



Perspectives on designing a climate club:

Alliance-building to strengthen international climate cooperation

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Perspectives on designing a climate club: alliance-building to strengthen international climate cooperation

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Executive Summary

The concept of a climate club has found references in academic literature on club theory, predominantly highlighting the benefits of exclusivity and measures conferring trade benefits. In recent months, the topic has re-entered the political mainstream with a broader conceptualisation. Most notably, a Statement of the G7 countries under the presidency of Germany in June 2022 expressed the intention of establishing an international climate club that is open and cooperative, with aspirations ranging from coordinating ambitious and transparent climate mitigation policies, accelerating industrial decarbonisation, and boosting partnerships to promote the just energy transition.

A climate club in this iteration is still in a nascent stage, with several aspects requiring further concretisation. This paper offers insights on designing the climate club outlined in the G7 Statement, particularly with a focus on sectoral collaboration, cooperation with developing countries, and establishing synergies with the goals of the Paris Agreement.

RECOMMENDATIONS FOR DESIGNING A CLIMATE CLUB

- Efficient and strategic utilisation of time and political capacity to move away from a top-down approach focused on carbon pricing to a flexible plurilateral approach is supported by existing experiences in international climate cooperation and support the need for a climate club.
- Recognising the polycentric nature of international climate cooperation, while also strengthening alliance-building in matters of policy, finance, technology, and trade should form the contours of a climate club.
- A climate club with sectoral foci offers pathways for accelerated emission reduction in emission-intensive industries with trade exposure.
- The climate clubs can be a valuable forum for international knowledge-sharing and transparent communication about a comprehensive mix of climate policy measures across countries.
- The climate club could improve the effectiveness of climate finance deliberations in at least two aspects. First, it could provide the institutional framework for enhanced cooperation across industrialised and developing countries, thereby fostering trust between the two groups of countries. Second, by focussing on sectoral topics such as industry, energy or transport, a club could foster cooperation on sector specific policies, technologies and finance instruments and flows specific to sectoral needs.
- The climate club can aid and supplement the Paris Agreement and the UNFCCC by addressing several action points contemplated therein, and accelerating the pace of action.
- The club activities should reinforce commitment to the principle of common but differentiated responsibilities and use the practical experience and learnings from existing initiatives such as JETPs, while offering a framework for improving their functioning.
- The climate club should build synergy with existing institutional structures within the UNFCCC, and develop the institutional structures, which have been difficult to establish in the UNFCCC, but are necessary for increasingly deeper climate cooperation and accelerated emission reduction.

Introduction

When the Group of 7 (G7), a group of the world's most developed industrial nations (the United States of America, Japan, Germany, United Kingdom, France, Italy, and Canada) met in Elmau on 28 June 2022, one of the big deliverables under the German presidency was the 'G7 Statement on Climate Club'. Its commitments were aspirational rather than prescriptive, promising to advance ambitious climate change mitigation policies, industrial decarbonisation, and partnerships and cooperation including through financial, technical capacity support and technology transfer development.

Just months earlier, in November 2021, the Coalition Agreement of the newly formed German federal government had expressed support for an international climate club open to all countries with a uniform minimum price for carbon dioxide, and a common carbon border adjustment. The German coalition's stated goal was to strive "for a global emissions trading system that will lead to a uniform CO₂ price in the medium term" (German Federal Government, 2021b; author translation). The Coalition Agreement built on a paper on climate clubs jointly published by a number of German ministries in August 2021, laying down the "building blocks of a cooperative and open climate club" (German Federal Ministry of Finance, 2021).

There is widespread consensus on the need to act on climate change. But there is difficulty to get the political buy-in on many concrete measures, and this will likely be made harder amidst the global energy crisis. The G7 Statement represents a departure from a classical Nordhaus-style carbon pricing-based club, which despite its theoretical benefits of a uniform carbon price, is politically difficult to implement. This paper examines the climate club model within the context of the G7 Statement and delves into the elements of designing such a club. The paper has been published within the framework of a German-Canadian cooperation and brings together perspectives from authors in Germany and Canada on a topic that both countries have formally expressed a commitment to, by way of the G7 Statement.

Part I of the paper discusses the evolution of the concept of a climate club, tracing its origins in club theory, and analysing the more recent developments in the German political narrative, as well as at the level of the G7. Part II examines the challenges posed by a climate club centred around carbon pricing, particularly in light of the divergence on the topic within the G7, as well as the challenges posed by the ongoing energy crisis. In Part III, the authors consider a climate club with sectoral focus areas, including the criteria for selecting the sectors, and the functions of such a club. Cooperation with developing countries as a prominent feature of the club is discussed in Part IV. Part V focuses on the relevance and value of a climate club alongside the Paris Agreement, offering initial suggestions on building the institutional architecture of the climate club.

I. Background and evolution of the concept of climate clubs

The climate club in club theory literature

The concept of a climate club finds its origin in academic literature in club theory. The theory of clubs is argued to be “a theory of optimal exclusion, as well as one of inclusion,” proposed originally as an ownership-consumption arrangement for public goods (Buchanan, 1965). The further development of club theory in the context of environmental policy is credited largely to William Nordhaus, who viewed climate change as a public good susceptible to free-riding by nations and argued that the free-riding can best be countered by an international climate club founded on a treaty where members agree on an international target carbon price and trade sanctions (Nordhaus, 2015).

Nordhaus defined a club as “a voluntary group deriving mutual benefits from sharing the costs of producing an activity that has public-good characteristics”, such that the payment of dues and abiding by rules associated with the club membership are sufficiently incentivized by proportionate gains (Nordhaus, 2015). At the heart of a Nordhaus-style climate club is “a coalition of countries organized to encourage high levels of participation and abatement”, which counters free-riding in international climate agreements through “obligations in terms of strong abatement and penalties for either nonparticipation or failure to meet the club obligations” (Nordhaus, 2021).

The climate club in the German political discourse

The idea of a climate club formally entered the German climate political discourse in the form of a paper released by a number of German ministries (the Federal Ministry of Finance, the Federal Foreign Office, the then Federal Ministry for Economic Affairs and Energy, the Federal Ministry of Environment, and the Federal Ministry of Economic Cooperation and Development) in August 2021 (German Federal Ministry of Finance *et al.*, 2021). The document was released shortly after Germany revised its climate goals to achieve climate neutrality by 2045 (German Federal Government, 2021a). The paper emphasized the importance of international cooperation for achieving the goal of industrial decarbonization, and in this context also the creation of international lead markets for climate-friendly technologies, fostering trust in international climate policy cooperation, and measures to protect against carbon leakage (German Federal Ministry of Finance *et al.*, 2021).

The paper outlined an international climate club founded on three chief characteristics – ambitious, bold, and cooperative – with each of these signifying specific aims. First, the term “ambitious” was a reference to ambitious target-setting which would form pre-requisites for the club membership (German Federal Ministry of Finance *et al.*, 2021). The two chief criteria defined here were a commitment to the 1.5-degree target and climate neutrality by 2050. Joint efforts on energy-intensive industry, hydrogen, and carbon-neutral production of products in the chemical industries were illustrated as examples of ambition in the field of industrial transformation (German Federal Ministry of Finance *et al.*, 2021).

Second, the term “bold” was a reference to “coordinated and ambitious climate policy measures”, in particular in relation to a minimum carbon price and carbon leakage measures (German Federal Ministry of Finance *et al.*, 2021). Endeavours such as establishing a uniform minimum carbon price across countries, especially through a homogenized procedure for calculating prices, potentially leading to a joint carbon border adjustment mechanism, were emphasised in the proposal. The explicit goals were to protect club members from competitive disadvantages in international trade and to avoid carbon leakage. Cooperation on industrial transformation, in particular with a view to establishing an international lead market for climate-friendly materials and products was highlighted as one of the key tasks of the members of the club (German Federal Ministry of Finance *et al.*, 2021).

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Third, a “cooperative” approach was highlighted as being central to the club, with specific reference to the principle of common but differentiated responsibilities under the United Nations Framework Convention on Climate Change (UNFCCC) to foster support for developing countries, as well as utilizing the specialized expertise of international organisations such as the World Trade Organisation (WTO), the Organisation for Economic Co-operation and Development (OECD), the International Monetary Fund (IMF) and the World Bank as supporting for a (German Federal Ministry of Finance *et al.*, 2021). The specific areas for cooperation identified here included the reduction of emissions from international air and sea traffic, cooperation under Article 6 of the Paris Agreement, international climate financing, cooperation on technology, and capacity building, as well as WTO-compliant trade policy to support climate action (German Federal Ministry of Finance *et al.*, 2021).

A few months after the publication of the joint ministerial paper on the climate club, the term came up again in the Coalition Agreement of the newly formed German government in November 2021. The coalition parties expressed their support for an international climate club open to all countries with a uniform minimum price for carbon dioxide, and a common carbon border adjustment, noting that the government was “striving for a global emissions trading system that will lead to a uniform CO₂ price in the medium term” (German Federal Government, 2021b; author translation). The Coalition Agreement further expressed the intention to utilise the framework provided by the European Union (EU), international bodies, and the G7 presidency for fostering such an initiative. The focus areas identified for a climate club were the goal of climate neutrality, the expansion of renewable energy and their infrastructure, and the production of hydrogen (German Federal Government, 2021b).

During a bilateral visit by Canadian Prime Minister Justin Trudeau to Germany in March 2022, the topic of a climate club featured in the discussions between the countries, alongside topics such as collaboration on carbon pricing, energy, and critical minerals (Office of the Prime Minister of Canada, 2022). Germany and Canada’s joint commitment to climate clubs is thereafter formally reflected in the G7 statement.

The G7 Statement on the climate club

At the summit in Elmau in Germany in June 2022 under the German G7 presidency, the G7 member states reflected their commitment to a climate club in a statement, noting: “[w]e aim to establish a Climate Club to support the effective implementation of the Paris Agreement by accelerating climate action and increasing ambition, with a particular focus on the industry sector, thereby addressing risks of carbon leakage for emission intensive goods, while complying with international rules” (G7, 2022a). The three foundational pillars for a climate club identified in the G7 Statement were: (1) the advancement of ambitious transparent climate mitigation policies, (2) industrial transformation with a view to jointly accelerating decarbonization, and (3) boosting international ambition through partnerships and cooperation, including support for developing countries (G7, 2022a).

Although the G7 statement appears in part modelled on the German ministerial paper on climate clubs from 2021, two crucial points of divergence are noteworthy. First, the G7 statement notes that ambitious emission mitigation policies could take the form of explicit carbon pricing as well as other carbon mitigation approaches. The creation and coordination of policies, strengthening of emission measurement and reporting mechanisms as well as addressing carbon leakage at the international level through the sharing of best practices were highlighted as priorities for this international initiative (G7, 2022a).

Second, the statement emphasized that “[t]he Climate Club, as an intergovernmental forum of high ambition, will be inclusive in nature and open to countries that are committed to the full implementation of the Paris Agreement and the decisions thereunder, in particular the Glasgow

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Climate Pact, and to accelerate their action to this end” (G7, 2022a). This reflects a departure from Germany’s earlier position from August 2021 that commitment to a net neutrality target of 2050 would be a mandatory pre-requisite for membership to the climate club. This is of particular relevance in light of China and India’s net neutrality targets of 2060 and 2070, which were announced at COP26 in November 2021 (BBC News, 2021). The adoption of a more inclusive approach in respect of the club membership appears to be a strategic choice, with a view to winning over China and India for cooperation on industrial decarbonisation.

On the whole, the G7 statement emphasizes that the climate club will be an inclusive alliance focused in particular on industrial decarbonisation, not restricted to a specific policy instrument, and geared towards initiatives such as knowledge-sharing on policies, financial and technical support. To this end, the G7 invites potential partners (in particular, G20 members and other developing economies) for consultation and seeks support from international organisations (such as the OECD, the IMF, the World Bank, the IEA, and the WTO) (G7, 2022a).

The statement of the G7 countries represents a shift away from the classic Nordhaus-style club focused on exclusivity through membership privileges as well as the framing of the ministerial statement of 2021, where the goals of avoiding carbon leakage to protect club members from being competitively disadvantaged were underlined as important goals of the climate club. Further, the reference to a global uniform or minimum carbon price is also conspicuous by its absence in the G7 statement – this a topic that had found a prominent place in Germany’s developing narrative on climate clubs up till this point. The G7 concept of an inclusive alliance to accelerate industrial decarbonisation is focused on higher ambition, while at the same time endorsing a more policy-agnostic formulation.

In light of this evolution of the mission of such a club, it may be important to revisit its very nomenclature, since club theory advocates the concept of a club based on its exclusive privileges. Particularly with a view to winning over the support of a wider base of countries, the international coalition-building would be better served by a term such as an “alliance” or a “coalition”. Indeed, the use of terms such as “alliance” and “coalition” may prove to be politically more appropriate in distancing themselves from a more exclusive conceptualization (Martini and Görlach, 2022). For the purpose of this paper, the term “club” has been used in consistency with the G7 statement.

II. The challenges and limitations of carbon pricing as the basis for a climate club

Carbon pricing in the G7 context

Within countries that have implemented a carbon pricing system, the adoption of uniform carbon prices in trade partners and competitors would be welcome to avoid adverse impact on industrial competitiveness. But as detailed below, the harmonization of carbon prices even within the G7 countries is at this point not a realistic prospect.

An assessment done in Canada (Fraser Institute, 2019) determined that the most trade-exposed industries from the carbon tax in that country, at CAD 50/tonne, were petroleum and coal-product manufacturing, with agriculture and chemical manufacturing (pesticide, fertilizer, and others), primary metals, cement, concrete, and non-metallic mineral products also disadvantaged.

Canada is in a different situation from the United Kingdom and the EU in that it is highly dependent on exports to the United States, which doesn't have a federal carbon tax, and which is a relatively easy location for Canadian companies to relocate their investment and operations to. The concerns of competitiveness extend not just to the fossil fuel industry, dependence on which would need to be reduced over time to meet Canada's climate targets, but also the agriculture industry. But agricultural producers in Canada see the carbon tax as a competitive disadvantage vis à vis American producers next door, in what is already a low-margin, inelastic sector. In that sense, those who are often opponents to the Canadian carbon tax may benefit most from a climate club model that levels the playing field for carbon-intensive industries as they compete with peer jurisdictions.

But within the G7, that is unlikely in the medium-term, given the diversity in carbon pricing regimes across G7 members. The European Union Emissions Trading System (EU ETS) is a cap-and-trade system, where a cap is set on the total amount of certain greenhouse gases that can be emitted, and subsequently reduced over time so that total emissions fall (European Commission, n.d.). This carbon pricing system covers emission-intensive industries in EU countries (European Commission, n.d.), including G7 members Germany, France, and Italy, with a proposal for a second emissions trading system for buildings and transport (European Commission, 2021a) currently being deliberated upon. The United Kingdom implemented a system nearly identical to the EU-ETS in 2021, the UK ETS, after it withdrew from the European Union (UK Government, 2022). In Canada, a carbon pollution pricing system, with minimum pricing set by the federal government and set to increase incrementally to CAD170 (US 125)/tonne of CO₂ by 2030, was implemented in 2018 (Government of Canada, 2021).

Japan does have a carbon tax, but it is amongst the lowest in the world (JPY2,89/tonne of CO₂, or less than USD 2 with today's exchange rates) (Gokhale, 2021). Following the COVID and energy crises, the government has indicated no immediate intention to adjust it (Nagasaki, 2021).

In contrast to the EU-ETS, the United States of America (USA) does not have a federal emissions trading system. In the United States, twelve states, home to over a quarter of the American population and accounting for a third of U.S. GDP, have carbon-pricing programs (Center for Climate and Energy Solutions, n.d.). However, there is no federal carbon pricing system (*ibid*). While the Biden Administration has indicated openness to a carbon tax, and the idea has support from many Democrats, it has not been able to move forward (Inside Climate News, 2022). Instead, it would appear as though the Inflation Reduction Act, the most significant climate legislation in US history, which was signed into law in August 2022, puts the United States on a different path. It uses tax credits, incentives, and other provisions to increase investments in renewable energy and enhance energy efficiency and is now the guiding approach for US federal climate policy (The White House, 2022). Although the

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Inflation Reduction Act of 2022 covers energy and climate related investments in the order of approximately \$370 billion through a variety of measures (Linklaters, 2022), carbon pricing is not one of them. Since a federal carbon tax is not foreseeable in the United States, and there is considerable variation in the nature and scope of carbon pricing within the G7 members, a climate club promoted by the G7 with a minimum carbon price at its core appears highly unlikely.

Border Carbon Adjustments

Border Carbon Adjustments (BCAs) refer to environmental trade policies, such as trade-related charges or rebates that exist to address carbon leakage and protect the climate ambition and domestic industry of the country enacting the BCA (Campbell *et al.*, 2021). An emerging set of trade policy tools (such as fees on imported goods or rebates on exported goods), BCAs are typically aimed at protecting industrial competitiveness by mitigating the migration of carbon-intensive economic activity from jurisdictions with relatively stringent climate policies to those where the climate policies are less stringent (Center for Climate and Energy Solutions, n.d). Due to their very nature, they pose concerns with respect to their impact on free trade, especially with developing countries, and their compatibility with the WTO and the UNFCCC.

A carbon border adjustment mechanism (CBAM) has been proposed in the EU as part of the EU Commission's Fit for 55 Package (European Commission, 2021b), and is currently being discussed between the European Commission, European Parliament, and European Council in the framework of the Trilogues (Carbon Market Watch, 2022). But border carbon adjustments (BCAs) are also being seriously considered by other G7 members, such as the United Kingdom (House of Commons, 2022), Canada (Government of Canada, 2022), and even the United States (Congressional Research Service, 2022).

Challenges of a carbon-pricing based climate club

One fundamental problem in decades of global climate negotiations is that the willingness of a country to give substantial commitment is limited unless a fair distribution of the potential burden is agreed on. The economics textbook solution for a global externality would be to attach a price tag to emissions. Theoretically, a Nordhaus-style club with a uniform global carbon price combined with regulations for border carbon adjustments on imports can strive to create a universal price signal. However, establishing consensus on carbon price issues will require considerable time frame and tremendous political will, apart from unfavourable tariff conditions against non-members bearing the risks of creating trade conflicts and falling foul of principles of the WTO. Further, such a club would not adequately reflect the distributional and equity aspects of present-day and historical emissions, and the different capabilities and responsibilities of the member state emitters and would therefore be incompatible with the principle of common but differentiated responsibilities in the Paris Agreement. In view of the different development trajectories of countries across the world and the choice of a diverse set of other climate policy instruments, a global uniform carbon price or any formal global agreement on it is unrealistic for the foreseeable future.

Further, the assumption that countries are motivated by economic arguments to shift domestic policy-making towards ambitious climate targets is increasingly challenged by scholars investigating transnational dynamics within the scope of the Paris Agreement. Contrary to the principal assumption that policy actors are driven by motives to minimize free-riding and make own climate action contingent on reciprocity of action by others, very little empirical evidence was found to back up these claims (Beiser-McGrath and Bernauer, 2022). Rather, it is argued that internal political processes and motives combined with the needs to resolve related distributional conflicts as arising through domestic

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climate policy making, are driving climate policy implementation (Aklin and Mildenerger, 2020). While it is argued that carbon pricing is efficient on domestic, sectoral, and regional levels (see Nachtigall, 2019), a model of international cooperation which rests on assumptions of agreements on carbon pricing has so far not materialised.

Moreover, the challenge of agreeing on an elusive common international carbon price has potentially led to the unintended consequence of inaction through extended periods of negotiations, as the attempts to negotiate a successor agreement to the Kyoto protocol have shown. UNFCCC COP 15 in Copenhagen in 2009 illustrated the shortcomings of a top-down approach to negotiating a global agreement in which mitigation targets are allocated in a centralized manner and carbon trading schemes are global instruments (Falkner *et al.*, 2010; Dubash and Rajamani, 2010; United Nations University, 2015). It took the international process another six years to adopt the Paris Agreement in 2015, which works in a decentralized way by countries choosing targets and policy mixes according to own preferences.

This experience also offers learnings for the creation of a climate club, which could benefit from being built around policy mixes, which are selected and designed by member states to a club based on their specific circumstances and requirements, instead of being based on a process of a top-down harmonization of carbon pricing instruments. As discussed above, there is diversity in climate change mitigation measures even within the G7 member states, which have collectively issued the G7 Statement on Climate Club. Therefore, even if carbon pricing schemes could play a role in the individual climate change mitigation policies of the climate club member states, it would be unrealistic to expect the introduction and coordination of carbon pricing schemes at the centralized level of a club in the near future. Rather, a club could play a role as facilitator for national policy-making for climate and development, and assist with the introduction of otherwise individual, and domestically adapted policy mixes. If there are more political interests by club members in the future in coordinating and agreeing on common carbon pricing, then the facilitator role could evolve into stricter forms of coordination, essentially representing a middle path between top-down and bottom-up governance as outlined by Dubash and Rajamani (2010).

Our argumentation is not that economic gains and financial assistance are not important incentives for countries, especially in countries of the global south, where owing to limited finances, such incentives can prove crucial for the implementation of climate policies (Roberts *et al.*, 2021). However, a club model with an economic rationale – in that it addresses the problem of free-riding using incentives and enforcement through legally binding rules and sanctions – is viewed as an unrealistic option due to its political infeasibility (Falkner *et al.*, 2022). Especially with a view to fostering cooperation with emerging economies and developing countries, partnership approaches that are less rigid on the choice of political instruments, and preferably with a sectoral approach, may be more effective in the context of a softer version of a climate club.

The climate club in the ongoing energy crisis

Politically, advancing the climate club concept requires getting buy-in not just from states, but from their political constituencies, including heavy industry. This brings added geopolitical significance as the Russian-Ukraine war is adding to pressure to ‘friend shore’ supply chains, ensuring that sufficient levels of raw and manufactured goods are coming from allied regimes, since a climate club could naturally reinforce friendly supply chains.

There is also a need for political consideration to what climate club and pricing measures look like in the context of energy scarcity. As a response to high oil and natural gas prices in the past eight months, the G7 countries have initiated action that in part dilutes climate ambition, electing variously for

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policies that subsidize and eliminate taxes on fossil fuels (Bruegel, 2022), releasing strategic reserves to keep prices artificially low (Department of Energy, 2022), and even implementing price caps (European Council, 2022a).

In the backdrop of the high costs of energy, with small businesses and households are reducing their consumption to the point that some are shutting down or facing bankruptcy, carbon pricing in the EU-ETS has come under attack by Poland (Reuters, 2022). Germany has frozen its domestic carbon price as part of its relief package (Kurmayer, 2022). In the backdrop of discontent in established carbon pricing systems, a climate club where the membership is based on establishing carbon pricing in countries that don't already have it (and indeed even in some that already do) could raise questions and prove to be infeasible.

III. Sectoral focus for a climate club

An alternative to a Nordhaus-style climate club or a comprehensive trade club (Kolev and Bardt, 2021) is the concept of sectoral climate clubs. Through cooperation on goals, standards, and policies that are specific to and compatible realities of particular industries, sectoral climate clubs offer a more tailored and focused approach. The costs of implementing sectoral specific clubs are cheaper than universal systems by establishing a global standard rather than trying to merge different territorial systems across a range of products (Banks and Fitzgerald, 2020).

Existing collective pledges by countries at the international level within a sector can offer insights for building a climate club with sectoral foci. The Montreal Protocol on Substances that Deplete the Ozone Layer (1987), a multilateral agreement aimed at phasing down the consumption and production of ozone-depleting substances (ODS) in a stepwise manner (UNEP, n.d.) can be viewed as a positive example of a climate-focused sectoral coalition. The Montreal Protocol was initially signed by 24 countries (UBA, 2017), but currently stands as the only United Nations (UN) treaty that has been ratified by all the countries in the world (UNEP, n.d.). As of date, the Montreal Protocol has been successful in phasing out 98% of ODS compared to 1990 levels, and it is estimated that in the absence of the Montreal Protocol, ozone depletion would have increased tenfold by 2050 compared to current levels (UNEP, n.d.).

This example shows that price signals are not necessarily the only option for an alliance focused on collectively addressing a critical environmental problem. Although the provisions to restrict trade with non-signatory countries (Article 4) contributed to the success of the Montreal Protocol, this was arguably due to the restrictions being considered fair and legitimate, and their support by a large number of countries (Barrett, 2010). Further, the trade restrictions formed but one aspect of a well-designed international treaty (Barrett, 2010). Notable elements of the Montreal Protocol include the recognition of the special status of developing country parties (Article 5, Montreal Protocol, 1987) as well as the corresponding commitment to the Multilateral Fund for covering incremental costs (Article 10, Montreal Protocol, 1) and technology transfers (Article 10A). The Montreal Protocol has often been compared and contrasted with the Kyoto Protocol to the UNFCCC focused on greenhouse gas reduction (see Sunstein, 2008; Barrett, 2010). The aforementioned examples from the Montreal Protocol have been cited as important non-carbon taxation features that enabled the success of this initiative (Gopalakrishnan, 2021), and could offer improvements to the concept of a club focused on carbon pricing. Another important contribution of the Montreal Protocol was the provision of a stable framework that enabled industry to plan long-term research and innovation (Rae, 2012). The Montreal Protocol can, therefore, offer valuable insights for international cooperation with a sectoral focus.

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Selection criteria for climate club sectors

While in principle, there is no limit in terms of selecting a sector as a candidate for a climate club, certain criteria for selection could enable prioritization. One important criterion is the international exposure of trade and value chains such as in the steel producing sector where about a quarter of all products are traded internationally (World Steel Association, 2020). A second important criterion is the international greenhouse gas (GHG) emission profile of the sector in question – again, steel as an example, produces between 7-10 % of global emissions, making this sector a prime candidate for international cooperation (Hermwille *et al.*, 2022). The decarbonisation of energy-intensive industries such as iron and steel, basic chemicals, cement, aluminium, glass, ceramics, and pulp and paper contribute to over 20% of the total GHGs and exhibit the characteristics of being highly concentrated and trade exposed (Oberthür *et al.*, 2019).

A third criterion could be the added value, which a climate club could bring to already existing international initiatives to decarbonize a certain sector. Provided political will to agree on a club approach, this could vary from a coordination function of various existing initiatives such as knowledge and capacity-building initiatives or linking up with high level political fora such as the Clean Energy Ministerial (CEM).

Considering these criteria, the aforementioned energy-intensive industry sectors with a high degree of international trade, and related motivations for governments to cooperate internationally emerge as possible candidates for a sectoral selection (see also Obergassel *et al.*, 2019). Another sector, which may be highly relevant for a climate club, albeit not considered widely till date, is the agriculture sector, given its importance for trade, economy, and food security (see Adams *et al.*, 2021). A further candidate could be the shipping industry, that has seen a number of proposals, most notably from Japan, the second largest ship owning company in the world, in May 2022. Japan's proposal envisages a global carbon tax for the shipping industry of USD 56 per tonne of CO₂ starting in 2025, and increasing every five years, to go up to USD 637 per tonne by 2040. (Bloomberg Tax, 2022).

Focus areas of a sector-focused climate club

A climate club focused on accelerating industrial decarbonisation internationally could play an important role in coordinating standards and policy frameworks relevant for reducing emissions in emission-intensive sectors. In the absence of a price signal within a sectoral club, standards for emission reduction, and policies relating to innovation and investment could be an attractive starting point. However, these instruments should be geared towards similar goals across the members of the club and must be more ambitious than the existing emission reduction paths. A common international vision towards decarbonisation – particularly through global roadmaps that build upon and are concretized in national, regional, and sectoral roadmaps – with a well-defined timeline and differentiated mitigation pathways would be valuable for decision-makers in industrial sectors (Oberthür *et al.*, 2021). At the same time, a flexible and inclusive alliance based not on the adoption of carbon pricing measures but on setting standards for achieving ambitious decarbonisation goals would signal a departure from the exclusivity and protectionism associated with the Nordhaus-style club (Vangenechten and Lehne, 2021). Creating conditions to enable scalable markets for low-carbon materials and products could be a focus area of sector-specific climate clubs (Shawkat *et al.*, 2022).

A climate club can play an important role for sector-specific knowledge-sharing internationally. It can coordinate and strive for synergies with existing initiatives which pursue objectives of knowledge-sharing and creation, either bilateral or multilateral. An example of the latter is the Industry Transition Dialogue to exchange progress of industry decarbonisation roadmaps and private – public sector coalitions, organized by the Leadership group on industry transition (Leadership Group for Industry

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Transition, 2022). Furthermore, it could provide targeted services for member countries to provide knowledge on the full range of the topics relevant to a sector, e.g., policy, technology, finance, etc.

The G7 Statement highlights the role of the climate club as a venue for member states to “share best practices” while striving towards ambitious and transparent climate mitigation policies, which could include explicit carbon pricing and international carbon leakage measures, but also other carbon mitigation approaches (G7, 2022a). With countries increasingly moving towards ambitious climate targets, but not necessarily through price-based approaches, diversity in policy measures combined with higher ambition and credible commitment could form important criteria for club membership (Stern and Lankes, 2022). In this context, the climate club can provide an avenue for transparent knowledge-sharing on climate policies in other countries, and build greater trust between countries, which could also benefit the UNFCCC process.

For example, one of the criticisms of the proposed Carbon Border Adjustment Mechanism (CBAM) in the EU has been that the affected trade partners have not had sufficient access to knowledge about the CBAM (Hübner, 2021). Greater communication and transparency on policies could, therefore, be a valuable goal and outcome of the climate club, particularly on trade-exposed industry sectors. In the specific context of carbon leakage measures, the club could play the role of a forum for discussions on principles and best practices (Stern and Lankes, 2022).

One of the mechanisms that the club could use for consultations and knowledge-sharing on policy frameworks is that of mutual policy peer review processes, which are for instance used among OECD member countries (Lehtonen, 2020). These can be very valuable for policy learning, and possibly also lead to policy diffusion and convergence. Policy diffusion is understood as the phenomenon whereby the decision for states to adopt new policies is affected not only by internal factors, but also external factors (Giraldi *et al.*, 2020). For a climate club, to foster policy diffusion may be beneficial, as policy choices by different countries are internationally interdependent and the adoption of a certain policy type may be the result of a utility expectation of the government adopting it (Braun and Gilardi, 2006). Kammerer and Namhata (2018) have found that the adoption of climate mitigation policies by governments depends, among other factors, on the benefits of international networks, which include political and cooperative interactions across countries. This means that the diffusion of climate policies is very much a matter of social influences in the form of interactions between policy actors, which can result in learning and emulation of policy choices across countries, a process (*ibid*), which a climate club could utilise and promote, potentially resulting in a higher climate policy adoption rate and speed within a climate club. To achieve that, a club could build upon knowledge-sharing activities and possibly conduct policy peer review processes, with OECD models in the energy sector being one such example (see, for example, Lehtonen, 2020). Such processes could lead to policy learning through an agreed procedure such as independent policy assessments and agreed steps for follow-up action (Pagani, 2002). An argument for such peer reviews may be that a given sector such as energy is not only of concern to an individual country but is important for the remaining countries and international community in terms of climate protection as well.

IV. Cooperation with developing countries to reinforce Paris Agreement commitments

The Paris Agreement of 2015 is based on a commitment by its signatory states to the principles of the Convention, including “equity and the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances” (Article 2(2)). Each country’s Nationally Determined Contribution (NDC) is a reflection of higher ambition towards climate change mitigation efforts, consistent with the principle of common but differentiated responsibilities (Article 4(3)). The Paris Agreement recognises that developing countries will take longer to reach peak emissions (Article 4(1)) and commits to the support of developing country parties for implementation of their NDCs in order to allow for higher ambition in their actions (Article 4(5)). This includes the provision of financial resources by developed countries to developing countries (Articles 2(1)(c) and 9). Developed countries committed to a goal of mobilizing USD 100 billion a year by 2020 to address the needs of developing countries within the UNFCCC (UNFCCC, 2010; UNFCCC, 2011).

Partnerships with developing nations are an appropriate format for cooperation within a climate club. This is because they might provide an opportunity for deeper cooperation, confer equal decision-making power between countries, and provide an institutional framework to allow for the transfer of financing, technology, and capacity development measures (Weischer *et al.*, 2021; Lüpke, Neuhoff and Marchewitz, 2022). Such partnerships within the club, and in furtherance of the Paris Agreement goals, will also serve to reinforce the commitment to the principle of common but differentiated responsibilities, which was explicitly recognised by the German ministerial paper on climate clubs (German Federal Ministry of Finance *et al.*, 2021) and implicitly acknowledged in the G7 statement through its commitment to the “full implementation of the Paris Agreement and the decisions thereunder” (G7, 2022a).

Indeed, one of the core pillars of the proposed G7 climate club – from the very first ministerial paper in Germany, which arguably forms its basis, to the communique from the G7 summit itself – has been outreach and cooperation with developing countries. Developing countries have contributed significantly less to global warming while at the same time being more vulnerable to its effects and having fewer resource to adapt. A climate club could serve as an additional forum for support with aspects such as financial resources, institutional capacity, and collaboration on technology. However, to include developing countries into a plurilateral cooperative forum like a climate club established by industrialised countries raises a number of questions about the goals and nature of the climate club.

To begin with, a club is usually defined by the benefits it provides exclusively to its members (Dröge and Feist, 2022). In order to get access to these benefits, certain barriers to entry must be overcome by meeting the membership criteria. This, however, raises important questions about conditionality, an issue that has dogged international climate negotiations for years. From the perspective of vulnerable countries, financial support is urgent and cannot hinge on the establishment of a climate club, the details of its implementation, or indeed membership. Particularly against the backdrop of unfulfilled past commitments (OECD, 2022; Oxfam, 2022) and unmet needs (UNEP, 2021) in international climate finance, such a prospect of conditionality poses the danger of severely alienating potential partner countries.

As it currently stands, the proposed G7 climate club seems to serve more as a platform to boost ambition and coordination for cooperation among members. While still emphasising inclusivity and openness to new members, its outreach component primarily promotes collective engagement in plurilateral cooperation with regard to aspects such as climate finance and capacity support. This

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means that the club seeks to use its collective leverage to enhance cooperation with third-party countries, without requiring those partner countries to apply for membership as a pre-condition for cooperation.

An example of what this might look like is the Just Energy Transition Partnership (JETP) with South Africa that was announced at COP 26 in Glasgow. France, Germany, the United Kingdom, the United States, and the EU pledged to support South Africa in phasing out coal in its energy production in a manner that affords social protection to those affected by the necessary structural changes in the economy. While plagued by some initial difficulties (Bauer and Feist, 2022), the partnership with South Africa is an obvious role model in this regard as it is the first time this kind of results-oriented approach to climate diplomacy has been undertaken on this scale. The current challenges relate to finding common ground in the negotiations between the funders and the South African government on the focus areas and modalities of funding. These include aspects such as the speed and scale of fossil fuel phase-out, the degrees of privatization of the energy sector, as well as the shares of concessional finance, grants, and loans (von Lüpke, 2022). In addition to South Africa, India, Indonesia, and Senegal were invited as guest countries to the G7 summit and are engaged in similar talks about just transition partnerships (G7, 2022b); Vietnam is another candidate (Clean Energy Wire, 2022).

Indeed, the JETPs have been recognised as a complement to the climate club, owing to the “potential to leverage support and assistance to developing countries for decarbonising energy and industrial sectors, transparency, including through financial, technical capacity support and technology transfer development and deployment depending on their level of climate ambition” (G7, 2022a). As the example of the JETP with South Africa shows, financial support must be appropriate to allow for a nation-wide energy sector transition, with political implications for the course of such transitions (von Lüpke, 2022). A climate club could aim to assist such partnerships by providing an institutional framework for more effective negotiation and decision-making, including in the process of setting up new partnerships. Such an institutional structure would reflect the transnational character of JETPs, which may develop if contributors and recipients become engaged in constructive deliberations about objectives and ambition levels of energy transitions, subsequent to high-level international declaration of partnerships. The roles of contributors need to be defined, and questions about the legitimacy of foreign contributors opining on domestic energy policy in the recipient country should be carefully considered, including a potential conflict resolving mechanism (*ibid*). International climate institutions and initiatives are often hampered by the fact that they have been launched without the details having been finalised (Feist, 2017). An established institutional framework for new partnerships provided by a climate club could help mitigate this issue.

In concretising the activities of the club for partnerships with developing countries, much can be learned from the implementation experience with Official Development Assistance (ODA) programs in terms of their challenges and successes. For instance, capacity development, policy advisory services and diffusion, and financial assistance have resulted in tangible benefits for development and climate objectives (SNAPFI Consortium, 2020).

The commitments to climate finance under the UNFCCC are already in place, and the discharge of these obligations cannot and should not be made conditional on membership to a climate club. However, the flow of international climate finance is hampered by insufficient contributions, potentially inflated contributions, and insufficient contributions for adaptation as compared to the needs, leading to dissatisfaction among developing countries due to the non-fulfilment of the climate finance pledges in the UNFCCC (Timperley, 2021; UNEP, 2021). The importance of the transparent reporting of collective progress on climate finance as well as improved action by the multilateral development banks (MDBs) were recently recognised as priority areas in the Progress Report on the Climate Finance Delivery Plan released by Canada and Germany (German Federal Foreign Office, 2022).

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A climate club can provide the institutional framework to enable improved flows of climate finance, including through the MDBs.

V. Governance structure

Relevance of the climate club alongside the Paris Agreement

The Paris Agreement focuses on overarching goals such as the commitment to a temperature goal, greenhouse gas reduction, and climate finance. However, its framework does not directly address many of the more specific elements of these goals. A climate club could complement the Paris Agreement with an implementation-oriented approach on topics that require further collaboration at the international level.

While not a new idea, plurilateral forms of climate cooperation – such as the climate club proposed by the G7 or the Just Energy Transition Partnership with South Africa – have regained much attention lately (Falkner *et al.*, 2022). The appeal of smaller cooperative formats like climate clubs from a governance perspective is that they provide a politically relatively inexpensive option to move things forward in smaller groups of like-minded countries, making cooperation easier and more effective than in the multilateral UN process (Falkner *et al.*, 2022). In addition, with major economies as part of the club, policy coordination and harmonisation among members can lead to positive spill-over effects beyond club members and potentially incentivise others to join (Lavanex *et al.*, 2009).

There are, however, important pitfalls that must be taken into consideration. For one thing, reaching agreement is still not always easy (Falkner *et al.*, 2022), particularly on issues pertaining to areas such as trade or finance. As the deliberations leading up to and at the 2022 G7 summit appear to indicate, the required degree of policy change, for instance for establishing comparable carbon pricing systems, is by no means easy to negotiate even in smaller arrangements. While Germany's initial draft proposal for the G7 club contained unspecific but ambitious calls for common or coordinated carbon pricing (German Federal Ministry of Finance *et al.*, 2021), it may be inferred that this was not agreeable to all G7 parties, in light of the G7 summit's communique mentioning this aspect only in passing (Dröge and Feist, 2022; G7, 2022). Compromises are necessary, but in turn, they risk watering down the initially envisioned ambition and stringency of a club, ultimately potentially defeating the very purpose of opting for a plurilateral format in the first place.

While launching plurilateral initiatives like a climate club gives countries a tempting opportunity to herald them as a diplomatic success, additional new initiatives do not necessarily make climate governance more effective. Not least, the post-agreement phase of climate negotiations is often no less demanding diplomatically (Feist, 2017). The details of implementation are often contentious and still to be resolved, as the example of the JETP with South Africa has shown (Sguazzin *et al.*, 2022). Lastly, while usually largely based explicitly on the goals of the Paris Agreement, the connection between any plurilateral arrangement and the multilateral UN process should be made clear. With these considerations in mind, the following emerge as essential governance features for a climate club.

Complementarity with the Paris Agreement

A climate club should arguably result in benefits, which are complementary to those of the Paris Agreement, and an institutional architecture should be built, which should allow for the delivery of such outcomes. Here we are proposing a range of principles, instead of suggesting already defined types of governance, such as a certain type of secretariat or steering board or other entities.

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This is because institutional arrangements and ensuing governance arrangements might follow a process of agreement between prospective members on which functions and precise objectives, they would like to assign to a climate club – institutions should thereby reflect agreements on rules-in-use. Three considerations as follows might guide the design of a governance structure.

First, if the objective of a club is to coordinate and harmonize ambitious climate policies, including carbon pricing schemes, then the institutional structure should reflect principles such as power equality, national sovereignty over policy processes and needs for dialogues and exchanges. The value of the climate club as a forum for exchanges on policy frameworks, in the form of knowledge-sharing and peer review process has been described in detail in Section III above.

Second, if the objective is in-depth cooperation with and support for developing countries and emerging economies, then an institutional framework may need to be built, which allows for mutual goal setting, legitimizing policy interactions between international and domestic actors, and potentially steering and conflict resolving mechanisms. Much can be learned from the ODA mechanisms and instruments, when designing such institutional structures, in particular with regard to implementation experiences with conditionality of finance cooperation by international donor organizations and MDBs.

Third, the institutional structure and governance arrangements should be open and cooperative regarding the many international initiatives such as the Glasgow breakthrough alliances, just energy transition partnerships, or industry-led initiatives such as the Mission Possible Partnership or the Leadership Group for Industry Transformation. Further, careful consideration should be given to the governance functions of the UNFCCC and the Paris Agreement, among others, ambition-raising principles of climate action as reflected in Article 4 of the Paris Agreement and processes such as the global stocktake in Article 14 of the Paris Agreement.

Developing the facilitative role of international institutions

Although the idea of a climate club has come most recently from the G7, it must be borne in mind that the role of the G7 is by its nature restricted to that of an inter-governmental forum for deliberation, with inherent limitations with regard to institutional structure and governance norms. A G7 club could therefore merely serve as an incubator for enhanced cooperation that, to have binding legal effect, would necessarily need to be institutionally anchored within the existing architecture of international institutions (Dröge and Feist, 2022). The function of a climate club could be facilitative in nature - for creating synergies, avoiding duplications, and enabling soft coordination among the various existing initiatives.

VI. Recommendations for designing a climate club

- Efficient and strategic utilisation of time and political capacity to move away from a top-down approach focused on carbon pricing to a flexible plurilateral approach is supported by existing experiences in international climate cooperation and support the need for a climate club.
- Recognising the polycentric nature of international climate cooperation, while also strengthening alliance-building in matters of policy, finance, technology, and trade should form the contours of a climate club.
- A climate club with sectoral foci offers pathways for accelerated emission reduction in emission-intensive industries with trade exposure.
- The climate clubs can be a valuable forum for international knowledge-sharing and transparent communication about a comprehensive mix of climate policy measures across countries.
- The climate club could improve the effectiveness of climate finance deliberations in at least two aspects. First, it could provide the institutional framework for enhanced cooperation across industrialised and developing countries, thereby fostering trust between the two groups of countries. Second, by focussing on sectoral topics such as industry, energy or transport, a club could foster cooperation on sector specific policies, technologies and finance instruments and flows specific to sectoral needs.
- The climate club can aid and supplement the Paris Agreement and the UNFCCC by addressing several action points contemplated therein and accelerating the pace of action.
- The club activities should reinforce commitment to the principle of common but differentiated responsibilities and use the practical experience and learnings from existing initiatives such as JETPs, while offering a framework for improving their functioning.
- The climate club should build synergy with existing institutional structures within the UNFCCC, and develop the institutional structures, which have been difficult to establish in the UNFCCC, but are necessary for increasingly deeper climate cooperation and accelerated emission reduction.

Conclusion

Although climate clubs find a place in academic literature in the context of club theory, protection against free-riding, and trade benefits, the concept has evolved to that of an inclusive and ambition-based alliance in recent times. Although the idea of a climate club has come into relative prominence through the G7 Statement of 2022, the various elements of a climate club are still being deliberated upon. This paper offers inputs on designing a purposeful and equitable climate club aimed at emission reduction and the furtherance of the Paris Agreement goals.

Garnering political support on a climate club based on carbon pricing has proven to be difficult not only within the G7 that seeks to advance the very concept but may also be unrealistic due to the developments in the ongoing energy crisis. At the same time, the present energy crisis highlights the importance of building strategic alliances to shift away from fossil fuels, which underscore the need for international cooperation through coalitions such as a climate club.

There are valuable lessons to be learnt from past forms of international cooperation. The bottom-up approach of the Paris Agreement replacing the top-down approach of the Kyoto Protocol highlights the importance of international cooperation on climate based on a mix of policy instruments. The Montreal Protocol on Substances that Deplete the Ozone Layer (1987) is instructive as an example of large-scale international cooperation between countries that was successful in reducing emissions in a sector, without reliance on a price signal, and with adequate consideration to the different obligations and considerations of developed and developing countries.

This paper finds that that a climate club with sectoral foci, concentrated on carbon-intensive industrial sectors, rather than across entire economies, offers a more practical path to decarbonisation. In concrete terms, the climate club can offer opportunities for setting higher ambitions for sector-based decarbonization, knowledge-sharing, transparent communication, and policy diffusion. In this context, the paper highlights the value of openness to a mix of climate change mitigation and decarbonisation policies.

The paper also examines the relevance and importance of a climate club alongside the Paris Agreement and the UNFCCC, including with respect to the discharge of obligations such as climate finance and the adherence to the principle of common but differentiated responsibilities. Governance structures that formalize those intentions, are discussed, and guiding principles proposed. Much lauded political declarations to finance just energy transitions in the global south such as the case of the JETP South Africa might require further institutional development to foster cooperation between contributing and recipient governments. A climate club could have the objective of fostering such institutionalisation of cooperative modalities with the expectation to thereby improve the effectiveness of international climate finance deliberations.

Beyond such measures, this paper represents a collaboration between German and Canadian partners to better socialize the concept of climate clubs beyond Europe. Climate policy comes at an intersection of energy, trade, and industrial policy, and as this paper points out, in practice is driven not just economic concerns such as free-riding, but also by internal domestic politics. Ensuring that proposed climate policy measures are understood and accepted across a much broader swathe of the public, and that policies are informed by the real concerns facing industrial stakeholders, including the regions they operate in and the workers they represent, is an integral step towards better and faster action.

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Some further areas for research and discussion on a climate club that emerge from this paper include the development of a methodology for piloting sectors for the climate club, identifying the gaps in climate finance that can effectively be addressed through a club setup without to make club membership attractive for developing countries, and developing processes for goal setting and the establishment of timelines within the club.

References

Adams, Kevin, Magnus Benzie, Simon Croft, and Sebastian Sadowski (2021). “Climate Change, Trade, and Global Food Security: A Global Assessment of Transboundary Climate Risks in Agricultural Commodity Flows”, SEI Report, Stockholm Environment Institute, Stockholm.

Aklin, Michaël, Mildenerger, Matto (2020). “Prisoners of the Wrong Dilemma: Why Distributive Conflict, Not Collective Action, Characterizes the Politics of Climate Change”, *Global Environmental Politics*; 20(4): 4–27.

Banks, George David, and Timothy Fitzgerald (2020). “A sectoral approach allows an artful merger of climate and trade policy”, *Climatic Change*; 162: 165–173.

Barrett, Scott (2010). “Climate Change and International Trade: Lessons on their Linkage from International Environmental Agreements”, [online] available at: https://www.wto.org/english/res_e/reser_e/climate_jun10_e/background_paper6_e.pdf, accessed on 31 October 2022.

Bauer, Steffen and Feist, Marian (2022). “Just Energy Transition Partnerships: Boosting international climate cooperation?”, [online] available at: <https://blogs.idos-research.de/2022/09/21/just-energy-transition-partnerships-boosting-international-climate-cooperation/>, accessed on 31 October 2022.

BBC News (2 November 2021). “COP26: India PM Narendra Modi pledges net zero by 2070”, [online] available at: <https://www.bbc.com/news/world-asia-india-59125143>, accessed on 31 October 2022.

Beiser-McGrath, Liam, and Thomas Bernauer (2022). “Domestic Provision of Global Public Goods: How Other Countries’ Behavior Affects Public Support for Climate Policy”, *Global Environmental Politics*; 22(1), 117-138.

Bloomberg Tax (20 June 2022). “Carbon Taxes in the Shipping Industry—Assessing Japan’s Proposal”, [online] available at: <https://news.bloombergtax.com/daily-tax-report-international/carbon-taxes-in-the-shipping-industry-assessing-japans-proposal>, accessed on 31 October 2022.

Braun, Dietmar, and Fabrizio Gilardi (2006). “Taking ‘Galton’s Problem’ Seriously: Towards a Theory of Policy Diffusion”, *Journal of Theoretical Politics*, 18(3): 298–322.

Bruegel (2022). “National fiscal policy responses to the energy crisis”, [online] available at: <https://www.bruegel.org/dataset/national-policies-shield-consumers-rising-energy-prices>, accessed on 31 October 2022.

Buchanan, James (1965). “An Economic Theory of Clubs”, *Economica*; 32(125).

Campbell, Erin, Anne McDarris, and William Pizer (2021). “What is a Border Carbon Adjustment?”, *Resources for the Future Explainer*, [online] available at: <https://www.rff.org/publications/explainers/border-carbon-adjustments-101/>, accessed on 31 October 2022.

Carbon Market Watch (2022). “Trilogue triangulation: Mapping the positions of the EU institutions on carbon market reform”, [online] available at: <https://carbonmarketwatch.org/2022/09/19/trilogue-triangulation-mapping-the-positions-of-the-eu-institutions-on-carbon-market-reform/>, accessed on 31 October 2022.

Perspectives on designing a climate club

Center for Climate and Energy Solutions, (n.d.). “Carbon Border Adjustments”, [online] available at: <https://www.c2es.org/content/carbon-border-adjustments/>, accessed on 31 October 2022.

Clean Energy Wire (2022). “Germany increases climate finance to poorer nations to €5.3 billion”, [online] available at: <https://www.cleanenergywire.org/news/germany-increases-climate-finance-poorer-nations-eu53-billion>, accessed on 31 October 2022.

Compton, Andrew, Will Kim, Gabriel Grossman, and Paulina Sosa (2022). “Climate Change Progress: The Inflation Reduction Act”, Linklaters, [online] available at: <https://www.linklaters.com/en/knowledge/publications/alerts-newsletters-and-guides/2022/august/23/climate-change-progress-the-inflation-reduction-act>, accessed on 31 October 2022.

Congressional Research Service (2022). “Border Carbon Adjustments: Background and Recent Developments”, [online] available at: <https://crsreports.congress.gov/product/pdf/R/R47167>, accessed on 31 October 2022.

Department of Energy (2022). “DOE Announces Notice of Sale of Additional Crude Oil From the Strategic Petroleum Reserve”, [online] available at: <https://www.energy.gov/articles/doe-announces-notice-sale-additional-crude-oil-strategic-petroleum-reserve>, accessed on 31 October 2022.

Dröge, Susanne, and Feist, Marian (2022). “The G7 Summit: Advancing International Climate Cooperation?”, [online] available at: <https://www.swp-berlin.org/en/publication/the-g7-summit-advancing-international-climate-cooperation>, accessed on 31 October 2022.

Dubash, Navroz K. and Rajamani, Lavanya (2010). “Beyond Copenhagen: Next Steps”, Climate Policy.

Euractiv, [online] available at: available at <https://www.euractiv.com/section/emissions-trading-scheme/news/berlin-freezes-carbon-price-in-the-name-of-crisis-relief/>, accessed on 31 October 2022.

European Commission (2021a). “Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union, Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and Regulation (EU) 2015/757”, [online] available at: https://ec.europa.eu/info/sites/default/files/revision-eu-ets_with-annex_en_0.pdf, accessed on 31 October 2022.

European Commission (2021b). “Proposal for a Regulation of the European Parliament and of the Council establishing a carbon border adjustment mechanism” COM(2021) 564 final, [online] available at: <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:52021PC0564>, accessed on 31 October 2022.

European Commission (n.d.). “EU Emissions Trading System (EU ETS)”, [online] available at: https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets_en#developing-the-carbon-market-1, accessed on 31 October 2022.

European Council (2022a). “European Council conclusions on energy and economy”, [online] available at: <https://www.consilium.europa.eu/en/press/press-releases/2022/10/21/european-council-conclusions-on-energy-and-economy-20-october-2022/>, accessed on 31 October 2022.

Perspectives on designing a climate club

European Council (2022b). “Council agrees on the Carbon Border Adjustment Mechanism (CBAM)”, [online] available at: <https://www.consilium.europa.eu/en/press/press-releases/2022/03/15/carbon-border-adjustment-mechanism-cbam-council-agrees-its-negotiating-mandate/>, accessed on 31 October 2022.

Falkner, Robert (2010). “International Climate Policy after Copenhagen: Towards a ‘Building Blocks’ Approach”, *Global Policy*.

Falkner, Robert, Naghmeh Nasiritousi, and Gunilla Reischl (2022). “Climate clubs: politically feasible and desirable?”, *Climate Policy*; 22(4): 480–487.

Feist, Marian (2017). “Learning in International Negotiations: The strategic use of lessons in post-agreement climate finance politics”, *London School of Economics and Political Science*.

Fraser Institute (2019). “The Impact of the federal carbon tax on the competitiveness of Canadian industries”, [online] available at: <https://www.fraserinstitute.org/sites/default/files/impact-of-the-federal-carbon-tax-on-competitiveness.pdf>, accessed on 31 October 2022.

G7 (2022a). “G7 Statement on Climate Club”, [online] available at: <https://www.g7germany.de/g7-en/current-information/g7-climate-club-2058310>.

G7 (2022b). “The G7 Summit programme at a glance”, <https://www.g7germany.de/g7-en/current-information/g7-working-sessions-2058318>, accessed on 31 October 2022.

German Federal Foreign Office (2022). “Where does the world stand on climate finance?”, [online] available at: <https://www.auswaertiges-amt.de/en/aussenpolitik/themen/climate-finance-delivery-plan/2560814>, accessed on 31 October 2022.

German Federal Government (2021a). “Intergenerational contract for the climate”, [online] available at: <https://www.bundesregierung.de/breg-de/themen/klimaschutz/climate-change-act-2021-1936846#:~:text=With%20the%20amendment%20to%20the,of%201990%20levels%20by%202030>, accessed on 31 October 2022.

German Federal Government (2021b). “Koalitionsvertrag zwischen SPD, Bündnis 90/Die Grünen und FDP”, [online] available at: <https://www.bundesregierung.de/breg-de/service/gesetzesvorhaben/koalitionsvertrag-2021-1990800>, accessed on 31 October 2022.

German Federal Ministry of Finance, German Federal Ministry of Foreign Affairs, German Ministry of Economy, German Federal Ministry for the Environment, German Federal Ministry of Economic Cooperation and Development (2021). “Steps towards an alliance for climate, competitiveness and industry – building blocks of a cooperative and open climate club”, [online] available at: https://www.bundesfinanzministerium.de/Content/EN/Downloads/Climate-Action/key-issues-paper-international-climate-club.pdf?__blob=publicationFile&v=4.

Giraldi, Fabrizio, Charles Shipan, and Bruno Wueest (2020). “Policy Diffusion: The Issue-Definition Stage”, *American Journal of Political Science*, [online] available at: <https://onlinelibrary.wiley.com/doi/abs/10.1111/ajps.12521>, accessed on 31 October 2022.

Gokhale, Hemangi (2021). “Japan's carbon tax policy: Limitations and policy suggestions”, *Current Research in Environmental Sustainability*, [online] available at: <https://www.sciencedirect.com/science/article/pii/S266604902100058X>, accessed on 31 October 2022.

Perspectives on designing a climate club

Gopalakrishnan, Tarun (2021). “What the 1987 Montreal Protocol Teaches Us About Carbon Border Taxes”, [online] available at: <https://www.climatepolicylab.org/climatesmart/2021/8/17/what-the-1987-montreal-protocol-teaches-us-about-carbon-border-taxes>, accessed on 31 October 2022.

Government of Canada (2021). “Update to the Pan-Canadian Approach to Carbon Pollution Pricing 2023-2030”, [online] available at: <https://www.canada.ca/en/environment-climate-change/services/climate-change/pricing-pollution-how-it-will-work/carbon-pollution-pricing-federal-benchmark-information/federal-benchmark-2023-2030.html>, accessed on 31 October 2022.

Government of Canada (2022). “Consultation on border carbon adjustments”, <https://www.canada.ca/en/department-finance/programs/consultations/2021/border-carbon-adjustments.html>, accessed on 31 October 2022.

Hermwille, Lukas, Stefan Lechtenböhrer, Max Åhman, Harro van Asselt, Chris Bataille, Stefan Kronshage, Annika Tönjes, Manfred Fishedick, Sebastian Oberthür, Amit Garg, Catherine Hall, Patrick Jochem, Clemens Schneider, Ryna Cui, Wolfgang Obergassel, Panagiotis Fragkos, Saritha Sudharma Vishwanathan, and Hilton Trollip (2022). “A climate club to decarbonize the global steel industry”, *Nature Climate Change*; 12: 494–496.

House of Commons (2022), “Greening imports: a UK carbon border approach: Government Response to the Committee’s Fifth Report of Session 2021–22”, [online] available at: <https://committees.parliament.uk/publications/22694/documents/166777/default/>, accessed on 31 October 2022.

Hübner, Christian (2021). “Perception of the Planned EU Carbon Border Adjustment Mechanism in Asia Pacific – An Expert Survey”, Konrad Adenauer Stiftung.

Inside Climate News (12 August 2022). “After 25 Years of Futility, Democrats Finally Jettison Carbon Pricing in Favor of Incentives to Counter Climate Change”, [online] available at: <https://insideclimatenews.org/news/12082022/after-25-years-of-futility-democrats-finally-jettison-carbon-pricing-in-favor-of-incentives-to-counter-climate-change/>, accessed on 31 October 2022.

Kammerer, Marlene and Namhata, Chandreyee (2018). “What drives the adoption of climate change mitigation policy? A dynamic network approach to policy diffusion”, *Policy Sciences* 51: 477–513

Kolev, Galina and Hubertus Bardt (2021). “Trade Club for Climate”, IW-Policy Paper; No. 8, Cologne, [online] available at: <https://www.iwkoeln.de/studien/galina-kolev-hubertus-bardt-trade-club-for-climate.html>, accessed on 31 October 2022.

Kurmayer, Nikolaus (5 September 2022). “Berlin freezes carbon price in the name of crisis relief”

Lavanex, Sandra, Dirk Lehmkuhl, and Nicole Wichmann (2009). “Modes of External Governance: A Cross-National and Cross-Sectoral Comparison”, *Journal of European Public Policy*, [online] available at: https://www.researchgate.net/publication/49286515_Modes_of_External_Governance_A_Cross-National_and_Cross-Sectoral_Comparison, accessed on 31 October 2022.

Leadership Group for Industry Transition (2022). Industry transition dialogue. URL: <https://www.industrytransition.org/events/industry-transition-dialogue/>

Martini, Leon and Benjamin Görlach (2022). “What Role for a Climate Club under the German G7 Presidency?”, *Ecologic Policy Brief*.

Perspectives on designing a climate club

Nachtigall, Daniel (2019). “Improving economic efficiency and climate mitigation outcomes through international co-ordination on carbon pricing”, OECD Environment Working Papers; No. 147, OECD Publishing, Paris.

Nagasaki, Junichiro (18 November, 2021). “LDP’s tax reform chief vows no carbon tax for next fiscal year. Asahi Shimbun”. [online] available at: <https://www.asahi.com/ajw/articles/14484093>, accessed on 31 October 2022.

Nordhaus, William (2021). “Dynamic climate clubs: On the effectiveness of incentives in global climate agreements”, Proceedings of the National Academy of Sciences; 118(45).

Nordhaus, William, (2015). “Climate Clubs: Overcoming Free-riding in International Climate Policy”, American Economic Review; 105(4).

Obergassel, Wolfgang, Hanna Wang-Helmreich, and Lukas Hermwille (2019). “A sectoral perspective on climate clubs”, [online] available at: https://epub.wupperinst.org/files/7547/7547_Climate_Clubs.pdf, accessed on 31 October 2022.

Oberthür, Sebastian, Gauri Khandekar, and Tomas Wyns (2021). “Global governance for the decarbonisation of energy-intensive industries: Great potential underexploited”, Earth System Governance.

OECD, (2022). “Aggregate Trends of Climate Finance Provided and Mobilised by Developed Countries in 2013–2020”, [online] available at: <https://www.oecd.org/climate-change/finance-usd-100-billion-goal/aggregate-trends-of-climate-finance-provided-and-mobilised-by-developed-countries-in-2013-2020.pdf>, accessed on 31 October 2022.

Oxfam International (2022). “Climate finance short-changed: The real value of the \$100 billion commitment in 2019-20”, [online] available at: https://www.oxfam.de/system/files/documents/bn-climate-finance-short-changed-191022-en_embargoed.pdf, accessed on 31 October 2022.

Pagani, Fabricio (2002). “Peer review as a tool for co-operation and change: An analysis of an OECD working method”. African Security Review, 11(4), 15–24, [online] available at: <https://doi.org/10.1080/10246029.2002.9628141>, accessed on 31 October 2022.

Prime Minister’s Office (2022). “Prime Minister participates in successful visit to Germany”, [online] available at: <https://pm.gc.ca/en/news/news-releases/2022/03/09/prime-minister-participates-successful-visit-germany>, accessed on 31 October 2022.

Rae, Ian (2012). “Saving the ozone layer: why the Montreal Protocol worked”, [online] available at: <https://theconversation.com/saving-the-ozone-layer-why-the-montreal-protocol-worked-9249>, accessed on 31 October 2022.

Reuters (30 August 2022). “EU’s von der Leyen rebuffs Polish call to suspend carbon market”, [online] available at: <https://www.reuters.com/article/europe-energy-power-idAFL1N3061Q1>, accessed on 31 October 2022.

Roberts, Timmons, Romain Weikmans, Stacy-ann Robinson, David Cipllet, Mizan Khan, and Danielle Falzon Weikmans (2021). “Rebooting a failed promise of climate finance”, Nature Climate Change 11: 180–182.

Saldinger, Adva (2022). “Devex Invested: Lots of talk and few solutions for a mounting debt crisis”, [online] available at: <https://www.devex.com/news/devex-invested-lots-of-talk-and-few-solutions-for-a-mounting-debt-crisis-104230>, accessed on 31 October 2022.

Perspectives on designing a climate club

Sguazzin, Antony, Jennifer Dlouhy, and John Ainger (2022). “A Landmark \$8.5 Billion Climate Finance Deal Hangs in the Balance”, [online] available at: <https://www.bloomberg.com/news/articles/2022-10-03/south-africa-s-8-5-billion-climate-finance-deal-with-rich-donors-test-for-coal>, accessed on 31 October 2022.

Shawkat, Aylin, Aaron Cosbey, and Oliver Sartor (2022). “International climate cooperation for energy-intensive industry: A (realistic) proposal”, Agora Industry Impulse.

SNAPFI consortium (2020). “Transformational change towards low-carbon development in emerging economies: insights from international climate finance cases”, [online] available at: <https://www.diw.de/snapfi>, accessed on 31 October 2022.

Stern, Nicholas, and Lankes, Hans Peter (2022). “Collaborating and Delivering on Climate Action through a Climate Club: An independent report to the G7”, London: London School of Economics and Political Science.

Sunstein, Cass (2007). “Of Montreal and Kyoto: A Tale of Two Protocols”, 31 Harvard Environmental Law Review.

The White House (2022). “Fact Sheet: Inflation Reduction Act Advances Environmental Justice”, [online] available at: <https://www.whitehouse.gov/briefing-room/statements-releases/2022/08/17/fact-sheet-inflation-reduction-act-advances-environmental-justice/>, accessed on 31 October 2022.

Timperley, Jocelyn (2021). “The broken \$100-billion promise of climate finance — and how to fix it”, Nature; 598: 400-402.

UBA (Umweltbundesamt / Federal Environmental Agency) (2017). “1987–2017: 30 Jahre Montrealer Protokoll”, Dessau, [online] available at: https://www.umweltbundesamt.de/sites/default/files/medien/376/publikationen/1987_-_2017_30_jahre_montrealer_protokoll_bf.pdf, accessed on 31 October 2022.

UK Government (2022). “Participating in the UK ETS”, [online] available at: <https://www.gov.uk/government/publications/participating-in-the-uk-ets/participating-in-the-uk-ets>, accessed on 31 October 2022.

UNEP (n.d.). “About Montreal Protocol”, [online] available at: <https://www.unep.org/ozonaction/who-we-are/about-montreal-protocol#:~:text=The%20Montreal%20Protocol&text=Adopted%20on%2016%20September%201987,all%20198%20UN%20Member%20States>, accessed on 31 October 2022.

United Nations (2015). “Paris Agreement”, [online] available at: https://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf, accessed on 31 October 2022.

United Nations Framework Convention on Climate Change (2010). “Report of the Conference of the Parties on its fifteenth session, held in Copenhagen from 7 to 19 December 2009” (the “Copenhagen Accord”), [online] available at: <https://unfccc.int/sites/default/files/resource/docs/2009/cop15/eng/11a01.pdf>, accessed on 31 October 2022.

Perspectives on designing a climate club

United Nations Framework Convention on Climate Change (2011). “Report of the Conference of the Parties on its sixteenth session, held in Cancun from 29 November to 10 December 2010”, [online] available at: <https://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf>, accessed on 31 October 2022.

United Nations Framework Convention on Climate Change (2015). “Report of the Conference of the Parties on its twenty-first session, held in Paris from 30 November to 13 December 2015”, [online] available at: <https://unfccc.int/resource/docs/2015/cop21/eng/10a01.pdf#page=8>, accessed on 31 October 2022.

United Nations University (2015). “COP15 to COP21 – Crucial Changes in the Climate Mitigation Landscape”, [online] available at: <https://ourworld.unu.edu/en/cop15-to-cop21-crucial-changes-in-the-climate-mitigation-landscape>, accessed on 31 October 2022.

UNPED, (2022). “Adaptation Gap Report 2021”, [online] available at: <https://www.unep.org/resources/adaptation-gap-report-2021>, accessed on 31 October 2022.

Vangenechten, Domien, and Johanna Lehne (2021). “Can a climate club accelerate industrial decarbonisation? Towards more international cooperation in the decarbonisation of heavy industry”, E3G Briefing Paper.

von Lüpke, Heiner (2022). “International Support for Just Energy Transitions: Identification and Assessment of Key Factors Driving Cooperation”, Earth Systems governance conference.

von Lüpke, Heiner, Karsten Neuhoff, and Catherine Marchewitz (2022). “Klimaclubs oder Klimapartnerschaften? Wie eine effektive Klimakooperation mit Drittstaaten gelingen kann: Policy Brief”, DIW Berlin: Politikberatung kompakt DIW Berlin, German Institute for Economic Research, volume 127.

Weischer, Lutz, Sven Morgen, Rixa Schwarz, Martin Voß, and Fiona Marker (2021). “Paris-Partnerschaften Ein Beitrag zur Neuausrichtung der deutschen Klimaaußenpolitik an den Zielen des Pariser Klima-Abkommens”, Berlin and Bonn: Germanwatch e.v, [online] available at: https://germanwatch.org/sites/default/files/Studie_Paris-Partnerschaften.pdf, accessed on 31 October 2022.

World Steel Association (2020). “World Steel in Figures 2020”, [online] available at: <https://worldsteel.org/wp-content/uploads/2020-World-Steel-in-Figures.pdf>, accessed on 31 October 2022.



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