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The Political Economy of Development and Climate Policy – Prospects and Challenges for an Emission Trading Scheme as Development and Climate Policy Tool*

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Abstract:

Economic development and climate change constitute two of today's major international policy challenges. While development cooperation has long been on the political agenda, addressing global climate change has gained policymakers' attention more recently. Transfers for financing single projects have been a common practice in the development field. Empirical evidence suggests that the effectiveness has remained disappointing. Consequently, many developing countries face governance problems affecting their ability to master challenges associated with climate change. Current trends in international climate cooperation follow a similar approach. Political efforts may prove insufficient to meet climate objectives if similar deficiencies occur in climate cooperation.

Applying a political economy approach, this paper provides a critical assessment of current practices in international development and climate policies highlighting the observed deficiencies in development and potential implications for climate cooperation. Acknowledging the interlinkages and linking development and climate change policies, could increase the effectiveness and efficiency of political efforts. The paper, furthermore, discusses market-based instruments, especially Emission Trading Schemes as policy alternatives as well as the potential merits for circumventing and solving institutional problems experienced in climate cooperation. We discuss the political economic challenges affecting the implementation and operation of (a global) scheme.

Keywords: development, climate change, policy coordination, emission trading scheme, issue linkage

JEL codes: O13, O44, P41, P48

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1. Introduction

Two major global issues today are economic development and climate change. While development has been a longstanding challenge, addressing climate change has gained recent attention from policymakers. These fields are interconnected, as traditionally development relied on resource exploitation, especially fossil fuels, and contributed to environmental changes which are unevenly distributed with developing countries overproportionately affected. International development cooperation has more experience than climate cooperation. Expenditures in development aid – mainly for single development projects – have increased over time, the aspired effects have been missed more often than not. The *modus operandi* in development cooperation has been the financing of single development projects linked to specific outcome objectives. The efforts in international climate policy pursue a similar approach. In 2009, donor countries committed to contribute 100 billion US$ per year to the Green Climate Fund for financing climate projects by 2020.[1]

Development and climate change differ regarding the geographic scale and timeframe, actors involved as well as the political economy concerning both fields. Climate change is a problem of global externalities. The atmosphere – used as a sink – has the characteristics of a commons, efforts in climate change are a public good. Each country has the incentive to exploit the good excessively while not contributing (sufficiently) to climate protection. This problem was well pointed out in economic sciences (e.g. see Hardin 1968; Ostrom 1990). The consequential market failure justifies intervention. However, the international community has yet not been able to resolve this failure and establish the required coalitions to adopt measures for addressing climate change. The main contributors to climate change are industrialized countries and some emerging economies. They seem on average to be prepared better for the consequences than developing countries. Thus, it is sensible that the latter are supported by the first. If, however, ineffectiveness observed in development cooperation similarly occurs in international climate cooperation, political efforts may prove futile to meet designated objectives. This means the loss of financial and time resources.

The linkages between development and climate change are manifold and reciprocal. However, they have yet been insufficiently considered. The so-called Rio process in 1992 constitutes a starting point for political efforts to approach both topics. The United Nations' (UN) Millennium Development Goals (MDGs) and succeeding Sustainable Development Goals (SDGs) comprise tangible and specific policy targets in both fields. Increasingly, climate policy has been mainstreamed in the framing of sustainable development (Halsnæs et al. 2008). Yet, no policy tool conflates both fields, emphasizes their linkages, and unleashes synergy effects.[2]

The political economy literature has established clear indications about institutional challenges that complicate cooperation and political reforms. This suggests that the political feasibility is likely to be a bottleneck for a global policy. Therefore, a thorough consideration of the governance structures pinned around the two policy fields and resulting incentive conflicts can help identify necessary institutional preparations for the suggested reforms.

The contribution of this paper is twofold. First, it addresses the question of whether experiences and inefficiencies in international development cooperation need to be considered as a warning example for international climate cooperation. Second and given the clear theoretical and empirical knowledge about globally effective policies, we discuss market-based instruments as a policy alternative.

[1] See: https://www.greenclimate.fund/about/resource-mobilisation.

[2] To overcome current inefficiencies, it is critical to come up with effective and efficient political. Freytag et al. (2023) suggest the establishment of a global emission trading scheme (ETS) that includes a distribution scheme for free emission allowances. Thereby, it can spawn development processes within the framework of a climate policy tool.

Especially, ETS combine several advantages that would make it a powerful instrument for international climate protection efforts. We discuss the political economic challenges affecting the implementation and operation of (a global) ETS against the background of the development problem.

The remainder of this paper is structured as follows. Section 2 portrays development and climate change as current global challenges and their interrelations. Section 3 provides an overview of the evolution of policies in both fields. Section 4 provides a discussion of the empirical evidence of aid effectiveness and identifies critical institutional problems and transfers those to climate cooperation. Section 5 summarizes the political economy of climate cooperation and empirical evidence on the effectiveness of ETS. This allows to derive critical institutional requirements. Finally, the conclusion summarizes the main points.

2. Development and climate change as political challenges

There is no conclusive definition of **development cooperation**. Much of the cooperation is based on financial transfers. In this paper, we follow the Organisation for Economic Co-operation and Development (OECD) which defines Official Development Aid (ODA) as "government aid that promotes and specifically targets the economic development and welfare of developing countries". Large-scale efforts in funding development projects in less developed countries emerged in the 1960s. The political ambitions manifested in a UN Resolution in 1970 when countries committed to spending 0.7 percent of Gross National Income (GNI) as ODA.[3] Ever since the spending has increased and amounted to almost 180 billion US$ of global ODA in 2020 (OECD 2022). Africa alone has received an aggregate of more than a trillion US$ (Masaki 2018). Traditionally, much of the development endeavors circulated around the creation of income sources with little attention given to climate matters.

Climate change is the observed change "in the long-term weather patterns that characterize the regions of the world." (VijayaVenkataRaman et al. 2012). As the explanatory power of climate models has increased over time, (Meckling et al. 2015), there is growing evidence that the changes are anthropogenic. The consequences are rising sea levels and a higher frequency of extreme weather events. This has already affected the functionality and sustainability of ecosystems and ultimately sources of human welfare (Hulme 2009). The political attention to changes in the natural environment as well as associated risks has intensified since the 1980s. The response to climate change must be to find solutions that would either help to adapt to the changes or slow down – ideally stop – the process.

Isolated and compartmentalized policies often fail to consider mutual connections and cause unintentional consequences. Development and climate policies have to be connected for various reasons:

Environmental degradation and extreme weather events are instances of how climate change can cause economic costs and disrupt economic development. More generally, temperature-induced changes in the natural environment can impair domestic production processes and, thereby, have devastating effects on national development (Agrawala 2005). The effects differ across countries, disadvantaging poor countries due to their geographic proximity to the equator (Moore et al. 2017; Ayers and Huq 2009; Mendelsohn, Dinar, and Williams 2006). Sectoral analyses show that among the main challenges for developing countries are the damages caused in agriculture (Mendelsohn 2009) as well as recessions in labour productivity, increases in healthcare expenditures and energy demand,[4] and downturns in tourism (Dellink et al. 2019). Dingel et al. (2019) emphasize that those regionally concentrated effects are likely to increase inequalities across continents. Environmental changes are

[3] Note that the definition of ODA was changed over time. The latest revision took place in 2018 (OECD 2022).

[4] The energy sector is of great significance as it contributes to global emissions by more than 70 percent (Climate Watch 2022; The World Resources Institute 2022).

further associated with increased risks for domestic armed conflict (Mach et al., 2019)[5] as well as social inequality (Islam and Winkel 2017; Cappelli et al. 2021). Climate-induced migration represents yet another channel that could cause economic disruptions (Burzyński et al. 2022). Disruptions can also occur on the project level when ill-designed. Natural disasters can destroy physical infrastructure built as part of development projects (Agrawala and van Aalst 2008; Agrawala 2005). This is especially difficult every time long-term climate effects vie against short-term development objectives. Timescale restrictions can prohibit the consideration of climate aspects in the planning of development projects (Agrawala 2005).

Traditionally, development has relied on the exploitation of natural resources, especially fossil fuels. Carbon emissions have been a critical determinant of economic development indicated by the positive correlation, especially in low-income countries (Tucker 1995; Fan et al. 2006).[6] Efforts to decouple economic growth and carbon emissions have weakened the correlation (Haberl et al. 2020). Global emissions are nonetheless increasing, though, at a lower rate than world GDP (Hickel and Kallis 2020). Countries differ with regard to their financial capabilities to fund climate policy, the historical and current emissions, and the vulnerability towards climate change. The chosen development path also affects the capacity to adapt to climate change (Huq et al. 2006). With the current technology and promoting domestic development being a priority over climate mitigation efforts, emissions are likely to increase in developing countries in the future.

3. The evolution of development and climate policies and their linkages

Facilitating economic development through international cooperation, especially in those parts of the world suffering from poverty, and combating climate change have been increasingly acknowledged as current policy challenges. The links between economic development and climate advise that policies address both jointly. As pointed out by Huq et al. (2002), for "either process to work, each must reinforce the other." This section gives an overview of the progression of the policy frameworks for development and climate cooperation.

Debates about climate change and development have emerged among a variety of stakeholders, probably being mutually dependent and reinforcing. This section traces the evolution of the political frameworks that have been implemented as a result of these debates. We distinguish between debates and policies addressing either of the fields as well as those that explicitly connect both. Furthermore, we disentangle between the contributions of science and politics as well as policy implementation as summarized in Figure 1.

The types of and intentions behind as well as targeted objectives and scale of funding in **development cooperation** have evolved over time. While in the period of decolonization in Africa, industrialization had been perceived as one critical driver of economic growth, the role of foreign aid was to provide resources for investment in the industrial sectors as developing countries largely failed to attract private investment (Ruttan 1996). This industrialization-centered approach of the 1960s was amended with funding of the agricultural sector which had been perceived as passive and backward-looking in the 1970s. Foreign aid was increasingly used to promote a modernized agricultural industry. Other new objectives were the remedy of widening foreign exchange gaps, employment creation, poverty reduction, moderation of income distribution, and moderating the effects of rural-urban migration. Aid funds had increasingly been used for technical assistance, redistribution schemes such as land reforms, and targeted welfare programs. The 1980s were characterized by severe balance-of-payment

[5] The 2007 Nobel peace prize for the IPCC may be interpreted as an indicator to this regard.

[6] Tucker (1995) finds evidence for a nonlinear relationship between income and emission levels. That can mean that environmental protection is given higher political priority at higher income levels or be the consequences of structural change towards a more service-oriented economy.

and budget deficits resulting in heavy debt burdens for developing countries. This period is referred to as the "lost development decade" (Singer 1989). Foreign aid was targeted at restoring fiscal stability and supporting structural adjustment policies. This coincided with a period of economic deregulation and liberalization which emphasized the role of the private sectors. This political course had been pursued into the 1990s. The economic turmoil after the Asian financial crisis in 1997 absorbed much of the aid capacities, yielded another round of adjustment policies and shifted the focus back towards poverty reduction. The volume of ODA funds dropped during the 1990s which can be a consequence of rising *aid fatigue* (compare Hook 1996). Since the beginning of the 2000s, development aid has changed with regard to donor structure – new players have entered the stage – and the organization (Lancaster 2008). The list of objectives was extended with political reforms, usually tied around aid conditionalities that aim to expedite democratization processes in recipient countries. Especially, starting with the 2000s, structural shortcomings led to a critical review of ODA practices. Those manifested in the 2005 Paris Declaration on Aid Effectiveness,[7] the 2008 Accra Agenda for Action, the 2009 OECD International Good Practice Principles for Country-Led Division of Labor and Complementarity, and the 2011 Busan Partnership for Effective Development Co-operation. Those agreements concluded guidelines streamlining aid practices and improving transparency and actors' accountability. More recently, ODA has involved objectives concerning environmental integrity,[8] humanitarian assistance as well as improving aid governance (Gupta 2009; Easterly 2007).

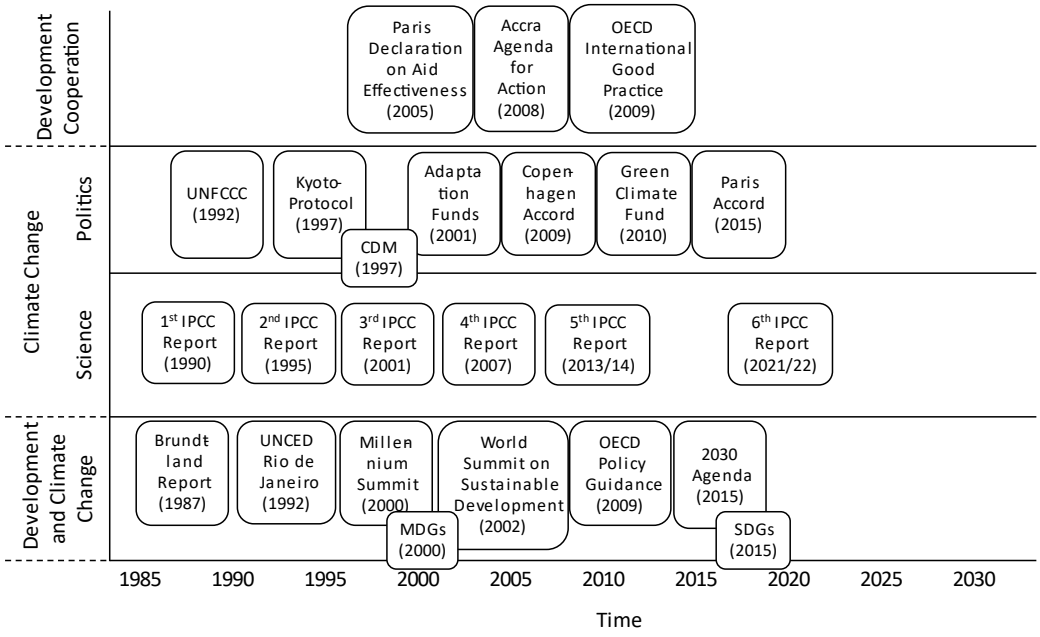


Figure 1: Timeline of the development of scientific and political occupation with development and climate change. Authors' contribution based on Huq et al. (2006)

A broader awareness of changes in the natural environment dates back to the 1970s. Early discussions unfolded around the finiteness of natural resources and consequential "limits to growth" (compare Meadows et al. 1972). The establishment of the International Panel on Climate Change (IPCC) in 1988 represents an early organization concerned with **climate change**. Its mandate to collect and assess the evidence on climate change describes its role in raising awareness, providing information and directing

[7] It reacts to institutional deficiencies and strengthens the role of recipient countries with the five principles: ownership, alignment, harmonization, managing for results, mutual accountability.

[8] There have been claims for 'mainstreaming' climate change concerns, i.e. 'climate-proofing' of development and including impact assessments as criteria for development projects (Ayers and Huq 2009, 683ff).

political debates (Beck and Mahony 2018a). Thereby, it acts on the interface but maintains the boundaries between science and politics. Besides being criticized due to concerns about representation, its consensus process and handling of scientific uncertainties (Berg and Lidskog 2018), this confinement to act as a bare provider rather than a producer of knowledge has been challenged (Beck and Mahony 2018b). This raises concerns about stretching its competencies and violating political neutrality (Hulme and Mahony 2010). Contrarily, Guillemot (2017) argued that changes in the economic and political context, especially in the post-Paris-Accord world, legitimize an extension of competencies. Gradually, the IPCC assessments have evolved and now conclude socio-economic analysis within the framing of climate research (compare Pörtner et al. 2022).

The awareness about **global climate** led to responses by policymakers. The current governance of global climate policy is characterized by a variety of actors on distinct political levels (Kuyper et al. 2018). Most political competencies have been left on the national level. Political negotiations have, yet, led to international agreements and the establishment of institutions. An early merit in international climate cooperation was the adoption of the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 with the assignment of "supporting the global response to the threat of climate change" (UNFCCC 2022). The Framework organizes the yearly Conferences of the Parties (COP) for negotiations of advancing climate policy efforts. Decisions are made by consensus principle which can slow down negotiation processes and evoke strategic behavior.[9] Nevertheless, several actions have been adopted. One milestone was the ratification of the 1997 Kyoto Protocol in which countries agreed on emission reduction targets. Those non-binding targets were negotiated individually for a limited number of key countries, including the United States (US), Japan, and the European Union (EU). The Kyoto Protocol distinguished between developed and developing countries and their contributions. Imposing responsibilities for mitigating emissions only on developed countries constitutes a direct link between climate and development cooperation. To support developing countries and minimize costs, the Clean Development Mechanism (CDM) allowed developed countries to receive Certified Emission Reduction credits (CERs) for projects implemented in developing countries. The Kyoto Framework had been determining the international climate governance as negotiations have not materialized into comprehensive commitment. In the 2009 Copenhagen Accord, the parties agreed on the continuation of the Kyoto Protocol and reemphasized their commitment to confine the increase in the global temperature. The next milestone was the Paris Accord adopted in 2015. It shifted the political approach and formalized a more far-reaching inclusion of developing countries into global climate efforts (Kuyper et al. 2018). The financing of climate action, especially adaption measures in developing countries, had even earlier been identified as critical. This led to the establishment of financing tools by the UNFCCC such as the Adaptation Fund, the Special Climate Change Fund, and the Least Developed Countries Fund (Huq, Reid, and Murray 2006), partly being carried out as projects covered by the CDM. The debates about improving the financing of climate action led to the establishment of the Green Climate Fund in 2010. Its role was strengthened under the Paris Accord with additional efforts in tracking the progress towards the objective to raise 100 billion US$ per year.[10] The growing complexity and simultaneity of funding organizations have been criticized for creating coordination problems and conflicting responsibilities (Müller 2008).

The Brundtland Report "Our Common Future" (World Commission on Environment and Development 1987) was an early attempt to explicitly address the **links between development and climate change** jointly. This attempt was consolidated by the following 1992 UN Conference on Environment and

[9] The decision procedure has been subject of criticism and led to proposals for institutional reforms (e.g. Vihma 2015).

[10] See: https://www.oecd-events.org/cop27/session/f9ead97c-4e49-ed11-819a-000d3a45c4a7/climate-finance-and-the-usd-100-billion-goal-insights-to-date-and-opportunities-looking-ahead-.

Development (UNCED)[11] in Rio de Janeiro. The result was the adaptation of Agenda 21 which contained guidelines for sustainable global development for the 21st century. These considerations translated into an increasing consideration of climate matters in development cooperation. Michaelowa and Michaelowa (2007) find that 7.2 percent of total ODA between 1998 and 2000 went into projects addressing environmental issues. Tirpak and Adams (2008) emphasize that, between 1997 and 2005, 6-10 percent of development assistance was deployed for projects in the energy sector, focusing on low-emission technologies. In 2000, the UN Millennium Summit ended with the ratification of the Millennium Declaration which established the MDGs and intensified policy links. Policymakers continued their efforts started during the UNCED, in 2002, with the World Summit on Sustainable Development (WSSD) in Johannesburg and the Multi-Donor Agency's report "Poverty and Climate Change", which suggested the integration of climate adaptation into mainstream development practices. Concerns about reducing the vulnerability of poor countries were further addressed during the COP8 in New Delhi in the report "Poverty and Climate Change" (Sperling et al. 2003). Subsequently, the OECD was particularly active in promoting the topic with the 2006 "Declaration on Integrating Climate Adaptation into Development Cooperation" and the 2009 Policy Guidance on Integrating Climate Change Adaptation into Development Cooperation. During the 2012 UN Conference on Sustainable Development (UNCSD)[12] in Rio de Janeiro, countries emphasized their ambition for a Green Economy, promoting sustainable development, and reducing poverty. The SDGs replaced the MDGs at the 2015 UN Sustainable Development Summit. These currently effective goals cover a wide range of development and, compared to the preceding MDGs, a higher number of environmental objectives.[13] From the overlook, it can be drawn that institutional links have been established between development cooperation and climate policy. A comprehensive, uniform policy framework that coordinates political efforts in both fields is not in place, but could potentially minimize costs and maximize effectiveness and efficiency.

4. Transfers as current practice in development and climate policy

Perpetual political negotiations about the policy solutions to address the urgent challenges have manifested in a variety of partial measures that characterize the current governance structure in development cooperation. This section aims to take a critical review of the experiences with the current form of organization by applying a problem-driven governance and political-economy approach. It allows to identify some of the current inefficiencies and institutional bottlenecks. Later, we convey insight into the projections of future climate cooperation to assess the risk of potential recurrences in this field.

4.1. Experiences with transfers in development cooperation

The increasing financial transfers in international development cooperation induced debates among both policymakers and economists about the very effects they have. The matter is compromised by data availability constraints and noise (Bourguignon and Sundberg 2007).

For assessing the effects of development aid empirically, qualified development indicators and their measurement must be identified in the first place.[14] Traditionally, the focus has been on gross

[11] Also referred to as "Earth Summit".

[12] Also referred to as "Earth Summit 2012".

[13] Environmental objectives include Goal 13 ("Climate Action"), Goal 14 ("Life below Water") and Goal 15 ("Life on Land"), and Goal 6 ("Clean Water and Sanitation"; contains also a development component). Development objectives include Goal 1 ("No Poverty"), Goal 2 ("No Hunger"), Goal 8 ("Decent Work and Economic Growth").

[14] We acknowledge the difficulty in the measurement of development which can conclude a multitude of outcome dimensions and variables. The target variables concerned in development cooperation include GDP p.c., GDP growth rate, investment to GDP ratio or poverty rate, or indicators of what is perceived as social development, e.g. literacy rate or access to sanitation.

domestic product (GDP) growth rates. Later, the attention shifted towards saving and investment rates (Hansen and Tarp 2000).

Much of the empirical evidence suggests a vague correlation between aid and GDP growth (Doucouliagos and Paldam 2008; 2011). While China and India hardly received any development funds from external sources, both have displayed high growth rates and been main drivers for the reduction in absolute poverty (Chen and Ravallion 2013, 16).[15] Contrarily, many ODA recipients have failed to facilitate growth. The average growth rate for the Sub-Saharan African (SSA) region has for the last ten years been slightly above 3 percent (World Bank 2022)[16] although it recently received about a quarter of global ODA in 2019 and 2020 (OECD 2021). This variance has been partly assigned to country-specific characteristics and as well as insufficiently distinguishing different types of aid funds (see Mavrotas and Ouattara 2006). Furthermore, empirical results have been determined by the data and empirical strategies applied as well as authors' institutional affiliation (Doucouliagos and Paldam 2008). The results have been tested towards very strong beliefs in large funding schemes and normative aspirations underlying (Doucouliagos and Paldam 2009, 445f). Copestake and Williams (2014) claim that aid effectiveness depends on the establishment of coalitions bringing together partners united in common goals and capable of utilizing funds efficiently.

To understand the underlying institutional dynamics for aid effectiveness, we identify relevant players and explain economic, political and social processes that determine (the feasibility of) policy reform.[17] For categorizing the challenges arising from institutional settings and misconceptions or priors in development cooperation, we follow Easterly (2007) and distinguish between the conceptions that, firstly, donors have required knowledge about qualified policies, secondly, development funds will be used effectively in achieving aspired policy objectives, and thirdly, policymakers and involved actors can abstract from self-interests and reflect their position in the governance structure.

Fristly, actors involved in development cooperation, i.e. international organizations and development agencies, tend to formulate general guidelines and conventional *wisdom* which allows to derive universal best practices (Easterly 2007, 328). The evolution of objectives in development cooperation may have followed (con)temporary convictions. These have been subject to change. Those changes could have potentially been connected to failures of previous beliefs. Rather than admitting inefficiencies, previous approaches have been denominated as necessary but incomplete justifying the establishment of additional criteria and efforts (Easterly 2007). This complicated the (administrative) requirements for recipient countries and increased compliance costs. It also turned the focus to recipient countries as the suspect of deficiencies. Uniform approaches have often failed to deliver expected results. Knowledge about development seems to be more contextual. This does not exclude general tendencies. Burnside and Dollar (2000) show that aid is effective in the presence of qualified fiscal, monetary and trade policies as well as political stability and good governance (McGillivray 2003). Some aspects relevant for development seem to be underassessed or not sufficiently explored. Doucouliagos and Paldam (2009, 455f), for instance, indicate occurring risks of the resource curse[18] or

[15] China alone shows a drop in the number of people living in poverty from 835 mio. in 1981 to 173 mio. in 2008.
[16] SSA lies well above the global average growth rate, i.e. around 2.6 percent. Nevertheless, other areas of the developing world have grown much faster, e.g. the countries in East Asia & Pacific at a rate of 4.6 percent p.c. (World Bank 2022).
[17] Political-economic analysis helps to disclose existing problems. However, in many instances, it fails to offer solutions (see Copestake and Williams 2014).
[18] As discussed e.g. in Sachs and Warner (1995).

the Dutch Disease as an effect of aid payments. Many recipient countries suffering from high inflation and exchange rate volatility can be a further indication of such problems.[19]

Secondly, aid transfers will only have designated effects when properly used. This requires that all actors pursue the same objectives. However, the actors involved in development cooperation may suffer from incentive problems which suggests a careful evaluation of the various interests.

On donors' side, aid may not be given purely for humanitarian but for political and strategic purposes.[20] Generally, development funding will be supported whenever it contributes to the survival of incumbent governments in donor countries (Mesquita and Smith 2009). If the benefits remain abroad, rational domestic taxpayers are likely to contradict the transfers. This holds particularly if they have unfavorable distributional effects in the donor country. Groups benefitting from terms of trade improvements, contrarily, are more likely to support ODA funding (Milner and Tingley 2010). The support for transfers can, alternatively, be explained as driven by normative aspirations such as humanitarian and philanthropic objectives as well as historical links between countries (e.g. colonial past) or attempts to build political alliances (Alesina and Dollar 2000; Werker 2012). Making aid funds conditional on policy concessions in recipient countries can establish dependency relationships,[21] especially when aid funds are paid as credits, thereby increasing risks of future debt pressure (e.g. Loxley and Sackey 2008). Ultimately, aid funds may be harmful to the nominal beneficiaries, i.e. the public in recipient countries (Mesquita and Smith 2009). Aid funds could also serve donors' commercial interests (Sogge 2015; Younas 2008).[22] Generally, aid funds are more effective when donors' interests are weak (Bearce and Tirone 2010).

On recipients' side, aid payments have contributed little to advance institutional reforms (Resnick and Walle 2013; Mesquita and Smith 2009, 312). Freytag and Heckelman (2012), however, show that aid can facilitate democratization processes. Foreign aid increases government spending on the one hand but reduces tax revenues on the other hand (Remmer 2004). Occasionally aid funds have even worsened political accountability, corruption,[23] and domestic rule of law as political elites in recipient countries have been less dependent on domestic approval (van der Walle 2005; Moss et al. 2006; Djankov et al. 2008; Alesina and Weder 2002).[24] Aid effectiveness can be negatively affected by ethnic conflicts between the political elite and the rest of the population (Angeles and Neanidis 2009). Politicians deploy aid funds strategically, especially in regions with large amounts of swing voters or low approval rates (Masaki 2018; Jablonski 2014; Briggs 2012; Banful 2011). Furthermore, aid inflow can discourage domestic development efforts. This *Samaritan's Dilemma* as described by Gibson et al. (2005) rests on the notion that external funds can be perceived as rents without economic efforts or

[19] Smith (2008) develops a theoretic model showing how external aid payments serve just like rents from natural resource exports. This can lead to a revaluation of the domestic currency and impair the exchange rates and international competitiveness (outside the concerned sector).

[20] Interests in donor and recipient countries may coincide. Poverty reduction in recipient countries may serve as a tool to reduce the risks of negative spillover effects stemming from recipient countries, such as terrorism activities (Werker 2012) or the international mobility of people or and criminal networks.

[21] Tilak (2018) shows how external funds for the education system in India created different types of dependencies of the Indian government on foreign actors.

[22] The aid allocation literature explains the determinants for aid funding, see e.g. Collier and Dollar (2002) or Schraeder et al. (1998).

[23] Contrarily, Menard and Weill (2016) find a statistical correlation but are not able to establish causal linkages in either direction between aid and corruption.

[24] On the contrary, Alesina and Dollar (2000) find that a democratization and political opening are rewarded with higher aid flows.

even create incentives to keep the level of development below critical thresholds to qualify for development schemes.

A common reaction to deficiencies in development cooperation was an augmentation of funds and expertise, often stemming from international organizations or aid agencies. The *reluctance hypothesis* describes the aversion against admitting mistakes and upholding current practices, especially considering the sunk costs. Profiteers within current frameworks are likely to oppose reforms and secure their rents (compare Carbone 2013). This includes a low level of transparency in spending structures and unfolding operations (Easterly and Pfutze 2008). Power struggles can distract from the original purposes and tie resources (e.g. Eyben 2008). The complexity and fragmentation in the aid community create coordination problems and increase administrative costs while few of the agencies reach a meaningful degree of specialization (Easterly and Pfutze 2008). However, the multitude of aid agencies could express differences in organizational, managerial, or political approaches.

Despite the abundance of experiences, the absence of reforms and organizational improvements supports claims about incentive problems of involved actors (Doucouliagos and Paldam 2009, 437 & 445f) or current structures primarily serving the purposes of partial interests (Sorens 2009, 88).

Thirdly and more conceptually, matters of sharing responsibilities, division of labor, representation and the ultimate impact of the efforts must be concerned. Aid agencies have an interest in upholding their dominant position. However, the actual significance of their expertise in facilitating development has been challenged. As a result of past experiences stemming from incentive and self-conception deficiencies, claims for including a higher number of actors, decentralizing responsibilities and strengthening bottom-up approaches rather than relying on the traditional centralized approach have been raised (Easterly 2007, 331). This could improve the chances that domestic contexts and constraints are adequately acknowledged (Copestake and Williams 2014, 138). Those can be multifold and complex with many being of informal character (Landell-Mills et al. 2007). The reforms in the development community taking place after 2005 were a promising start as they strengthened recipients' ownership and autonomy. Moreover, the increased involvement of recipients improves the exchange of ideas and feedback. This can prevent donors from suffering from *aid fatigue* as a result of missing effects and frustration about externally imposed policies grows on the recipients' side (Easterly 2007, 330).

4.2. Implications for international climate cooperation

The current efforts in international climate policy result in funds being raised to finance climate projects in developing countries. The establishment of the Green Climate Fund elucidates this pattern and associated challenges. This course resembles the political modes in development cooperation. Given the observed problems and inefficiencies in international development cooperation, this raises the question whether similar issues can be expected once climate funding further lifts off.

Initially, it needs to be noted that the development and climate politics differ in fundamental characteristics. Different disciplines and stakeholders dominate the two issues and, hence, policy fields. Development policy is a socioeconomic issue. Scientific consultation stems from social sciences. Contrarily, climate change is a predominately natural scientific issue with the natural scientific community providing expertise. Both issues also differ concerning temporal as well as geographic scale (Huq et al. 2006, 9). Much of the development practices revolve around development matters that are perceived to be particularly urgent. Climate change is a long-term, sluggish, and tenacious process. Development schemes and projects are designed for timeframes much shorter than those for climate

change projections. While the problem of climate change is discussed as a global or at least regional phenomenon, development is addressed mainly as a problem on the national (or even local) level.[25]

The following discussion is an attempt to convey the previous experiences from development cooperation to the emerging trends in international mitigation climate policy. The discussion is guided by the same distinction.

Firstly, climate change is a natural scientific problem - despite the consequences affecting socio-economic domains. It requires natural scientific expertise and knowledge when thinking about policy solutions. Due to its deterministic characteristics, natural sciences will more likely be able to identify suitable instruments after fully understanding the dynamics underlying environmental systems. Over time, climate models and the models on partial environmental systems have gained explanatory power and become more complex. The IPCC's (2021) latest assessment report was "based on improved observational datasets to assess historical warming, as well as progress in scientific understanding of the response of the climate system to human-caused greenhouse gas emissions." This – unlike in development cooperation – increases the chance to derive conventional *wisdom* ultimately improving steadiness and predictability and reducing uncertainties associated with certain policy measures. Carbon emissions constitute a straightforward indicator that can be used to assess political achievements (Ellis et al. 2013).[26]

Secondly, political feasibility of reforms and problems of international policy coordination as well as correlations with development have been given less attention in international climate policy (Huq et al. 2006, 6). Political rationality as well as institutional setting could be a critical bottleneck in climate policy as well. Some considerations regarding development cooperation could hold similarly. The success of projects probably depends on factors like political stability and institutional quality. Likewise, incentive problems of the involved actor could occur. As the commitment and funding of climate action increases, so do potential rents for the stakeholders. On the donor side, this could lead to selectively supporting projects only in countries serving domestic political and/or commercial interests. Furthermore, they could establish clauses making funding conditional on political concessions. According to Figaj (2010) however, climate project funding has, yet, been organized around poverty reduction and environmental objectives rather than political factors. In climate matters due to self-protection concerns, donors could have a stronger interest in ensuring the effectiveness of the efforts. This changes the characteristics of climate finance which can perceived as restitution rather than aid payment and, therefore, has critical meaning for climate governance giving recipient countries more ownership and leeway in the allocation of funds (Browne 2022). Regarding the implementation of projects, it will be critical to ensure transparency. If the market for climate projects is contestable, stakeholders will act disciplined. A high number of climate project agencies could facilitate specialization but increase coordination and transaction costs.

The recipients of climate funds could again have incentives to exploit the funds for political interests, for instance along ethnic frontiers. This could shift projects being carried out in regions that are most preferred rather than most urgent or effective. It could also deflate fiscal discipline. External funds can create economic dependencies vis-à-vis the donors and slow down domestic efforts to secure future funds.

[25] Adaptation policies respond to anticipated climate change in a specific territory. Therefore, they usually concern shorter timeframes and limited geographic scope.

[26] Other indicators include e.g. emission intensity of GDP or renewable energy capacities or changes in forest stocks (Ellis et al. 2013, 30).

Once, the structures in international climate governance are consolidated, institutional inertia and path dependencies as well as opposition against reform could occur. This can be harmful if political objectives are missed and donor countries of climate funding start to develop a *climate funding fatigue*. Yet, the payment of green ODA has not led to substantial reductions in emissions, however. They even increased emissions in the context of weak political institutions (Li et al. 2021).

Thirdly, the attempts to coordinate and implement mitigation policies need to take place on an international level due to the global due nature of the issue. The implementation, in turn, can depend on a country-specific context. These efforts in climate cooperation should be reconciled with development policies. The responsibilities must be clearly formulated, and tasks precisely divided. All actors need to be aware of their responsibilities and the impact they can ultimately exert. The incentives of each of the actors involved must be considered and the institutional setting carefully adjusted.

5. Market solution and integration as a development and climate policy tool

In Section 4, we provide a critical assessment of the currently prevalent policies in the fields of development and climate cooperation. The practices of financing single projects and relying on the experts' assessment have revealed inadequacies. Even when assuming that the stakeholders are qualified to identify solutions to meet the designated objectives, disregarding incentive problems has caused further complications. An alternative is the exploitation of comprehensive market-based instruments. Market-based approaches could confine many of the political issues commonly observed. Rather than institutional capacities and expert knowledge, the price mechanism will decide which activities will be conducted.

Theory and empirical evidence together suggest that market-based instruments involve advantages compared to command-and-control instruments with regard to both effectiveness and efficiency, especially for mitigation policies (Baranzini et al., 2017). The pricing can either take place in form of a Pigou'vian tax (2017) or assignment of property rights in form of emission allowances in a Coase'ian manner (1960). The number of countries that have established a price for carbon emissions has been increasing. Köppl and Schratzenstaller (2023) as well as Best et al. 2020) discuss that carbon pricing is associated with reduced emission levels or at least lower emission growth rates. If policies are applied unilaterally, *carbon leakage* can compromise these effects. Empirical evidence suggests that stricter environmental regulation, e.g. participation in the Kyoto Protocol, has led to an increase in the carbon intensity of imports (Aichele and Felbermayr 2015). Contrarily, Naegele and Zaklan (2019) find no significant impact of the EU ETS.[27] Tools for alleviating *carbon leakage* such as rebating and establishing consumption taxes have been suggested (e.g. Böhringer et al. 2017). Furthermore, unilateral climate action of forerunning countries has translated into increased efforts abroad, e.g. through technological spillovers and learning effects or for political reasons (see Schwerhoff et al. 2018).

Considering the global scale, the coverage of carbon pricing has remained limited and prices usually low. Economic and political criteria seem to condition the establishment. For instance, presidential systems lead to lower fuel prices compared to their parliamentarian counterparts (Van Beers and Strand 2013). By arguing that the marginal costs of emission reduction are lower in democratic countries than in autocracies (Congleton 1992), politicians in democracies are more prone to establish stricter environmental policies. Furthermore, Dolphin et al. (2020) identify domestic GDP p.c., the objection of affected industries and the size of expected economic distortions, e.g. indicated by the

[27] In a literature review, Verde (2020) concludes that the EU ETS does not affect domestic firms' competitiveness (negatively). Most studies on carbon leakage use measures of carbon embedded in trade, mostly derived from input-output tables. Potential problems associated with the data and applied methodologies to construct those measures leading to variations in the estimates have been summarized by Sato (2014).

dependency on fossil fuels for energy generation, as relevant factors. The importance of energy-related natural resources is highlighted by Best and Zhang (2020).

5.1. The political economy of climate policy on national level

To develop a better understanding of the political feasibility of ETS, it is helpful to look at the political economy of international climate policy and the reasons for the failure to implement suitable solutions. Much of the policy implementation remains on the national level. We follow Kirchgässner and Schneider's (2003) approach of distinguishing different stakeholders.

Public **voters**' support will be critical for the enforcement of climate policy. They are likely to oppose such policies when the expected costs are higher than the benefits. Temporal and geographic mismatches of climate damages can create intertemporal incentive problems (Jenkins 2014). Establishing a carbon price can affect voters with additional costs and unfavorable distributional consequences (Hughes and Urpelainen 2015). Increasing energy costs affect households with low and middle income disproportionally (Dorband et al. 2019). Baranzini et al. (2017) highlight that public preferences for carbon pricing depend on distributional aspects. Targeted (redistribution) policies supporting marginalized groups may help to moderate unfavorable effects and increase policy acceptance. Growing awareness of environmental issues among voters can create momentum for climate policy when competing with other policy fields. Yet, often voters' willingness to pay for climate measures remains at levels lower than the costs resulting from suggested tax and allowance schemes (Jenkins 2014). Socio-psychological factors such as uncertainty and a lack of knowledge and experience with the policy tools determine climate policy acceptance (Baiardi 2023; Drews and van den Bergh 2016). Carbon pricing has increased climate change awareness (Best and Zhang 2020; Levi et al. 2020). With growing knowledge about the actual effects, public support for carbon pricing has also increased over time (Murray and Rivers 2015). Furthermore, motivational crowding stemming from carbon pricing can reduce the intrinsic motivation for climate-friendly behavior (Baranzini et al. 2017).

Industries, especially emission intense sectors are another stakeholder being affected by environmental policies. If the expected benefits exceed the costs of lobbying, we expect that industries will engage in rent-seeking and try to detain policy proposals. The costs for companies can comprise financial losses due to payment for the carbon emissions or a loss in asset value (Jenkins 2014). Firm-specific capabilities and efforts can explain how successful the rent-seeking activities in carbon pricing policy are (Patnaik 2022). The activities do not only serve to secure rents but they can also provide information critical for policy formulation (Helm 2010). MacKenzie (2017) shows that the size of interest groups can affect policy outcomes. Companies have long been reluctant against carbon pricing, but recently become more supportive (Baranzini et al. 2017). This could suggest that the policy space might be increasing. The industries' efforts are complemented by those of environmental non-governmental organizations (Marchiori et al. 2017).

Command-and-control-type regulations dominate the field of environmental policies in many countries. This might reflect the preferences of the **public bureaucracy** which might be in strong favor of this type because it strengthened their impact (Kirchgässner and Schneider 2003) but might come with higher complexity and administrative costs. Market-based instruments could help to reduce those costs.

National **governments** are assigned to formulate climate policies both domestically and internationally. Perceiving politicians as self-interested utility-maximizers rather than interested in maximizing social welfare indicates constraints in the national political markets for politicians that might prevent them from establishing suitable policies. Assuming that the main objective for politicians is to be (re)elected, the platform politicians offer depends extensively on public support. This support was identified as a critical determinant for policy adoption (Yeganeh et al. 2020). It might ultimately

reflect economic and social characteristics immanent to countries, such as reliance on fossil fuels (Levi et al. 2020). Politicians' constraints comprise also aspects of institutional quality. Best and Zhang (2020) show that the implementation of carbon price policies is positively associated with the level of corruption control. More generally, Hughes and Urpelainen (2015) hint towards institutional capacities as determinants for climate policy. Helm (2010) identifies rent-seeking and regulatory capture as the main reasons for poor policy choices and *climate pork barrels*. In international negotiations, national governments pursue domestic interests. In case of conflicting interests, international policy coordination might be complicated. The resolution of those conflicts is difficult and has created consideration about adjustments in international climate governance (see Green et al. 2014).

From an economic point of view, market-based instruments establishing a carbon price are the *first best solution*. In the real world, they can be challenged by incomplete or asymmetrically distributed information and the existence of transaction costs. Once established, climate policies can suffer from inertia and persistence (Dolphin et al. 2020) and institutional path dependencies exacerbating reforms (del Río and Labandeira 2009). In addition, as climate change is a problem of the commons, a global approach would be the first best solution, but does not seem politically feasible for now.

When the optimal policy solutions are not politically feasible, it is possible to pick the *second best solution*. One possibility is to keep the number of actors involved sufficiently low to increase the probability of an agreement. This means that the geographic scope of the agreement will be (more) limited. Such scenarios have been proposed e.g. by Stewart et al. (2013). Limiting the scope can be critical for political challenges with global effects if it cannot be assured that a significant share of countries partners up. Bosetti et al. (2013) describe the requirements to establish such a coalition and discuss its stability which is highly fragile because the benefits of cooperation are unlikely to exceed the gains from defection. Alternatively, the political scope could be adjusted so the willingness of partners to cooperate on politically less controversial topics will increase. This can lead to compromises that might jeopardize the achievement of political objectives (del Río and Labandeira 2009). Especially considering (the growing urgency of) climate matters, this solution is linked with risks.

Yet, another possibility is the creation of additional incentives to engage in climate cooperation. *Issue linkage*, i.e. linking two policy fields and displaying the benefits of one to increase the commitment in the other fields, can yield those incentives. Nordhaus' (2015) suggestion of Climate Clubs is one such solution, linking climate and trade policy (for a group of voluntary partner countries). As climate affects economies in multiple ways, potential linkages could be established in a variety of policy fields such as innovation policy, industrial policy, or social policy. Given the general commitment to development cooperation despite observed deficiencies and growing awareness of environmental problems, linking development and climate cooperation could expedite the political efforts in both policy fields. This approach is not entirely new. Sandmo (2004), for instance, highlights the merit of environmental taxation as a source to finance international development projects. The main merits and demerits of this linkage have been summarized and emphasized by Gupta (2009). On the *pro* side, financial, practical, and administrative factors allow to save capacities and resources and resolve governance-related issues. Given the stakes of development cooperation, developing countries can be further incentivized to commit to climate policy (Kok et al. 2008). On the *con* side, different paths to development, political sensitivity, resource dependencies, changing target groups, and the conditionality arguments inherent to the development practices can cause complications.

5.2. The political economy of Emission Trading Schemes

For assessing the feasibility of a global ETS containing development cooperation, it is helpful to look at the experiences from existing frameworks. As holds for climate policy more generally, the main actors responsible for ETS have been on the national (and subnational) political level. This sub-section

analyzes the observed challenges in the establishment and operation of ETS. Subsequently, we discuss the implications for the conversion into a global system.

The number of operating ETS in the world has been increasing and amounted to 25, as of 2018 (World Bank and Ecofys 2018). Those include the national ETS in China or several sub-national ETS in the US such as the Regional Greenhouse Gas Initiative (RGGI) and California's cap-and-trade system (Schmalensee and Stavins 2017). The European Union (EU) ETS is an exceptional case as it includes more than one national jurisdiction. Therefore, it can give useful indications about issues arising from international cooperation in the context of an ETS which can be relevant for the purpose of this paper. ETS have commonly been accompanied by schemes that combine allowances with carbon taxes.

First, an ETS entails technical requirements. One major challenge has been emission tracing. The levels of emissions as well as emission reductions must be monitored and reported, usually by companies. Subsequently, these reports need to be verified by government institutions or third party entities to ensure the integrity and, thus, the functionality of the scheme (Tang et al. 2018). Without an effective monitoring-reporting-verification (MRV) process, it will be impossible to enable emission trading and ensure the compliance of allowances of countries and companies (Wang et al. 2019).[28] This MRV process can be problematic for several reasons. It can impose costs on companies that are required to accurately measure their emissions levels which could damage their competitiveness (Fujimori et al. 2016). Another critical aspect is the comparability of data. The MRV process must follow standardized procedures and protocols to increase accuracy and credibility of data (Wang et al. 2019). The Chinese ETS which is based on seven regional pilot projects showed deviances of data reported on national and regional levels (Wang et al. 2019). Despite having standardized measuring and verification procedures, differences in emission data were also observed in the EU ETS. Those were assigned to differences in administrative and enforcement capabilities of the member states (Kruger et al. 2007). Strong institutional capacities are also required for the enforcement of rules and sanctions for non-compliance (Schmalensee and Stavins 2017). Some countries did not have the needed capacities and were required to assign the MRV process to third parties (Kruger et al. 2007). Before the establishment of the EU ETS, emission data had been scarcely available. As a part of the National Allocation Plans (NAP), countries were obliged to determine an emission cap as well as a draft for the allocation of allowances (Kruger et al. 2007). The new obligations increased the information asymmetries between the actual emitters and the governmental institutions which disadvantaged them during the formulation of NAPs.

Second, ETS pose political issues. Again, the interests of the different stakeholders are distinguished:

Voters could be negatively affected by increasing prices following the establishment of the ETS. With growing urgency of the problem and lacking success in prior emission reduction efforts, the political pressure for reforms might increase (Cass 2005). When postponing required investments today, the costs of future policy intervention might be even higher (Stern 2008). Not only the magnitude of the problem will benefit public support but also the observation of an increasing number of actors cooperating (Stern 2008).

The opposition of **industries** is another barrier to the implementation of an ETS. In addition to the initial costs that occur from obligatory data collection, companies face costs for mitigation measures or the acquisition of allowances. This increased their production costs and, thus, threatened the companies' competitiveness (Levi et al. 2020). Uncertainties revolving around the ETS design and operation have increased corporate risks. Due to the scarce experience with such instruments,

[28] However, it should be noted that the problem of MRV is a challenge for every instrument chosen in climate policy. That said, it is important to solve, but does not really make a difference for different policy instruments.

companies might suffer from business uncertainties, such as the initial and future price development of allowances as well as regulatory uncertainty (Peeters and Weishaar 2017). Due to the geographical restriction of the EU ETS, fears of competitive disadvantages emerged. This increased domestic companies' opposition to the EU ETS (Sato et al. 2022). This could specifically apply to emission-intense companies where uncertainties and costs are particularly high. However, companies' expectations have often turned out as too pessimistic and overestimating the constraints established by the ETS (de Perthuis and Trotignon 2014). One way to alleviate distortion for companies is the allocation of free allowances. By giving free allowances in early stages of the scheme and gradually moving towards auctioning, the acceptance in industries can be increased (Stern 2008; Schmalensee and Stavins 2017). The free allowances were usually linked to historical emission levels ("grandfathering") and gradually reduced over time. Given the information advantage within the industries, this created a moral hazard where companies were incentivized to claim larger amounts of emissions in the short run to acquire higher allocations in the long run (Sato et al. 2022). This allowed them to generate windfall profits from selling excess allowances (Bailey 2010). Patnaik (2022) showed that industry-wide efforts are positively associated with the size of rents at stake. In fact, free allowances increased rent-seeking activities in many EU countries (Butzengeiger and Michaelowa 2004).

The **public bureaucracy** will be assigned the administration of the ETS and market for allowances. The functioning of the market can be hampered by conflicts of interest and the abuse of market power exerted by single participants (Bailey 2010). The bureaucracy needs to control market forces, oversee MRV processes, and ensure the compliance of all actors. This evokes risks of rent-seeking and regulatory capture. Historically, prices for allowances in ETS tended to be lower than the carbon tax rates (Haites 2018). This can indicate either insufficient competencies in regulating the market or successful rent-seeking efforts. A related question is the degree of centralization of political competencies. In most ETS, one central entity performs several tasks. The EU ETS, however, includes various countries. While the central authority is nonetheless required to supervise compliance, the international scale required a more decentralized structure that allowed member states to have authority over their own key decisions. Member states were responsible for determining emission caps, allocation, MRV processes and enforcement, which increased countries' vulnerability to rent-seeking and lobbyism (Ellerman et al. 2010). The level of centralization increases the information costs of the central authority and concentrates the links for rent-seeking. However, it could increase the enforcement capabilities. Besides determining the cap and allocation of allowances, the authority also determines the scope of the scheme, i.e. the sector included (Kruger et al. 2007). Usually, the coverage is only partial and prices often fail to achieve intended environmental policy objectives (Dolphin et al. 2020). Another challenge can be the dispute of political influences among different public administrations. Schmalensee and Stavins (2013) show that judicial decisions and regulatory responses affected the efficiency of the SO_2 market in the US.

National **governments** are responsible for the implementation of ETS. Thereby, they face political constraints within the existing institutional frameworks and stakeholder interests (del Río and Labandeira 2009). Radical policy shifts towards a comprehensive ETS can be costly and associated with political risks that national leaders are not willing to take. The granting of free allowances can be used to absorb cost increases and unfavorable distributive effects striking industries and voters. Carefully adjusted redistribution policies and the concession of free allowances have led hesitant countries to overcome existing barriers and join the EU ETS (Ellerman et al. 2010). National governments can exploit the ETS to increase fiscal returns (MacKenzie 2017). Whereas in scenarios with free allowances, the rents are obtained mainly by the industries, the rents from priced allowances stick with the government. Those rents can appear in the form of financial transfers which can be used for political purposes. The transfers, in turn, can be subject to bureaucratic inefficiencies which reduce their sizes.

Yet, carbon pricing schemes are less common in developing countries. Price (2020) finds that these countries are more vulnerable to changes in the government. They often commit to the implementation of carbon pricing to comply with international protocols and to raise government revenues.

5.3. Implications for a global Emission Trading Scheme

The limited experience, especially with international ETS, exacerbates the discussion about critical factors and problems occurring during the implementation of a global ETS. Here, the critical factors discussed for the national ETS will be complemented by the different national interests and arising conflicts and problems to coordinate policies. Nevertheless, a set of factors critical (also) for the international level can be identified. A country needs sufficient institutional capacities for emission measuring and MRV processes, which can be challenging, particularly for developing countries. Environmental awareness and compliance of enterprises in developing countries have often been low. Few firms collect data on emission levels, many are unwilling to do so (Liu et al. 2022). The establishment of qualified MRV institutions can imply high costs. This explains their reluctant attitude toward the proposals (Best et al. 2020). The limitation of the influences of interest groups will be important and power imbalances in political negotiations must be contained. Especially when different stakeholders negotiate on the international level, the needs and interests of developing and developed countries differ and conflict (Kruger et al. 2007). When establishing a global ETS, concerns about international competitiveness can be confined. However, regions being more dependent on fossil fuels and those with limited financial capacities could still suffer a comparative disadvantage. As most developing countries have little to no experience with ETS, uncertainty could be significantly higher than in developed countries.

Free allowances can play a critical role in successfully implementing an ETS. By mitigating the cost burdens for developing countries, they compensate for competitive disadvantages and create additional incentives for participation (compare Freytag et al. 2023). However, the experiences from existing schemes suggest that free allowances can cause price disturbances in the allowance market. They need to be carefully guided to sustain incentives for emission reduction. Free allowance can also cause rent-seeking activities (Burtraw and McCormack 2017). For establishing a global ETS which entails the allocation of free allowances as a tool for development cooperation, existing institutional obstacles and governance structures must be considered. The required majorities must be convinced to make the implementation possible. This means that stakeholders' objections from both the aid as well as the climate community must be overcome.

Replacing the current structures that are characterized by the funding of single projects with an ETS could imply far-reaching consequences for agencies and public administration involved in development cooperation. Given the vested interest and opportunity costs of the development community, substantial opposition against the ETS can be expected. This requires the ETS advantages to be well communicated and losers of the reforms potentially be compensated. Given the disappointing results of the development practices, the ETS can prompt a new momentum. When utilized to improve competitive cost advantages in industries, free allocation of allowances can spawn production expansion in developing countries. Recipients of free allowances could alternatively choose to sell those and use the income to finance development schemes. The misuse of allowances, e.g. to generate rents at the expense of the public poses a risk. This may require mechanisms that restrict the amounts of allowances received by a country per time period or constraints for trading with them. This evokes problems of legitimacy as well as enforcement of those rules. Receiving large amounts of free allowances can cause effects similar to natural resource rents and problems associated with the *resource curse* including institutional deficiencies, extensive rent-seeking and social instability (Ross 2015). Free allowances could also provoke macroeconomic distortions such as a devaluation of

domestic currencies (Gylfason et al. 1999). Also here, constraints on the number of allowances as well as the disposal could provide a remedy.

Regarding the chance to meet environmental objectives, the ETS could play a critical role in limiting global emissions. When problems in the MRV process are solved, the cap determines the upper emission boundary. When backed by scientific expertise, the ETS is promising in ensuring adherence to the target emission levels. If the markets for allowances are well adjusted, those targets should be met at minimal costs. The ETS upholds the incentive to reduce emissions when the abatement costs are lower than the allowance price which will automatically lead to emissions reductions realized where it is possible for lowest costs. The advantages of market-based climate instruments have been acknowledged by policymakers and emphasized in the Paris Accord (United Nations 2015). Article 6 of the Accord highlights their importance as complementary to other tools. Given the observed inefficiencies in the existing ETS and institutional bottlenecks, the reliance on only one instrument is perceived as unpreferable. Therefore, claims about diversifying political risks by applying various policy tools simultaneously were raised (e.g. Bennear and Stavins 2007 or Dolphin et al. 2020). For instance, the definition of a minimum price for allowances or the settlement with charges of a complementary carbon tax could prevent price collapses for the allowances in the ETS.

6. Conclusions

Political efforts in the two fields of development and climate cooperation have not yet led to the intended actions required due to growing urgency. The empirical evidence regarding the effectiveness of development cooperation suggests that conventional funding has not contributed to achieving designated policy objectives. Likewise, international efforts for climate cooperation have not led to the aspired reduction in global emissions.

While development is perceived as a national challenge, determined rather by political factors, climate change is an international challenge with a natural scientific character. The effects of climate change entail socio-economic consequences regarding the facilitation of human development or justice concerns stemming from geographic and time mismatches of climate change causes and effects. The countries being exposed to climate change-induced risks and costs are usually not the ones which carry historic responsibilities.

Political negotiations about the provision of other types of global public goods have culminated in the establishment of institutions like the World Trade Organization (WTO) or the Bretton Woods institutions establishing a political order in a specific policy field while balancing diverse national interests (e.g. see Levi 1991). The negotiations on development and climate cooperation have not yet yielded the establishment of such qualified structures elongating the critical shortcomings of current practices. This leaves a void, especially for a comprehensive international climate policy framework. To this extent, a global ETS as suggested by Freytag et al. (2023) serves as an attempt to increase the incentives for political commitment by utilizing the leverage of issue linkage. Because of the interrelations between development and climate change, increasingly integrating both fields can be of great merit for increasing policy effectiveness.

The political economy of both policy fields including vested interests and institutional path dependencies hamper the support for political reform. It will be critical to establish the required majorities by acknowledging and addressing different stakeholders' incentives. When properly communicated, the advantages of the ETS linking the avoidance of long-term climate damages with urgent development matters can help to increase the public disposition for increased engagement on the national level (Jenkins 2014). On an international level, the objection of policymakers, especially in developing countries, can be reduced with the assignment of free allocations. Technical assistance and

international cooperation can increase knowledge and technology spillovers that support disadvantaged countries.

With the establishment of an ETS, policy effectiveness and efficiency in international development and climate cooperation could be improved. Political economy concerns show potential vulnerabilities of an ETS that advise a careful institutional adjustment and implementation. For the sake of lowering political risks, it can be advisable to complement the scheme with additional policies. Questions of political legitimacy and responsibilities as well as checks and balances need to be carefully considered, though.

The establishment of a global ETS helps to address the global challenges associated with climate change. Urgent regional or local climate needs, especially in developing countries, may still require the financing of adaptation measures. Here, the international governance can draw on existing structures. The global efforts in the development fields need to a larger extent consider the links to other policy fields, including climate but also Innovation policy. The latter can take a critical role in identifying and developing technological solutions for emission reduction. Those linkages can be further explored, emphasized, and supported by the incentives for emission reduction created by the ETS.

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