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Bridges over troubled waters: Climate clubs, alliances, and partnerships as safeguards for effective international cooperation?

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Abstract

Driven by the motivation to raise the ambition level of climate action and to foster the transformation of economies, current climate policy discourse revolves around ways to improve cooperation between industrialized countries and emerging economies. We identify three broad types of initiatives—multilateral-cross sectoral, multilateral, sector specific, and climate and development partnerships—and assess them for potentials to deliver on such objectives with a specific focus on industry transformation. This paper provides new reflections on the institutionalization of international climate cooperation. Specifically, we demonstrate the urgent need to understand what values, norms, and underlying principles drive a cooperation in order to draw conclusions on how to best institutionalize climate cooperation rules-in-use. We conclude that an overemphasis on a CO₂ price and on carbon border adjustment mechanisms, such as in the context of the initial proposals for a cross-sectoral climate club envisaged by G7 countries, would have contributed to a further polarization of the international landscape. We find, however, that multilateral, sectoral alliances play an important role for international goal setting and the convergence on standards, metrics, and benchmarks. Based on our analysis, we recommend strengthening multilateral, sector-specific partnerships. These can be focused on sectoral topics as a connector between countries, allowing for a strategically-aligned, increasingly deep collaboration. However, for any initiative to succeed, processes of international institutionalization will be needed in order to agree on rules for implementation based on aligned interests and equity. Building such institutions may well serve as a steppingstone toward more durable cooperation structures between developed economies and emerging economies. In sum, no existing cooperation approach is perfect, but three actions may be taken to move the agenda forward: First, reform of the carbon border adjustment mechanism and removing it from the center of climate club discussions, second, coupling sectoral alliances with climate and development partnerships, and three, designing them in a way to address fears of political influence seeking and superimposition of global north agendas on the global south.

Keywords Global climate cooperation · Climate alliances · Climate partnerships · Carbon leakage · Industry decarbonization

Abbreviations

APEC	Asia–Pacific Economic Cooperation
CFC	Chlorofluorocarbon
EIB	European Investment Bank
GCF	Green Climate Fund
GEA	General Environmental Assessment
GEF	General Environmental Facility
GIZ	Deutsche Gesellschaft für internationale Zusammenarbeit
HCFC	Hydrochlorofluorocarbon
HFC	Hydrofluorocarbon
IAEA	International Atomic Energy Agency
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
IRENA	International Renewable Energy Agency
LDC	Fund Least Developed Country Fund
MDB	Multilateral Development Bank
UNIDO	United Nations Industrial Development Organization
WTO	World Trade Organization

The discourse around climate clubs, alliances, and partnerships shows a need for durable international cooperation structures to achieve industry transformation. For instance, the EU introduced the Carbon Border Adjustment Mechanism with the aim of implementing CO₂ prices without causing production and emission shifts. The CBAM also aims to provide incentives for stronger climate policies in countries beyond the EU (European Commission, 2022). Another goal by the G7 is strengthening multilateral climate cooperation by establishing a climate club with other ambitious countries, thus achieving a common approach on mitigation ambition, building partnerships, and achieving transnational cooperation on industrial decarbonization with emerging economies (G7, 2022). Concurrently, bilateral sector-specific climate partnerships with global south countries are discussed in the context of official development cooperation (ODA) by, for instance, Germany (Weischer et al., 2021). International climate finance is to be increased for the purpose of implementing the partnerships. Yet there is uncertainty on which type of international cooperative instrument might achieve the climate and development goals that countries have set for themselves. This is the background against which we conduct our analysis of existing cooperation proposals: we assess how these initiatives can contribute to raising ambition levels, how they could support transitions to climate neutrality, and how they address EU policy concerns of carbon leakage.

The aim of the paper is to discuss three real-world design options for international climate cooperation and less to contribute theorizing on related institutional design. There is a significant body of literature on the issue of institutional design, to which we can only refer to; see for instance, regarding general overviews contained in Mitchell (2013) or more specifically on discussions of neoliberal institutional theory and domestic policy factors (Purdon, 2015). We present however a concrete analysis of existing degrees of institutionalization of global north and south cooperation on climate cooperation to assess, in how far gaps exist, which could potentially be filled by such forms of cooperation structures which we discuss in the paper.

The methods applied to conduct the analysis of international cooperation structures, consisted of an extensive literature review, which covered keywords related to the three cooperation types and their various iterations, theories of international climate cooperation, and the factors, institutions and objectives driving it. We developed an analytical framework for the three cooperation structures, which contains the assessment elements presented in Sect. 3. Lastly, we used a focus group discussion with key experts in the field to test the analytical framework and findings.

The paper is structured as follows. Section 1 of this paper describes the current developments and institutional structures for international climate cooperation, then introduces the three main functions of climate cooperation structures. Section 2 evaluates the capability of existing institutions for fulfilling required functions of climate cooperation. Section 3 provides a critical assessment of the structures based on their objectives, processes, and principles as well as with regard to essential elements of the discussions on a carbon price and cooperation mechanisms. We finish with conclusions and recommendations for further research.

1 Current developments: institutional structures for international climate cooperation

In international climate policy discourses, there is an on-going discussion on how climate cooperation can be supported and advanced through minilateral or multilateral institutions. However, little attention has been paid to what values, norms, and underlying principles drive climate cooperation and how these could best be institutionalized. We aim to contribute to the discussion around climate clubs, alliances and partnerships by presenting three main strands of literature on climate cooperation and highlighting their underlying assumptions. We use a definition for cooperation (Chan, 2016), as actions by concerned actors such as governments and sectoral stakeholders to deliver on common goals of the Paris Agreement in line with equity and fairness principles. These actions to achieve more cooperation by individual governments do not happen in isolation, but are catalyzed by international factors and processes as will be explained in the following section.

1.1 State of research on international climate cooperation

One body of literature has its origins in the field of economics. International, centralized provision of economic incentives and fines are central assumptions for cooperation in the form of minilaterally designed climate clubs (Nordhaus, 2015). These theories rely on the assumptions that prospective member countries are motivated to join such clubs because of the expected gain from club goods (such as access to markets for green industrial products) and to avoid disadvantages (no access to markets, facing trade barriers) (Hovi et al., 2019). Frequently, this string of theories also puts the idea of carbon pricing systems at its center, i.e., the idea that like-minded countries introduce carbon pricing policies and penalize countries that do not implement such policies (Falkner et al., 2022; Tagliapietra & Wolff, 2021; Victor, 2011). The principal assumption is that political actors in climate policy are prone to free-riding (Paroussos et al., 2019). This means that, in voluntary agreements, the national mitigation contributions hinge on the implementation of mitigation actions by other states and it is assumed that while other countries do their part, some countries would continue to emit GHGs, evade the (costly) restructuring of their economies, and, thereby,

achieve economic gains. Accordingly, reciprocity is central to this theory: it is assumed that countries will only fully engage in mitigation actions if they can be sure that all participating countries do the same (Leal-Arcas, 2022; Nordhaus, 2017).¹

A second strand of literature emphasizes factors that lead to unilateral climate action by national governments. It is argued that policymakers take actions relatively independently from other countries (McGrath & Bernauer, 2017). Instead, scholars such as Aklin and Mildenberger (2020) argue that domestic costs of transforming economic sectors, as well as distributive conflicts, are most significant.

According to such arguments, international cooperation for global climate protection cannot be framed as a collective action problem, in which reciprocity and avoidance of free riding would be central elements. It rather builds on simultaneous efforts by individual countries to transform their economies toward climate neutrality, which are driven by policymakers' responses to new emerging norms, claims by local constituencies, policy diffusion processes, and, importantly, the existence of catalytic institutions (Hale, 2020). In particular, the emerging international norm of climate neutrality is considered to be an increasingly important factor for global climate cooperation (Blondeel et al., 2019; Gach, 2019). Hence, international initiatives, such as financial and technical support, should be understood as a component of such catalytic cooperation: it provides means of implementation for transformational change processes by countries. However, these are initially and primarily driven by domestic concerns (Hale, 2020).

A third body of literature conceptualizes international climate cooperation as support flows from industrialized countries to developing countries in order for them to achieve climate and development targets (Zou and Ockenden 2016). Much of this literature takes the existence of institutional structures and principles of official development assistance (ODA) as a basis for the implementation of international climate finance and support (Selin, 2016). Central claims for the success of ODA-based climate finance are that recipient countries demonstrate ownership over the proposed support measures and that an alignment of funders and recipients' instruments takes place (Fourth high level forum on aid effectiveness, 2011). The character of cooperation can be described as a unilateral flow of support and related resources from industrialized to developing countries, which needs reform to enable more mutual partnerships and deep collaboration among participating countries (Weischer et al., 2021).

To summarize, three points can be made. First, these different literature strings do not necessarily stand in opposition – for instance, governments may be inclined to adjust domestic policies due to expectations of economic gains, and if this aligns with domestic reform agendas. Secondly, relying solely on carbon pricing incentives to trigger international cooperation is unrealistic and might lead to time delays in climate action. Thirdly, climate finance implemented on established ODA institutions may not meet the current reality of relationships between emerging economies and industrialized countries.

Our contribution consists in an identification, discussion, and assessment of the values, norms, and underlying principles of the various forms of cooperation, in order to support policymakers in their efforts to shape an institutionalized format for effective climate cooperation. In the following, the aforementioned structures of cooperation are summarized in

¹ For a review of the climate club approach see also Hermwille et al. (2022).

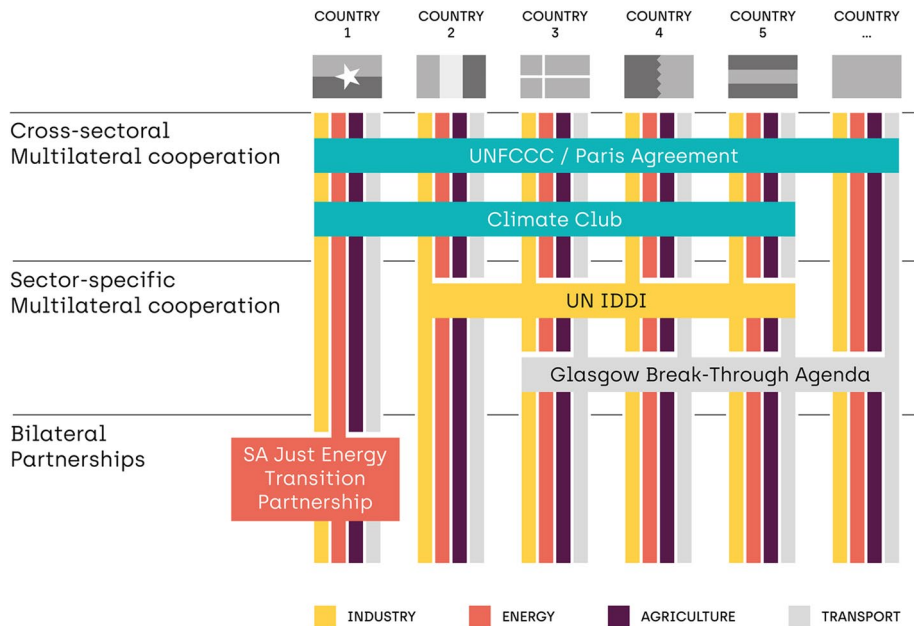


Fig. 1 Illustration of different structures of international climate cooperation *Source:* Authors' own illustration

three groups (Fig. 1): (i) Cross-sectoral multilateral; (ii) Sectoral multilateral; and (iii) Climate and development partnerships.²

1.2 Cross-sectoral multilateral cooperation

Drawing largely on the first (economic) literature type above, climate clubs were originally built on the hypothesis that asymmetric costs and a consequent shift of production and emissions (i.e., carbon leakage) are mainly prevented through an internationally coordinated approach. In a climate club, a uniform CO₂ pricing system is established for this purpose, with participating countries benefiting from club benefits, such as access to markets for green industrial products. It is assumed that countries with similar climate policy ambitions will participate in the club (Nordhaus, 2015).

However, there are also a variety of other aspects that a climate club can include (Martini & Görlach, 2022). The development of the original proposal of the German government (August 2021³ to create an international climate club might illustrate this: Originally aiming at a uniform minimum CO₂ price and a common CO₂ border adjustment, it later emphasized much stronger the role of a club for industry decarbonization and cooperative elements with the Global South (G7 2022).

² The terms “alliance” and “partnerships” are often used synonymously. This paper uses the term partnership.

³ Also included in the 2021 coalition agreement, pages 26, 63, and 155: www.bundesregierung.de/breg-de/service/gesetzesvorhaben/koalitionsvertrag-2021-1990800

The aim is to establish lead markets, technology cooperation in industry, for example, and offers for capacity building and financial support to developing and newly industrializing countries. Thus, a joint approach in terms of content and timing for industrial cooperation as well as the preparation and implementation of CO₂ pricing schemes are essential components of the German proposal⁴ – which overlaps with our second cooperation type, sector-specific multilateral cooperation. This also means that designing a climate club raises a similar set of questions about the feasibility of industrial cooperation beyond CO₂ prices with emerging economies as in the case of the sector-specific multilateral and bilateral partnership approaches.

1.3 Sector-specific multilateral cooperation

Sector-specific alliances and partnerships in various industries mostly focus on the common goal of climate neutrality.⁵ The Glasgow Breakthrough Agenda (GBA) deserves particular attention. Forty-two countries have joined forces to drive forward the halving of global emissions by 2030 and the transformation to climate neutrality by 2050 in five sectors: steel, energy, agriculture, hydrogen, and transport. This approach is illustrated here by the example of the steel industry (Fig. 2).

Aligned with the second literature strand (catalytic cooperation), it is assumed that participating countries set up individual policy mixes in accordance with domestic prerequisites and preferences. However, participants agree on an overarching goal that ensures support for emerging economies and should lead to more cooperation in technology, production, and trade. The GBA relies on political leadership by participating countries, in close cooperation with the private and financial sectors, thereby supporting and coordinating existing sector-specific initiatives. It is planned to conduct an annual progress report, the so-called Global Checkpoint Process. The approach is based on a shared understanding of goals but is otherwise driven primarily by dynamics at the national level. It is also based on the assumption that creating jobs, economic growth, and securing human life will create incentives that motivate governments to achieve the agenda's goals.

Research conducted on how international cooperation can be organized to advance decarbonization transitions highlights the need to work and design sector-specific cooperation in accordance with individual national circumstances. Sector-specific cooperation can build on, for instance, specific structures of steel producing industries in India. It necessitates international finance to cover substantial investment needs on plant levels and courses of action towards the creation of lead markets by introducing green public procurement for example (Singh et al., 2020). Individuality of countries manifests also in the specific political priorities and processes, that guide transition processes, and which are an important factor for the design of cooperation, as the example of the Just energy transition partnership with South Africa shows (Boulle, 2023). These findings hint towards targeted, individual cooperation in order to enable deep cooperation on decarbonization and move

⁴ www.bundesfinanzministerium.de/Content/DE/Downloads/Klimaschutz/eckpunkte-internationaler-klima-club.pdf?__blob=publicationFile&v=6

⁵ Further examples of this are the Forest, Agriculture, and Commodity Trade (FACT) Dialogue, the Net-Zero Steel Initiative (NZSI) Mission Possible, and the LeadersShip Group for Industry Transition (LeadIT). In the financial industry examples are the Glasgow Financial Alliance for Net Zero (GFANZ), Net-Zero Banking Alliance (NZBA), Net-Zero Insurance Alliance (NZIA), Net-Zero Asset Owner Alliance (AOA), and the Initiative Climate Action 100+.

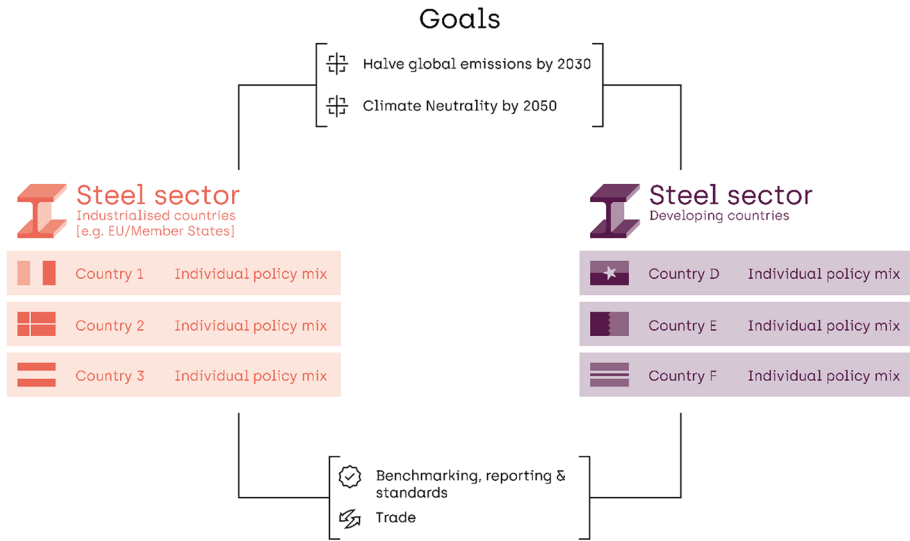


Fig. 2 Representation of sector-specific alliances, example steel sector *Source:* Authors' own illustration

beyond shallow coordination (see Keohane & Victor, 2016), which is likely the result of an increasing number of countries and sectors participating in a cross-sectoral, multilateral structure. Hence, we argue that factoring in the specific sectoral and individual political conditions are necessary to structure cooperation. We argue that cooperation is likely to take place in the case of limited amounts of participating countries. We propose that coordination would be increasingly difficult in a case, where a cross-sectoral, plurilateral climate club assembles more members with diverse political and sectoral interests. Currently observed diverging interests and positions of China, EU and US in the context of the 2021 “Global Arrangement on Sustainable Steel and Aluminum” may illustrate this point (Reuters, 2023).

1.4 Climate and development partnerships

The G7 foreign ministers' communiqué of 2022 proposes climate partnerships with individual emerging economies, aiming at a “true paradigm shift, by demonstrating that ambitious climate action is conducive to strong and sustainable growth for all economies” (item 31). Such partnerships may implicitly include theoretical assumptions about transitions of the industrial and the energy sectors toward net-zero pathways. Another important feature is the inclusion of development policy, along with the provision of financial, technological, and capacity support. Thus, in order to support transformative change and the achievement of sustainability goals, partnerships are to be established on an equal footing between industrialized countries, developing countries and emerging economies.⁶ It is argued that the ambition of current international development and climate policy should also be raised (Germanwatch, 2021; Speck, 2021).

⁶ Answer of the Federal Government 19.04.2021 to the Small Question Climate Foreign Policy of the Federal Government, Printed 19/27537: <https://dserver.bundestag.de/btd/19/286/1928639.pdf>

In this context, partnerships like the Just energy transition partnership between South Africa, as a recipient, and France, Germany, the UK, the US, and the EU, on the funder side, were developed. This specific partnership aims at enabling a phase-out of coal to renewable energy in South Africa and focuses on the role of just structural change.⁷ In doing so, the initiative can build on a number of tried and tested structures, institutions, and experiences of previous climate policy cooperation—including on the existing programs of implementation of climate finance and support for developing countries and emerging economies.

1.5 Three main functions of climate cooperation structures

The literature review and focus group discussion with experts on international climate policy resulted in the identification of three core functions of international climate cooperation.⁸ These are as follows:

1. Introducing a pricing mechanism or giving access to benefits shall directly incentivize the shift to a cleaner production.
2. Improving international coordination by linking and strengthening sectoral alliances and partnerships.
3. Providing support for emerging economies through partnerships and international financial institutions.

In the current policy discourse, these functions are connected to different types of proposals – pricing mechanisms and access to benefits, for instance, are typically associated with the concept of climate clubs, while providing support is mostly related to climate partnerships. Here we argue that choosing the right design elements and strategies for setting up the individual initiatives and implementing them are crucial. In other words, it is rather the political strategy and approach to involve partners and negotiating for the specific design (values, norms, goals, instruments, legal nature, governance, and decision-making processes) that is of crucial for the success of any cooperation initiative.

Before we critically assess the potential of the three proposed cooperation structures to fulfil the above functions, we first evaluate already existing institutions according to their suitability to implement those very functions. If we assume that one of these three cooperative structures need institutionalization to allow for effective implementation, and if a proliferation and further fragmentation is to be avoided, a first look into the range of existing institutions is useful. In the following section we show a mapping of existing institutionalized cooperation structures between industrialized countries and emerging economies.

⁷ https://ec.europa.eu/commission/presscorner/detail/en/IP_21_5768

⁸ A summary of the workshop is available here: Link to authors' workshop.

2 Assessment of existing institutions for required functions of climate cooperation

A mapping of already existing institutions related to international climate policy that bridge emerging economies and industrialized countries is given in Table 1. Institutions with potential relevance for international climate action were selected. The mapping shows that several of the three main functions defined in Sect. 1.5 for climate clubs, sectoral alliances, and partnerships are supported through various institutions, but are highly fragmented. For instance, information management, political venues, assistance to standard setting and benchmarking, as well finance and support could be delivered through, for instance, existing UN-specialized agencies, informal governance structures (G20, APEC), and ODA-based institutions. However, significant gaps exist with regards to governance structures, such as decision-making mechanisms, joint agenda setting, and conflict resolution procedures. These are particularly important for more formal structures, like climate clubs, but also for bilateral partnerships.

None of the existing institutional settings outlined in Table 1 can fulfil the three functions identified: They do not provide a conducive and durable setting to introduce, negotiate, and litigate conflicts in relation to a pricing mechanism or access to benefits that directly incentivize the shift to a cleaner production. Furthermore, questions arise in relation to the legitimacy of existing institutions to provide a forum that handles issues connected to just transitions, such as politically sensitive topics like policy and sectoral reforms. Although some existing institutions provide support for emerging economies through partnerships and international financial institutions, they can only provide limited support to improve international coordination by linking and strengthening sectoral alliances and partnerships.

3 Assessment of the proposed structures of cooperation

In the previous section, we assess whether the existing institutions could fulfil the three functions we identified in Sect. 1.5. As we conclude that this is not possible, below we assess the general structures for international climate cooperation, clubs, partnerships, and sectoral alliances, in terms of implementation feasibility and effectiveness.

To structure this discussion, we place them in the context of the UNFCCC and of the Paris Agreement, thereby focusing on theoretical assumptions about the factors that lead to the achievement of objectives. In our discussion, we focus on whether the existing processes can be complemented by the three cooperation structures or whether the latter will be perceived as a parallel process, ultimately contradicting the goals of the UNFCCC. The architecture of international climate action and compatibility with the Paris Agreement is of high relevance due to legitimacy concerns as well as to the fact that the history of international climate negotiations is partly characterized by mistrust between parties (Falkner et al., 2022).

3.1 Shared norms and understanding of cooperation

Shared norms are a starting point for cooperation and for strengthening public and political support domestically. Norms are a factor, among others such as trust, communication,

Table 1 Institutions related to climate policy in industry sectors to link emerging economies and industrialized countries

Type/ examples	Role for climate action	Suitability to implement cooperation functions
Global Multilateral legal regimes UNFCCC	Framework and reference point for other climate forums/ initiatives; help building global consensus and momentum	Multilateral approach complicates agreements within smaller groups. Limited decision making and conflict resolution power
Montreal Protocol	Phase out / Ban of Ozone Depleting Substances (CFCs and HCFCs), expanded in 2016 to cover replacements (HFCs), includes a multilateral adaptation fund	Successful multilateral sector-specific cooperation, but only limited scalability for a cross-sectoral climate club
Sector Specific Energy: IEA, IRENA, IAEA Industry: UNIDO	Multilateral organizations with a mandate limited to their sector, typically related to data repositories, policy, and governance support, capacity building	Multilateral approach complicates agreements within smaller groups. Limited decision making and conflict resolution power. Supportive, especially for sectoral alliances
Scientific assessments GEAs IPCC	Large scale, multiauthor efforts to collect and review knowledge in a certain topic and provide information (esp. of consensus areas) for policymakers	Not suitable
Informal Governance Groups such as G20, APEC	Discuss trade-offs, raise awareness, increase commitments/ ambitions in the absence of legal arrangements. Most informal international organizations were founded with smaller non-environmental objectives but broadened their agenda	Lack of implementation structures
Finance in the context of UN/ UNFCCC GEF, GCF, Adaptation Fund, LDC Fund, Special Climate Change Fund (UNFCCC)	Funds as result of UN programs/ UNFCCC decisions – to support UN decisions with resources for countries	Difficult to channel finance for specific purposes – governance structures geared toward multilateralism, but not for focused initiatives
ODA: MDBs Almost 30 in total, oldest: World Bank; others often regional MDBs (e.g. Asian Development Bank)	Act primarily as implementing partners for ODA provided by donors	Supportive of implementation of just transitions and sectoral alliances (for instance improve access of companies to capital markets in order to reduce the CO ₂ intensity of their products, reduce adverse effects of a CBAM)
ODA: Technical Assistance e.g. technical donor agencies (e.g., GIZ), UN Environment Program, the mandate of the EIB under the EU ODA facility	Act primarily as implementing partners for ODA provided by donors Most organizations have a technical or administrative assistance facility that can support the implementation of regulatory frameworks and specific programs, esp. in LMICs	Could facilitate partnerships, just transitions, CO ₂ pricing, but lack decision making mandates

Table 1 (continued)

Type/ examples	Role for climate action	Suitability to implement cooperation functions
Trade-related policies: - WTO	Binding regulation on tariffs and trade-related regulations, limits discriminatory measures, international litigation procedures	Limits exclusionist potential of a climate club
- Trade agreements with provisions about environmental or sustainability issues	Recognition of mutual/ minimum standards, lower tariffs and increased (green) investment in non-EU countries Theoretical option to sanction non-compliance	Trade negotiations (esp. of the EU) could be linked to a climate club (esp. if CBAM is included), and the mutual recognition of climate measures
Subnational and non-state actors' intergovernmental initiatives Transnational climate initiatives and networks of sub-state, non-state and private actors	Usually have a limited scope, their role and proliferation are increasingly recognized since the Paris Agreement	Leaves out national governments as important actors for international cooperation policies
Regulations with spillover effects e.g. soft power of EU regulations, taxonomies	With high global interdependence, non-environmental agreements often influence global environmental governance as unintended consequences or increasingly seen as co-benefits	Informal elements of climate governance, thus not useful for a formal club
Legal institutions International Court of Justice	Currently not involved, but theoretically play a role for litigation of international disputes about climate change	Not yet applicable but legal arrangements might play a strong role for international cooperation structures in the future

Source: Authors' own representation

fairness, and transparency, which drives global cooperation in the climate commons (Högl, 2018). We select shared international norms as a main factor for cooperation because it can result in the institutionalization of rules-in-use. This is because the behavior of decision makers is influenced by certain norms, which can exert influence across international borders and influence the understanding of issue by actors in climate policy (Gach, 2019). Norms can be a powerful factor that can lead to sustained cooperative outcomes if the stakeholders involved display mutual trust. In turn, this trust relies on the sanctioning of norm violators (Ostrom, 1990).

This shared understanding of cooperation and the associated internalization of global norms enhances the credibility of a low-carbon investment framework by improving the stability of policy decisions and increasing the likelihood of implementing standards that preclude further use of carbon-intensive goods and services (Carattini et al., 2019). The comprehensive multilateral framework of the Paris Agreement set the stage for climate neutrality commitments both by countries and companies.

A cross-sectoral, multilateral climate club among Western countries could be perceived as a rival to the Paris Agreement. This may especially be the case if the nucleus of such a club consists of G7 countries and the EU, which would imply that prospective member countries from the group of emerging economies would have to attain member status by adopting standards developed by industrialized countries.

The rocky history of negotiations for an inclusive global agreement on climate change shows that overcoming the dichotomy between industrialized and developing countries is by no means trivial. In contrast to scholars who identify potential synergies between a minilateral climate club and the UNFCCC (Falkner, 2016; Vihma, 2009), we argue that a climate club would be met with domestic legitimization challenges and that countries would display a lack of motivation to enter it, as is found to be the case for emerging economies.⁹ This danger might be less pronounced when different countries join together in sector-specific climate partnerships. Such partnerships, which respond to similar challenges with concrete climate protection measures, could create a frame of reference for the actors involved in which the norm of climate neutrality is strengthened¹⁰.

3.2 Motivation to increase ambition

The UNFCCC framework, along with the Paris Agreement, provides an institutional setting with climate conferences, review processes, and high visibility worldwide. This institutional structure enables respective governments to commit and encourage each other to increase ambition (Morgan & Northrop, 2017) (see article 4.3. of the Paris Agreement). Thus, it reflects a legitimized, decentralized system with the architecture for countries to commit to raising ambition according to individual perceptions of equity and fairness. At the same time, it is criticized that the Paris Agreement's pledge and review system of collective upscale mitigation contributions by all countries comes at the expense of vagueness and potential leeway for delivering less GHG emission reductions (Keohane & Oppenheimer, 2016). Hence, the question is, what motivates countries to commit to higher climate ambition? We argue that sector-specific cooperation, such as the aforementioned Breakthrough Alliances, allow a group of countries to jointly formulate more ambitious goals for a specific sector – such as the coal phase-out or the shift to electric mobility. In this sense, leverage over laggards can also be a potential goal or outcome of a partnership. It may be implicit in emerging product standards for climate neutrality and related product standards needed for new markets.

The idea of climate clubs is to put more emphasis on club benefits, so as to provide incentives for joining by setting higher ambitions or to economically penalize third countries that do not meet targets through a common CBAM. Before the Ukraine war, this approach was still supported, especially by economists (Wissenschaftlicher Beirat 2021; see also literature in Sect. 1.1). However, this has changed. Neither China, India, Indonesia, South Africa, Brazil, or Mexico joined the West's economic sanctions against Russia. If a climate club comprising the use of trade instruments to influence third countries' domestic policies is indeed initiated within the framework of the G7, then the rejection of trade policy instruments could also lead to resistance in this context.

It can be argued that economic incentives and transfer of support measures can encourage countries to take up higher climate ambitions because this might influence domestic policy decisions in favor of climate action (see also Keohane & Oppenheimer, 2016). Yet, important questions regarding the legitimacy and political feasibility of a climate club must be raised. For instance, whether domestic legislators could legitimize such cooperation approaches in parallel to the UNFCCC and Paris Agreement. At that level, it is imaginable

⁹ for South Africa, see Rennkamp and Marquard 2017; for India, see Gampfer 2016

¹⁰ see also Rennkamp and Marquard 2017

that ambition raising of national climate policy takes place within the Paris Agreement, but not simultaneously in the context of a climate club, which would then require legitimization as well. Nonetheless, incentives, such as access to markets for climate neutral products, might be effective in triggering more ambitious climate policy.

3.3 Support for sectoral transformation

Support for sectoral transformation can take place through the delivery of capacity-building measures, policy dialogues, and technology/financial cooperation. The commitment by industrialized countries, established in the Paris Agreement, to provide US\$ 100 billion annually to support developing countries and emerging economies in their efforts to address climate change defines an important framework and goal for sectoral transformations. To date, implementation has largely taken place within bilateral cooperation structures and through multilateral organizations, such as the World Bank. The conceptualization of dedicated climate partnerships allows for focused cooperation to support just transitions and deep collaboration. This may then gradually evolve from the coordination of activities toward frequent interactions between actors involved in the partnership, leading to trust development and collaboration based on a deep understanding of the transition challenges at hand (see also Keohane & Victor, 2016). However, such deep collaboration might bring another set of challenges, as experience with ODA-based implementation of climate finance and support measures shows: there are frequently voiced concerns over sovereignty infringements by international actors involved in international cooperation, particularly in the form of influence seeking in policy processes, superimposition of external policy ideas, and the promotion of economic interests through an international backdoor (Stichelmans, 2016; Winkler & Dubash, 2016). To counteract such negative influences on cooperation, dialogues between funders and recipients of support are recommended (Winkler & Dubash, 2016).

It is questionable whether structures sufficiently strong for handling financial and technical cooperation will be developed in the case of cross-sectoral climate clubs or in multilateral cooperation at the sector level. However, such structures could provide an important framework for the coordination and joint implementation of such collaborations.

3.4 Common markets of industrialized countries and emerging economies

Shared markets prove relevant for entrepreneurial business decisions, especially for multinational companies, and the likelihood of successful innovation and decarbonization. The more successful a global transition to climate neutrality is, the more opportunities there are for new business models and technologies for the climate neutral provision of transport, housing, and food. International coordination of reporting requirements and standards, product standards, or even CO₂ costs to be priced into internationally traded products can accelerate this process for the respective sectors.

For the technical issues, new sector-specific collaborations, such as the Clean Energy Ministerial Industrial Deep Decarbonization Initiative (IDDI) in the industrial sector or the Task Force on Climate-related Financial Disclosures (TCFD) in the financial sector, could be helpful forums for the further development of common reporting and product standards.

One specific proposal is a cross-sectoral climate club that establishes a common minimum CO₂ price. The example of the EU shows that such a common approach to CO₂

pricing for internationally traded goods, like steel or even electricity, in the EU emissions trading system has its advantages and is possible, at least within the EU, while a new European emissions trading system for building heat and transport is currently under discussion. Against this background, it should be considered in the future whether a coordination of CO₂ costs in products can also be established within sector-specific forums. For this to be possible, however, the share of climate-neutral products would first have to be large enough to justify the inclusion of CO₂ costs in internationally traded products. In other words, the additional costs should reflect the additional effort involved in producing climate-neutral products—and not just additional CO₂ revenues for the exporting countries.

3.5 Avoiding carbon leakage

There is a risk that CO₂ costs, if implemented by only a handful of countries, can lead to the relocation of production facilities and, thus, of emissions. This risk increases proportionally to the CO₂ intensity and, thus, to the CO₂ cost intensity of the production processes – so it is primarily and almost exclusively an issue in the production of basic materials like steel, cement, plastics, fertilizers, and aluminum (Baccianti and Schenker 2022; Martin et al., 2014). For this reason, countries largely exempt heavy industry exemptions from energy taxation as well as from CO₂ pricing, for example, through the free allocation of emission certificates in the EU Emission Trading System. However, this removes the incentives for the transition to climate neutrality with a switch to climate-neutral production processes, material efficiency, and recycling, especially in those sectors that react particularly strongly to prices and require them for investment decisions (Source).

In principle, a border adjustment mechanism can remedy this by equalizing CO₂ costs between countries rather than continuing to avoid effective pricing of CO₂ costs (Babiker & Rutherford, 2005; Mehling et al., 2019; Monjon & Quirion, 2011). The EU Commission proposes that importers should pay for CO₂ costs symmetrically to EU producers, based on the CO₂ emissions incurred by their production and CO₂ prices in third countries (EU 2021). However, this approach is prone to three main challenges. First, the reimbursement of CO₂ costs for exports is highly uncertain as it could be challenged on the grounds of trade law incompatibility and, second, value chains cannot be covered due to administrative feasibility constraints. Third, the mechanism creates incentives to shift trade flows to already existing climate- friendly production instead of mitigating emissions (so called “resource shuffling”). For these reasons, the proposed border adjustment mechanism is expected to be only effective to a very limited extent.

3.6 Summary of assessment

Table 2 summarizes the results of the discussion and shows the importance of cross-sectoral cooperation under the Paris Agreement for the formulation of standards and ambition enhancement, which should be supported by sectoral coalitions.

Cross-sectoral climate clubs. Especially after geopolitical upheavals, such as the Ukrainian invasion, there is an increased risk that a cross-sectoral climate club with a focus on carbon pricing and border adjustments will lead to polarization and, thus, the loss of community norms of climate neutrality and the credibility of processes to increase ambition.

The EU’s previously planned border adjustment was originally intended to provide incentives in the steel, cement, fertilizer, and raw materials sectors, especially for Russia,

Table 2 Comparison of different forms of organization for international climate cooperation

		Shared norms	Ambition increment	Transformation support	Common markets	Carbon Leakage
Cross-sector multilateral cooperation	UNFCCC/ Paris Agreement	Important	Established process	Defines framework and goals	Not intended	Not intended
	Climate Clubs with carbon pricing	Risk for UNFCCC	Incentives vs. acceptance	Intended but not defined	Min. CO ₂ price, CBAM	
Sector-specific multilateral cooperation	UN IDDI	Important	Intended	Not directly intended	Norms, standards, in the future min. CO ₂ price	Not intended
	Glasgow Break Throughs	Role				
Bilateral partnerships	e.g. SA Just energy transition partnership	Important	Made possible by successful implementation	Financial and technical cooperation	Joint further development	Not intended

Light: given / important feature, medium: risk, dark: indifferent / not intended Source: Authors' own illustration

Ukraine, and Turkey, to switch to climate-neutral production processes.¹¹ As the geopolitical situation has changed drastically in recent months due to the war in Ukraine, this function of a border adjustment is now largely obsolete. At the same time Europe is dedicating more attention to strategic partnerships for long-term security of, e.g., energy imports. In the political process, for example the G7 statement on climate clubs¹² carbon pricing and border adjustments are no longer mentioned.

Sector-specific, multilateral cooperation can help develop appropriate reporting requirements, norms, and standards—as envisioned, for example, in the IDDI work program. Of course, existing multilateral organizations, like the IEA or OECD, can also contribute to this. At the same time, common standards and increasing ambitions – for example in the transition to electromobility – can be established. From the assessment, we conclude that climate partnerships could be coupled with sectoral alliances, like the Glasgow Break Throughs, as these facilitate in-depth cooperation, which is needed to support just industry transitions. Reform needs of existing ODA-based approaches might arise due to the aforementioned sovereignty infringement concerns regarding national policy processes and to revise outdated narratives of unilateral support-channeling mechanisms from the Global North to the Global South.

Climate & development partnerships offer the opportunity to accompany ambitious policy projects, for example South Africa's coal phase-out, and to support them financially with sufficient resources. Such cooperation in sectors like energy or industry can also strengthen private-sector cooperation.

In sum, no existing cooperation approach is perfect, but the following three recommendations might go a long way toward more effective climate cooperation:

- Reforms of the CBAM in combination with EU climate contributions bear significant potential to address leakage;

¹¹ Source: A CO₂ border adjustment for the EU Green Deal Functions, Facts and Pitfalls, SWP Study 2021/S 09, 05.07.2021.

¹² www.g7germany.de/resource/blob/974430/2057926/2a7cd9f10213a481924492942dd660a1/2022-06-28-g7-climate-club-data.pdf?download=1.

- Complementing sectoral alliances with climate partnerships would allow coupling international sectoral goals with support for just transitions in emerging economies; and
- Designing climate partnerships on basis of realistic expectations of emerging economies and industrialized countries relations can counteract fears of political influence seeking and superimposition of foreign agendas.

4 Conclusions and suggestions

This paper aims to provide new reflections on the institutionalization of climate cooperation for industry transformation. We assess three prominently-discussed approaches: cross-sectoral multilateral (climate clubs); sector-specific alliances (Glasgow Breakthrough alliances); and sectoral climate partnerships. The following section contains conclusions from our analysis and suggestions for the way forward, directed towards proponents and decision-makers of the three cooperation structures. In the political reality of these processes, each of the three options have specific opportunities for suggesting the following points, so policy advocacy actors and policy advisors find specific levers in each of these processes at the time of writing in 2023.

4.1 Targeted, sectoral cooperation in climate partnerships most promising to achieve transitions to climate neutrality

We find that international climate policy should focus more on partnership-based cooperation, especially with emerging economies. These partnerships in Germany and the EU should be embedded in sector-specific mechanisms. The G7 could commit to strengthening the necessary institution. Further exploration of how a G7-initiated cross-sector climate club could contribute to strengthening the necessary institutions while supporting cooperation under the Paris Agreement is required.

4.2 Climate clubs need to evolve further from a sole focus on club goods and carbon pricing agreements

In order to capture interest by countries not prioritizing internationally-coordinated carbon prices, in-depth sectoral cooperation is required. This removes the option of using a climate club to ensure trading partners implement similar effective CO₂ prices in the industrial sector. This means it is even more important to have a CBAM that makes effective CO₂ prices possible within the EU without the risk of relocating production and emissions to other countries. With a climate contribution based on standardized emission intensity values, incentives for material efficiency and recycling can be created and revenues for climate protection generated without exposing non-EU countries to such incentives. It would also support a successful transition to climate neutrality within the EU, with proceeds supporting partnership-based and multilateral international cooperation.

4.3 Renewed case for rules-in-use for international cooperation

The three types of initiatives would be implemented in a setting that is characterized by a lack of strong institutions. For instance, the G20 forum provides for the exchanging political views and collaboration through working groups, but it is not enough to implement an initiative large enough to be meaningful for any of the three initiatives. If institutionalization is conceptualized as the development of rules of the game, then it also becomes clear that these initiatives cannot be installed through a top-down political style, as the history of negotiating nation states under the UNFCCC has shown. Instead, these require the involvement of actors who will be affected by the initiatives and who will be tasked with their implementation. Furthermore, any attempt to cooperate internationally must bridge seemingly-independent states by agreeing on rules-in-use for cooperation instruments. In light of recent geopolitical tensions and disruptions, but also of historically strained relationships between industrialized and developing countries, a re-thinking about rules-in-use seems more appropriate than ever. Discussions and negotiations around institutionalization and targeted rules-in-use should be based on an understanding that traditional power relationships and spheres of influence may have to be overcome to obtain more non-hierarchical cooperation modes between countries.

5 Future research

Our paper indicates significant gaps within existing institutions which appear to hinder the development of climate cooperation structures. The factors and conditions which influence institutional arrangement development should be addressed in future research. This refers to the discussion on shared norms in Sect. 3.1. The research could focus on how norms, principles, and values of actors in cooperation structures should be reflected in the design of institutions and which norms, principles, and values matter for climate policy cooperation. Specifically, with regards to cooperation between industrialized countries, emerging economies, and developing countries.

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