billion of new and additional financing	Sector
Joint Declaration of Energy Importers and Exporters on Reducing Greenhouse Gas Emissions from Fossil Fuels	Reduce warming by 0.1°C by midcentury	Sector
Net-Zero Government Initiative	Achieve net zero emissions from national government operations by no later than 2050	Sector
Net-Zero Industries (MI)	Achieve a portfolio of at least 50 large-scale demonstration projects in energy-intensive industry	Products/ projects
Net-Zero Industries (MI)	Reduce CAPEX of low emissions innovative technologies by 15 percent	Products/ projects
New York Declaration on Forests	End the loss and degradation of natural forests by 2030	Sector
New York Declaration on Forests	Increase global restoration of degraded landscapes and forestlands to restore and maintain 350 million hectares of landscapes and forestlands by 2030	Sector
New York Declaration on Forests	Eliminate deforestation from the production of agricultural commodities well before 2030	Technology/ practice
New York Declaration on Forests	Reduce deforestation and degradation derived from infrastructure development and extractive industries well before 2030	Technology/ practice
PACE	Double global circularity in the next 10 years, working toward climate-neutral and inclusive economies	Technology/ practice
PPCA	Phase out coal by members of the OECD by 2030	Technology/ practice
PPCA	Phase out coal by the rest of the world in 2050	Technology/ practice
Product Efficiency Call to Action (SEAD, CEM)	Double the efficiency of four key globally traded products—air conditioners, lighting, industrial motor systems, and refrigerators/freezers—by 2030	Products/ projects
2023 Zero-Emission Government Fleet Declaration	Achieve 100 percent zero-emission light-duty vehicle acquisitions of fleet owned and operated by civil government—and aspire to 100 percent zero-emission medium- and heavy-duty vehicle acquisitions—by 2035	Products/ projects
Zero Emissions Cars and Vans Declaration	Ensure that all sales of new cars and vans are zero emissions by 2040 or earlier, or by no later than 2035 in leading markets	Technology/ practice
Zero Routine Flaring by 2030	Ensure that routine flaring at existing oil fields ends as soon as possible, and no later than 2030	Technology/ practice

Notes: CCAC = Climate and Clean Air Coalition; CEM = Clean Energy Ministerial; CCS = carbon capture and storage; COP = Conference of the Parties; GW = gigawatt; IDDI = Industrial Deep Decarbonisation Initiative; IEA = International Energy Agency; IPHE = International Partnership for Hydrogen and Fuel Cells in the Economy; JETP = Just Energy Transition Partnership; MI = Mission Innovation; MoU = memorandum of understanding; $MtCO_2$ = metric tons of carbon dioxide; OECD = Organisation for Economic Co-operation and Development; PPCA = Powering Past Coal Alliance; SEAD = Super-Efficient Equipment and Appliance Deployment.

ABBREVIATIONS

BA	Breakthrough Agenda
BOGA	Beyond Oil and Gas Alliance
CAIT	Climate Analysis Indicators Tool
CCAC	Climate and Clean Air Coalition
CCS	carbon capture and storage
CEM	Clean Energy Ministerial
COP	Conference of the Parties
ECA	Eastern Europe and Central Asia
EIA	Energy Information Administration
GHG	greenhouse gas
GPP	Green Public Procurement
G7	Group of Seven
IDDI	Industrial Deep Decarbonisation Initiative
IEA	International Energy Agency
IMF	International Monetary Fund
IPHE	International Partnership for Hydrogen and Fuel Cells in the Economy
ISA	International Solar Alliance
JETP	Just Energy Transition Partnership
LAC	Latin America and the Caribbean
LDC	Least Developed Country
M&E	monitoring and evaluation
MENA	Middle East and North Africa
MI	Mission Innovation
MoU	memorandum of understanding
$MtCO_2$	metric tons of carbon dioxide
NDC	nationally determined contribution
NSA	nonstate actor
OECD	Organisation for Economic Co-operation and Development
OICA	Organisation Internationale des Constructeurs d'Automobiles (International Organization of Motor Vehicle Manufacturers)
PEC	Product Efficiency Call to Action
PPCA	Powering Past Coal Alliance
R&D	research and development
SEAD	Super-Efficient Equipment and Appliance Deployment
SIDS	Small Island Developing States
TDA	Transport Decarbonisation Alliance
ZEV	zero-emission vehicle

ENDNOTES

1. A list is available on the Global Climate Action portal, https://climateaction.unfccc.int/.
2. A list of cooperative initiatives is available on the Global Climate Action Ecosystem, https://kumu.io/FCC/global-climate-action-ecosystem.
3. See the Global Action Climate Ecosystem, https://kumu.io/FCC/global-climate-action-ecosystem; Climate Initiatives Platform, https://www.climateinitiativesplatform.org/index.php/Browse_initiatives; and Global Climate Action portal, https://climateaction.unfccc.int/Initiatives.
4. Under "crosscutting," we have gathered all initiatives that do not fit into any specific sector; for example, finance, national decarbonization, trade, and the like.
5. Based on Keohane and Victor (2016) and Oberthür, Hermwille, and Rayner (2021).
6. For the purposes of the analysis, we do not consider the value of the target against established benchmarks. Rather, the "level of resolution" of each target is evaluated with a view to understanding its breadth, from covering entire sectors to specific practices.
7. The analysis considers national governments only. The European Union and its commission participate in about 33 initiatives, with most targeting energy supply (17) and industry (13).
8. After the review phase of this report had been completed, membership under the Global Methane Pledge had increased from 149 to 151.
9. Energy targets include those relating to hydrogen, biofuels, and CCS.
10. The Joint Declaration of Energy Importers and Exporters on Reducing Greenhouse Gas Emissions from Fossil Fuels has set a target of "reducing global warming by 0.1°C by mid-century" (U.S. Department of State 2022). With a view to avoiding the creation of a separate category for a single initiative, the target has been classified as sector/gas.
11. This dimension does not include reports prepared by secretariats on the activities undertaken or the related financial aspects.
12. The *State of Climate Action* report (Boehm et al. 2022) translates the sectoral transformations to limit global warming to 1.5°C, identified by the Intergovernmental Panel on Climate Change, into specific sectoral shifts; for example, in the case of emissions from agriculture, one is increasing the efficiency of crop production. It identifies targets for 2030 and 2050 as benchmarks. *Off track* and *well off track* implies, respectively, that the global pace of action is advancing in the right direction but not at the required pace and well below the required pace.
13. Includes only national governments.
14. For example, the European Union's Carbon Border Adjustment Mechanism, which sets tariffs for carbon-intensive goods entering the European Union (see European Commission 2023a), or the US Inflation Reduction Act (see White House n.d.).
15. According to indicators and data used in this working paper, six countries account for about 70 percent of global steel production, and eight account for 70 percent of global emissions from cement production.
16. See, for example, GCCA (2022); SBTi (n.d.); WCA (n.d.); World Steel Association (n.d.); and the Mission Possible Partnership, https://missionpossiblepartnership.org/.
17. Emissions from international aviation and maritime transport, which account for 3.3 percent of global emissions (Esmeijer, den Elzen, and van Soest 2020) are part of this sector but related action falls outside the scope of this paper.
18. See commentary in the *Economist* (2023).
19. General bilateral, regional, and other trade agreements that incorporate climate change considerations into their provisions fall outside the scope of this working paper.
20. The initiatives considered here have social issues as their central objective. Initiatives that treat social issues as a component (e.g., JETPs) are not included.
21. For more information, see World Bank (2023).
22. For the original proposal, see Ministry of Foreign Affairs and Foreign Trade (2022).
23. In this context, the Group of Twenty countries agreed in 2009 to rationalize and phase out inefficient fossil-fuel subsidies that encourage wasteful consumption; however, progress has been limited. See IISD (2020).
24. This campaign is closed.
25. This campaign is closed.

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ABOUT WRI

World Resources Institute is a global research organization that turns big ideas into action at the nexus of environment, economic opportunity, and human well-being.

Our challenge

Natural resources are at the foundation of economic opportunity and human well-being. But today, we are depleting Earth's resources at rates that are not sustainable, endangering economies and people's lives. People depend on clean water, fertile land, healthy forests, and a stable climate. Livable cities and clean energy are essential for a sustainable planet. We must address these urgent, global challenges this decade.

Our vision

We envision an equitable and prosperous planet driven by the wise management of natural resources. We aspire to create a world where the actions of government, business, and communities combine to eliminate poverty and sustain the natural environment for all people.

Our approach

COUNT IT

We start with data. We conduct independent research and draw on the latest technology to develop new insights and recommendations. Our rigorous analysis identifies risks, unveils opportunities, and informs smart strategies. We focus our efforts on influential and emerging economies where the future of sustainability will be determined.

CHANGE IT

We use our research to influence government policies, business strategies, and civil society action. We test projects with communities, companies, and government agencies to build a strong evidence base. Then, we work with partners to deliver change on the ground that alleviates poverty and strengthens society. We hold ourselves accountable to ensure our outcomes will be bold and enduring.

SCALE IT

We don't think small. Once tested, we work with partners to adopt and expand our efforts regionally and globally. We engage with decision-makers to carry out our ideas and elevate our impact. We measure success through government and business actions that improve people's lives and sustain a healthy environment.