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# ÖSTERREICHISCHES INSTITUT FÜR WIRTSCHAFTSFORSCHUNG



## **ICPIA – Coping with Complexity in the Evolving International Climate Policy Institutional Architecture**

### **Alternative Frameworks for International Climate Cooperation: Towards a Systematic Assessment Matrix**

**Michael Mehling (Ecologic Institute)**

**June 2012**

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Austrian Institute of Economic Research, Climate Strategies

The project "ICPIA – Coping with Complexity in the Evolving International Climate Policy Institutional Architecture" was funded by the Austrian "Klima- und Energiefonds" and carried out within the research programme "ACRP".

## Abstract

Recent climate negotiations have evinced a controversial debate on how best to reform the institutional and legal framework of international climate governance. Unlike the domestic policy context, where widely recognised criteria have evolved to guide choices among alternative policy frameworks, no equally systematic approach has yet been developed for the international arena, where narrow state preferences or a specific methodology tend to dominate the discussion. Drawing on lessons from the evaluation of domestic climate policies and measures as well as the study of broader international environmental governance, this paper surveys existing research and proceeds to define a matrix of criteria for the classification of alternative frameworks for international climate cooperation. In so doing, it hopes to facilitate a more transparent and systematic approach to the assessment of alternative frameworks for climate cooperation. Specifically, the criteria proposed in this paper are: level of ambition, compliance facilitation and control, institutional capacity, participation and inclusiveness, systemic coherence, as well as political and economic feasibility. Future application of this matrix to existing and proposed climate governance frameworks will determine whether the foregoing criteria offer a suitable frame of reference for the evaluation and comparison of contending climate architectures, regimes, and institutions. Given the proliferation of existing and proposed venues to advance climate governance, such a framework would seem both timely and useful.

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# Alternative Frameworks for International Climate Cooperation: Towards a Systematic Assessment Matrix

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**December 2011**

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## Abstract

Recent climate negotiations have evinced a controversial debate on how best to reform the institutional and legal framework of international climate governance. While this discussion on competing governance architectures is by no means new, it has rarely been pursued with the intensity prompted by what many observers considered a failure of classical multilateralism at the Copenhagen climate negotiations in 2009. While the latest negotiating mandate agreed in Durban in 2011 has strengthened the climate regime of the United Nations as the central venue for climate cooperation, a number of reform proposals are still on the table, and new recommendations are likely to follow in upcoming years; the discussion has thus not yet been put to rest.

Unlike the domestic policy context, where widely recognized criteria have evolved to guide choices among alternative policy frameworks, no equally systematic approach has yet been developed for the international arena, where narrow state preferences or a specific methodology tend to dominate the discussion. Drawing on lessons from the evaluation of domestic climate policies and measures as well as the study of broader international environmental governance, this paper surveys existing research and proceeds to define a matrix of criteria for the classification of alternative frameworks for international climate cooperation. In so doing, it hopes to facilitate a more transparent and systematic approach to the assessment of alternative frameworks for climate cooperation.

Specifically, the criteria proposed in this paper are: Level of Ambition, Compliance Facilitation and Control, Institutional Capacity, Participation and Inclusiveness, Systemic Coherence, as well as Political and Economic Feasibility. Future application of this matrix to existing and proposed climate governance frameworks will determine whether the foregoing criteria offer a suitable frame of reference for the evaluation and comparison of contending climate architectures, regimes, and institutions. Given the proliferation of existing and proposed venues to advance climate governance, such a framework would seem both timely and useful.

**Keywords:** Climate Regime, COP15, International Climate Policy, Kyoto Protocol, UNFCCC

**JEL Codes:** K32, K33, Q54



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## 1 Introduction

After almost two decades of negotiations, the momentous summit held in Copenhagen in December 2009 marked a watershed moment for international climate cooperation. Many observers pointed to this summit and its outcome as evidence that the international climate regime was in need of fundamental reform, while others defended the status quo and blamed any failure to achieve meaningful progress on the complex issues at stake or the political maneuvering of individual states. A heated and controversial debate followed in the wake of the Copenhagen summit, evincing a broad spectrum of proposals on how best to reform the institutional and legal framework of international climate governance. At the extreme ends of this spectrum, suggestions have ranged from placing climate cooperation under the auspices of a strengthened, centralized World Environment Organization, to relying purely on domestic action with little or no international coordination. Mostly, however, the various options submitted in this debate lie somewhere between the foregoing extremes, combining elements of formal, legally binding and centrally organized authority to informal, voluntary and decentralized approaches to climate governance.

While this discussion on competing governance architectures is by no means new,<sup>1</sup> it has rarely been pursued with the intensity prompted by what many considered a failure of classical multilateralism at the Copenhagen climate negotiations. In the relatively short time since that summit, a large number of recommendations and reform proposals have been introduced into the debate, typically guided by a particular ideological outlook or epistemic interest. Unlike the domestic policy context, where widely recognized criteria have evolved to guide choices among alternative policy frameworks,<sup>2</sup> no equally systematic approach has yet been developed for the international arena, where narrow state preferences or a specific methodology tend to dominate the discussion.<sup>3</sup> Drawing on lessons from the evaluation of domestic climate policies and measures as well as the study of broader international environmental governance, this paper defines a matrix of criteria for the classification of alternative frameworks for international climate cooperation. For this purpose, it approaches international climate cooperation in the broadest sense, covering architectures, regimes and institutions, and including venues for political negotiation as well as technical cooperation and exchange (see *infra*, Box 1); it does not, however, extend to the domestic level, for instance to reflect the divergent capacities of individual states, as such circumstances

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<sup>1</sup> See, for instance, Aldy and Stavins (2007); Aldy and Stavins (2010).

<sup>2</sup> See below, Section 3.

<sup>3</sup> Relevant criteria have been proposed by Aldy et al. (2003), Bosetti et al. (2008), Bodansky (2004), Keohane and Victor (2010), and Moncel et al. (2011), and will be amply referenced throughout this paper; still, the focus of these studies does not rest on the elaboration and assessment of criteria as such, but rather on providing a reference framework for the substantive proposals assessed in each study. See also Stewart (2007): 148 ("still in an early stage").



inherently resist any attempt at generalization. Ultimately, the following analysis hopes to facilitate a more transparent and systematic approach to the assessment of alternative frameworks for climate cooperation.

## 2 Diagnosis: Evolving Frameworks of International Climate Cooperation

### 2.1 A Brief Retrospective

Calls for concerted international action on climate change date back more than two decades. When, in 1988, the United Nations (UN) General Assembly declared global warming a “common concern of mankind”,<sup>4</sup> it paved the way for formal negotiations<sup>5</sup> under the auspices of the UN, ultimately resulting in the adoption of the United Nations Framework Convention on Climate Change (UNFCCC) in 1992.<sup>6</sup> A milestone in early climate cooperation, the UNFCCC entered into force on 21 March 1994 and has since been ratified by 194 parties, affording it one of the broadest memberships of any international agreement.<sup>7</sup> Given the need for unanimous consent,<sup>8</sup> however, broad participation translated into substantive commitments that were largely programmatic in nature; the adoption of more specific obligations had to be deferred to a subsequent instrument.<sup>9</sup>

To this end, parties adopted a negotiating mandate in 1995;<sup>10</sup> yet both its definition and implementation saw states pitted against each other in an arduous marathon of consultations, setting the tone of future negotiations.<sup>11</sup> By late 1997, the international community had adopted the Kyoto Protocol,<sup>12</sup> a separate instrument under international law that required ratification by a sufficient number of signatories before it could enter into

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<sup>4</sup> Protection of Global Climate for Present and Future Generations of Mankind, UN General Assembly Resolution 43/53, 6 December 1988, endorsing the establishment of the Intergovernmental Panel on Climate Change (IPCC).

<sup>5</sup> Protection of Global Climate for Present and Future Generations of Mankind, UN General Assembly Resolution 45/212, 21 December 1990, which established an Intergovernmental Negotiating Committee (INC).

<sup>6</sup> On the negotiations, see Bodansky (1994): 45; Goldberg (1993): 244-51; Sands (1992): 270.

<sup>7</sup> United Nations Framework Convention on Climate Change (UNFCCC), New York, 9 May 1992, in force 21 March 1994, 31 *International Legal Materials* (1992) 849; the status of ratification is published on the Internet at <[unfccc.int/essential\\_background/convention/status\\_of\\_ratification/items/2631.php](http://unfccc.int/essential_background/convention/status_of_ratification/items/2631.php)> (last accessed on 15 August 2010).

<sup>8</sup> On the role of unanimous consent and its problematic consequences for international environmental governance, see Palmer (1992): 270-78.

<sup>9</sup> This approach to environmental diplomacy is credited with facilitating consensus within a shorter timeframe, while also increasing the ability of the regime to dynamically adapt to rapidly changing factual and legal circumstances, see generally Susskind (1994).

<sup>10</sup> See Decision 1/CP.1, FCCC/CP/1995/7/Add.1, 6 June 1995 (the “Berlin Mandate”), which opened a new round of negotiations on “a protocol or another legal instrument”.

<sup>11</sup> On the negotiation process, see Oberthür and Ott (2000).

<sup>12</sup> Kyoto Protocol to the United Nations Framework Convention on Climate Change (Kyoto Protocol), Kyoto, 10 December 1997, in force 16 February 2005, 37 *International Legal Materials* (1998) 22.



force.<sup>13</sup> A number of setbacks and several years of diplomatic stalemate followed, indicating that the nearly universal support enjoyed by the parent convention would not be easily extended to its subsequent Protocol.<sup>14</sup> Nearly a decade after its adoption, and only narrowly meeting the criteria for an entry into force, the Kyoto Protocol became effective on 16 February 2005, albeit without the backing of the largest greenhouse gas emitter at the time, the United States.<sup>15</sup>

While the Protocol marked an important step in climate cooperation, its practical effect was described as narrow, thin, and ultimately symbolic (Victor, 2001; Bell, 2006; Böhringer and Vogt, 2004). Because the quantified emission limitation and reduction objectives (QELROs) for developed countries specified in the Kyoto Protocol expire in 2012, its governing body immediately adopted a mandate to negotiate new commitments by its parties. This mandate had to account for the divergent membership of the UNFCCC and the Kyoto Protocol, forcing the negotiations to proceed on two separate, yet overlapping tracks with distinct bodies and procedures.<sup>16</sup> Also, the difficulties experienced in its negotiation and ensuing ratification prompted the emergence of new channels for international engagement on climate change, including several regional and bilateral initiatives,<sup>17</sup> which further increased the complexity of international climate cooperation.

By December 2007, discussions under the UNFCCC and Kyoto Protocol had progressed sufficiently to adopt a more sophisticated mandate, the Bali Roadmap, which called for a focused process to conclude two years later.<sup>18</sup> When leaders from around the world converged in Copenhagen in December 2009, the parallel negotiation processes had failed to narrow down potential options sufficiently to allow for passage of an international agreement in the tradition of the UNFCCC or the Kyoto Protocol. Instead, in an atmosphere of tension and mistrust, a group of heads of state and government elaborated a new document that was sufficiently vague to meet with the approval of all dissenting factions.<sup>19</sup>

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<sup>13</sup> Under Article 25 (1) of the Kyoto Protocol, it was to enter into force once fifty-five states “deposited their instruments of ratification, acceptance, approval or accession”, on the condition that those states account for at least 55 % of the 1990 CO<sub>2</sub> emissions by developed states.

<sup>14</sup> See, *inter alia*, Brandt and Svendsen (2002): 1197-8; Dessai et al. (2003): 183.

<sup>15</sup> On the U.S. decision to reject the Kyoto Protocol, see Lisowski (2002).

<sup>16</sup> For details, see Bausch and Mehling (2006).

<sup>17</sup> Such initiatives include informal partnerships and more formal forums on a variety of technical issues (e.g. the Global Methane Initiative, the Carbon Sequestration Leadership Forum, the International Partnership for a Hydrogen Economy, the International Carbon Action Partnership, the – no longer active – Asia-Pacific Partnership on Clean Development and Climate, or the International Renewable Energy Agency Methane) as well as various high-level ministerial dialogues (Dialogue on Climate Change, Clean Energy, and Sustainable Development of the Group of Eight (G8) Industrialized Nations, Major Economies Forum on Energy Security and Climate Change (MEF), or Group of Twenty (G20)); for an overview and analysis, see Biermann et al. (2009): 21-24; de Coninck et al. (2008); Michonski et al. (2010); Vihma (2009).

<sup>18</sup> See, in particular, Decision 1/CP.13, FCCC/CP/2007/6/Add.1, 14 March 2008 (“Bali Action Plan”).

<sup>19</sup> Decision 2/CP.15, FCCC/CP/2009/11/Add.1, 30 March 2010 (“Copenhagen Accord”).





Given the absence of alternative options, a majority of states agreed to “take note” of the ensuing Copenhagen Accord, with several parties censuring its lack of ambition and the undemocratic process in which it had been adopted.

Although parties soon resumed the negotiations following this traumatic summit, it was clear that faith in the UNFCCC regime had been severely shaken. Only when measured against significantly lowered expectations can the climate summit held in Cancún one year later be considered a success and, as some observers claimed, a new lease of life for the UNFCCC negotiations (Oberthür, 2011: 5; Rajamani, 2011: 519). In effect, the central decisions adopted at this meeting – collectively referred to as the “Cancún Agreements” – largely limit themselves to enshrining the broad terms of the Copenhagen Accord in more formal language. New institutional arrangements, such as the Technology Mechanism and the Green Climate Fund, were rendered operational, but more divisive issues, such as the legal form of a future climate agreement and the extension of commitments under the Kyoto Protocol, were consciously deferred to later meetings.<sup>20</sup> Negotiations since the summit in Cancún have shown that these very questions are what threaten to once again unravel diplomatic progress, and as the international community heads towards Durban for the next climate summit, it is evident that international climate cooperation is being driven at more levels than the UNFCCC and the Kyoto Protocol.

## 2.2 Alternative Scenarios for Future Climate Cooperation

In many ways, the Copenhagen summit marked an important departure from the practice of multilateral climate cooperation over the previous two decades. Although fissures had become visible at earlier stages in the negotiations, international engagement on the issue – driven by the participation of heads of state and government rather than only administrative officials – reached a new dimension of political controversy, yielding a compromise that was merely “taken note of” rather than formally adopted. At least in part, this document can be understood as a reaction to the challenges faced in achieving universal agreement on an international treaty, presupposing that its adoption be individually rational at acceptable cost to all parties (Lane et al., 2008: 33). Yet in doing so, recent events have also given new momentum to an earlier debate about the merits of alternative regime architectures, giving rise to a number of conceptual diagnoses and proposals for the negotiation process.<sup>21</sup> In an attempt to structure this debate, such proposals have often been framed as falling along a continuum, with one end representing the traditional “top-down” approach to international

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<sup>20</sup> See Rajamani (2011): 500.

<sup>21</sup> For recent examples, see Abbot (2011); Aldy and Stavins (2007); Aldy and Stavins (2010); Barrett and Toman (2010); Bodansky and Diringler (2007); Bosetti et al. (2008); Evans and Steven (2009); Hare et al. (2010); Keohane and Victor (2010); Okereke et al. (2009); Olmstead and Stavins (2009); Pizer (2007); Rayner (2010); Stavins (2009); Stavins (2010); Tangen (2010); WBGU (2009); WBGU (2010). An overview of earlier proposals is provided by Aldy et al. (2003); Bodansky (2004).



climate cooperation, the other end a “bottom-up” aggregation of nationally or regionally defined efforts (Bodansky et al., 2007: 1). As mentioned earlier, no regime as complex as that governing climate cooperation can be easily assigned to either extreme, and many features typically ascribed to one approach can also be found in the other (Dai, 2010: 633-634); yet recent trends in the international negotiations still warrant a closer look at the criteria and classifications this conceptual dichotomy is based on.

Keeping with the foregoing characterization, a “top-down” approach would be based on formal engagement between sovereign actors, usually states, along traditional channels of multilateral diplomacy. Such negotiations are expected to result in binding international commitments adopted through an international treaty, often complemented by centrally integrated processes and hierarchical institutions, which in turn shape and drive domestic implementation efforts. Under a “bottom-up” approach, by contrast, countries retain the ability to define both the nature and scope of their climate efforts; while they may cooperate with other partners by coordinating their activities and defining common aspirations, decision making remains decentralized and focused on the national level, rather than being assigned to any international institution. International climate cooperation then largely occurs through fragmented institutions with no identifiable core and weak or nonexistent linkages (Keohane and Victor, 2010: 3-4).

Proponents of “bottom-up” approaches highlight the importance of flexibility, which they believe will allow each actor to define priorities that are technically, economically, and politically acceptable in light of local or regional conditions. By avoiding the cumbersome process of international law and its requirement of unanimous consent, “bottom-up” cooperation is thought to lower the threshold for meaningful progress, allowing similarly minded actors to form coalitions and take action that accommodates their individual circumstances and specific interests. Unlike conventional diplomacy, such informal approaches might also avoid the conservative tendency of legally binding arrangements, which are apt to lock in low levels of ambition and prove vulnerable to defection (Victor et al., 2005: 1820). Additionally, “bottom-up” approaches are seen as conducive to stakeholder involvement, improving the political viability of implementation, but also relying on civil society to hold public entities accountable in case implementation fails to occur. Once underway, the resulting cooperation is expected to develop in an organic manner as parties explore new forms of governance and gradually increase their level of commitment. Perhaps most importantly, advocates doubt the very ability of a “top-down” architecture to address the climate challenge, as it underestimates the underlying complexities and overestimates the willingness of decision makers and stakeholders to act; rather, action should occur at the same level as the causes and effects of climate change, which is the local level (Rayner, 2010: 616).

As a direct corollary, however, “bottom-up” approaches are thought to afford less certainty and reciprocal confidence than a formally binding “top-down” agreement, potentially



detering some actors from adopting commitments without assurance that others will engage in similar efforts (Hare et al., 2010: 607; Pew Center on Global Climate Change (2005): 19). Without a single overarching framework, it may prove more difficult to predict environmental outcomes, both in terms of ensuring that individual efforts add up to what is scientifically required and that actors meet their pledges within the proposed timeline. In particular, if science is no longer the central point of reference for objectives and timelines, it may be difficult to identify a different benchmark for the success of the regime. Absent an *ex ante* allocation of collective efforts, moreover, the “bottom-up” approach may also contribute to higher levels of free-riding and fail to capture equity concerns among participants (Dubash et al., 2010: 595). Indeed, by circumventing the established decision making processes of international law, the outcome of “bottom-up” regime building may be thought of as less legitimate than universally negotiated commitments, especially where small groups of powerful states decide to resolve a global challenge at the exclusion of large parts of the international community (Bodansky et al., 2004; Reinstein, 2004).<sup>22</sup> And finally, existence of concurrent regimes in an increasingly fragmented policy system will not only require better interplay management (Biermann, 2010: 286), but could potentially lead to forum-shifting, in which actors will move a regulatory agenda from one forum to another, abandon a forum, or pursue the same agenda in more than one forum (Braithwaite and Drahos, 2000: 29).

#### **Vehicles of International Climate Governance: Architectures, Institutions and Regimes**

In the debate on international climate cooperation, notions such as “architecture”, “institution” and “regime” are used recurrently, although often without a clear or authoritative definition. An “architecture” may be understood as an “overarching system of public and private institutions, principles, norms, regulations, decision-making procedures and organizations that are valid or active in a given issue area of world politics” (Bierman et al., 2009: 15). Defined thus, “architectures” differ from “institutions” and “regimes” primarily by virtue of their broader scope, which extends beyond solving only a particular governance challenge. Accordingly, “institutions” are typically approached as sets of rules stipulating ways in which states and other actors on the international plane should cooperate (Mearsheimer, 1994: 8; Martin and Simmons, 1998: 729). Closely related are regimes, which have been described as “implicit or explicit principles, norms, rules, and decision-making procedures around which actors’ expectations converge in a given area of international relations” (Krasner, 1982: 185; Haggard and Simmons, 1987: 491). A common feature of all

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<sup>22</sup> Precisely that was a widespread criticism leveled against the Copenhagen Accord, which was elaborated by a limited number of states and then presented to a plenary that decided against formal adoption and instead merely appended it to a decision. For instance, Bolivian President Evo Morales, reflecting sentiments held by a group of states joined in the so-called Bolivarian Alliance for the Peoples of Our America (ALBA), has described the Copenhagen Accord as a “product of closed-door diplomatic horse trading” that has been “reticently approved by an elite group of negotiators” (UN, 2010).



three concepts is their permanence, that is, their ability to transcend individual actors, decisions, and interests.

All these concepts are essentially means of governance, that is, ways in which individuals and institutions manage their common affairs (Commission on Global Governance, 1995: 2); as governance systems, they facilitate collective choices on matters of common concern (Young, 1994: 26), including any number of processes that help to manage international interdependence, such as: treaty negotiations, agenda-setting and issue analysis in support of treaty adoption; dispute settlement within international organizations; rulemaking by international bodies in support of treaty implementation; development of government-backed codes of conduct, guidelines, norms, and technical standards; networking and policy coordination by regulators; structured public-private efforts at norm creation; informal workshops at which policymakers, non-governmental organizations (NGOs), business leaders, and academics exchange ideas; and private sector policymaking activities (Esty, 2006: 8-9).

In the context of climate change, hence, the UNFCCC and Kyoto Protocol form a dedicated regime for international efforts to cooperate on climate change governance, that is, they create a regulatory and institutional framework for international mitigation and adaptation efforts. Additional regimes have emerged or taken on a stronger role in international climate cooperation, such as the Major Economies Forum on Energy Security and Climate Change (MEF) or the Group of Twenty (G20). Some regimes, such as the foregoing, have primarily political functions as venues for negotiation and dialogue; others are primarily technical, and help facilitate implementation, such as the International Energy Agency (IEA); and some, such as the UNFCCC, combine both functions. All of the foregoing could be considered part of the current architecture for international climate governance. Regime interactions can occur within this architecture – for instance between the UNFCCC and the MEF – and with architectures serving other purposes, such as the regimes promoting international trade liberalization. Also, the various regimes addressing climate change and cooperation have distinct effects at various levels of governance, from the international plane all the way to regional, national and local implementation policies and measures.

Box 1: Vehicles of International Climate Governance: Architectures, Institutions and Regimes

Because of its relative simplicity and straightforward application, the distinction between “top-down” and “bottom-up” approaches to international climate cooperation has been widely used as a framework of analysis to structure and explain recent trends in the climate negotiations.<sup>23</sup> Without disputing its conceptual utility, however, it stands to reason that the complexities of sovereign engagement on climate change cannot be fully captured by a binary dichotomy. In an attempt to bridge two largely separate debates, the following

<sup>23</sup> See, for instance, Barrett et al. (2010); Bodansky (2004); Reinstein (2004); Victor et al. (2005); retaining the notion of two extremes along a continuum, but arguing for a “middle ground” of parallel efforts integrated in a multi-track framework or regime complexes: Bodansky et al. (2007); Keohane and Victor (2010); Pew (2005).



section draws on an existent body of work regarding the evaluation of policy instruments for domestic climate policy and rules and institutions for international environmental governance, leveraging criteria developed therein for application to the context of international climate cooperation.

### 3 Evaluating Frameworks of International Climate Cooperation

#### 3.1 Evaluating Climate Policies and Measures: The Domestic Dimension

Decision makers seeking to address the causes and effects of climate change can take recourse to a portfolio of policy instruments, including pricing controls and quantity rationing,<sup>24</sup> performance standards, subsidies, agreements, and informational instruments (IPCC, 2007: 750; OECD, 2009: 18-22).<sup>25</sup> In practice, these instruments are applied alone or in varying combinations to different sectors, such as electricity generation, transport, buildings, and industry (Krupnick et al., 2010: 8-9).<sup>26</sup> By diverting resources and capital away from the production of conventional goods and services, and often into costly abatement measures, these instruments can have a detrimental effect on economic growth in the short term. Over the medium and longer term, the various co-benefits of mitigation action, such as energy savings, reduced health impacts, or improved energy security, suggest that a carefully designed strategy to lower greenhouse gas emissions will generate greater benefits than costs,<sup>27</sup> but current political and economic decision making cycles are notorious for being myopic and providing little incentive for anticipatory governance or foresight (Fuerth, 2004). Additionally, while the social cost of action is expected to be lower than the impacts of unabated climate change, it will nonetheless rise over time as readily available abatement options are exhausted and more costly solutions need to be explored (Stern, 2006: 63, 191). In

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<sup>24</sup> Pricing models date back to Pigou (1920), and notably include emissions charges and taxes set to cover the marginal damage caused by polluting activities, thereby internalizing their costs; quantity rationing, in turn, is based on work by Dales (1968): 92-100 and Montgomery (1972): 395, both building on Coase (1960), and generally requires the creation of a market for tradable emission allowances, where each allowance confers the right to discharge a specified quantity of pollutants for a limited duration of time; for further details, see Tietenberg (2006). For a discussion of relative merits, see Weitzman (1974).

<sup>25</sup> This is a very broad categorization of policy instruments, and further differentiation is possible; in 1995, for instance, the Congressional Office of Technology Assessment divided environmental policy instrument in tools without fixed targets (technical assistance, subsidies, information reporting, liability, and pollution charges), multisource tools with fixed targets (challenge regulations, tradeable emissions permits, integrated permitting), and single-source tools with fixed targets (harm-based standards, design standards, technology specifications, and product bans), see OTA (1995): 81-89.

<sup>26</sup> In a majority of sectors, greenhouse gas mitigation will be achieved by improving the efficiency with which energy is used or by reducing its carbon intensity, see OECD (2009): 11, but in agriculture, forestry, and certain chemical and industrial processes where emissions are not related to energy use, different approaches – such as stabilization or expansion of carbon sinks – are applied.

<sup>27</sup> Especially when taking into consideration the expected costs of climate change impacts, such as extreme weather events, flooding, crop losses, vector-borne diseases, and biodiversity loss, see e.g. CBO (2008): 11.



the context of climate change, therefore, both the rationale of policy instruments and the manner in which they are designed have been sensitive to economic concerns from a number of important stakeholders, prompting widespread adoption of flexible or suasive incentives alongside more coercive regulatory prescriptions.<sup>28</sup>

With this broad range of available instruments comes a need for reliable criteria to guide and justify selection processes between contending approaches to climate governance. While it is widely agreed that no single model can serve as a panacea for all regulatory purposes (Goulder et al., 2008: 2), a number of criteria have gradually evolved in various academic disciplines to evaluate individual instruments and their combination in a coordinated portfolio. At a sufficient level of abstraction, the following criteria are typically proposed:

- *Environmental effectiveness*: how well does a policy instrument meet its intended environmental objective? How certain is its level of environmental impact?
- *Cost effectiveness*: can the policy achieve its objectives at a lower cost than other policies? Does it create revenue streams that can be reinvested?
- *Distributional considerations*: how does the policy impact consumers and producers? Can it be considered fair and equitable?
- *Institutional feasibility*: is the policy instrument likely to be viewed as legitimate, gain political acceptance, be adopted and ultimately implemented? (IPCC, 2007: 751).

While these criteria are widely advocated, albeit with slight variations,<sup>29</sup> it bears noting that processes of instrument choice are often complicated by the fact that individual criteria tend to compete with each other, rendering tradeoffs inevitable and any selection largely dependent on specific circumstances (Goulder et al., 2008: 2).<sup>30</sup> Additionally, climate

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<sup>28</sup> Limiting the economic burden requires equalization of marginal abatement costs across the economy and for each source, something price- and quantity-based instruments are said to achieve better than rigid technology standards (Baumol and Oates, 1988: 177; Keohane et al., 1998: 313); as a result, conventional regulation, criticized for belonging to an “extraordinarily crude, costly, litigious and counterproductive system of technology-based environmental controls” (Ackerman and Stewart, 1985: 1333), has been increasingly joined or supplanted by market incentives, all with an aim to “improve the command system through better balancing of regulatory costs and benefits, improved risk analysis and management and greater flexibility” (Stewart, 2001: 21).

<sup>29</sup> Similar criteria are e.g. reported in the broader academic literature, see, for instance, Sterner (2003): 133-134, who lists efficiency (in various forms, such as static and dynamic allocative efficiency, efficiency in the use of public funds, and transaction costs), effectiveness, fairness, effects on income distribution and other aspects related to the distribution of welfare, incentive compatibility, and political feasibility; Harrington et al. (2004): 5, who list effectiveness, efficiency, equity and fairness, non-intrusiveness, and public participation; or OTA (1995): 143-147, requiring that policies be cost-effective and fair, place the least demands on government, provide assurance to the public that environmental goals will be met, use pollution prevention when possible, consider environmental equity and justice issues, be adaptable to change, and encourage technology innovation and diffusion. See also Baumol and Oates (1988): 57-78; Goulder et al. (2008): 3-23. Of course, actual practice has often “diverged strikingly from the recommendations of normative economic theory”, see Keohane et al. (1998): 313, and will be strongly influenced by local traditions, cultures, institutions, and infrastructures, with institutional capacity especially constraining viable choices in developing countries, see Bell (2003): 22.

<sup>30</sup> For instance, assuring a reasonable degree of fairness in the distribution of impacts, or ensuring political feasibility, often will require a sacrifice of cost-effectiveness.





governance tends to address several market failures and seek a variety of outcomes, thus necessitating the use of more than one instrument (Tinbergen, 1952). Yet with the simultaneous operation of various instruments comes a risk of adverse interactions or even redundancies (OECD, 2007: 27). Some instruments will pursue more than one objective (Knudson, 2008: 308), and the extreme uncertainties underlying causes and impacts of climate change as well as policy outcomes further complicate the evaluation of relevant instruments (Weitzman, 2009: 8-10). As the next section illustrates, similar complexities are also faced when seeking to apply evaluation criteria to international regimes; many of the considerations guiding the debate on domestic instrument choice are, however, transferable to some extent (Stewart, 2007: 159).

### **3.2 Evaluating Climate Cooperation: The International Dimension**

Both the nature of climate governance as well as its objectives differ fundamentally between the national and international level. Unlike domestic climate policy, which can rely on public institutions endowed with authority to enforce obligations and settle disputes, international cooperation presupposes that sovereign states assent voluntarily to any obligations they assume and subsequently implement these (Wiener, 1999: 683; Werksman, 2010: 673). Yet climate change is a complex and long-term challenge that can only be solved through collective action (Underdal, 2010: 1), and any abatement efforts – or absence thereof – will have repercussions on the international community in its entirety, as well as on the position of domestic constituents in the states undertaking such efforts (Hare et al., 2010: 602). For instance, while all states will benefit from the greenhouse gas controls adopted by any one state, the acting state will enjoy only a small share of the benefits of its own efforts (Ostrom, 2009: 7-8, differentiating on Hardin, 1968, and Olson, 1965). Given this inherent disposition to encourage free-riding and generate spillover effects, countries thus have a strong incentive to limit emissions only “so long as it were assured that all others would reduce their emissions as well” (Barrett et al., 2010: 4). Conversely, domestic entities in active states will face a rising regulatory burden, potentially placing them at a disadvantage *vis-à-vis* competitors in countries without comparable environmental constraints; in a global economy with increasingly free movement of trade and investment, such differences in the ambition of national abatement efforts can have far-reaching consequences, both in economic and environmental terms. Accordingly, international climate cooperation needs to achieve a balance between substantive ambition, scope of participation, and level of compliance.

Any set of criteria used to evaluate different models of global climate cooperation will need to reflect this underlying reality of international environmental governance (Stewart, 2007: 161). Consequently, the categories guiding an assessment and classification of contending international governance architectures can only be informed by, but not identical to, the criteria set out in the preceding section. Unlike the domestic level, where the research community and scientific bodies have formulated a widely recognized canon of evaluation



criteria,<sup>31</sup> no benchmarks of comparable authority have yet been defined for the international debate. Instead, different approaches to the study of international relations and global governance have resulted in very diverse assessment metrics, each premised on a particular outlook and understanding of cooperation between states and the social, political or economic priorities it is meant to address. In the field of international environmental governance, a rich and insightful literature has emerged on the assessment of regimes, treaties, and institutions, some of which has clearly informed our current understanding of international climate cooperation. Some major strands of this research are briefly highlighted in the following subsection.

### 3.2.1 *Evaluating Frameworks of International Environmental Governance*

Past decades have seen an astounding proliferation of international arrangements in the area of the environment. A widespread perception that these have proven only marginally successful sparked growing interest, both institutional and academic, in the conditions and requirements of improved environmental governance. Over time, this shift in attention from the design of new international environmental arrangements to their evaluation and improvement has elicited a number of individual and collaborative research efforts across academic disciplines, producing a wealth of output and generating intense debate. In effect, research on the role and consequences of environmental regimes, treaties, and institutions became such a dominant part of the study of international relations at one point that it compelled a scholar to speak of a “veritable growth industry” and a “driving force” in his field (Zürn, 1998: 649). Much of the resulting literature has focused on specific dimensions of regime performance, with the greatest weight being afforded to questions of effectiveness, followed by research on economic impacts, fairness, and equity (Mitchell, 2008).

But even within these narrow categories, terms and definitions have varied greatly due to “elusive” (Keohane, 1996: 8; Young et al., 1999: 3) concepts involving “daunting evaluative and analytical problems” (Bernauer, 1995: 352) that have given rise to much “disagreement, both in method and approach and in substantive views” (Kingsbury, 1997: p. 50). Significant variations in the focus of relevant studies, as well as the distinct intellectual backgrounds and orientation of their authors, have resulted in very different approaches to the measurement of performance in terms of outputs, outcomes, and impacts (Underdal 2008). Research on the effectiveness of international environmental governance, for instance, was initially prompted by a shared concern about the ability of cooperative arrangements to influence state behavior, and hence focused on issues of regime design and improved compliance management. But definitions of what exactly constitutes “effective” governance differed widely in earlier research, with some authors merely seeking behavioral change or

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<sup>31</sup> See the references in note 29 above and accompanying text.





observable political effects,<sup>32</sup> while others set the threshold higher by looking for an improvement in – or even resolution of – the situation that necessitated cooperation in the first place.<sup>33</sup> Although later research has become more critical in terms of applied methods and concepts (Mitchell, 2008; Underdal, 2008), even a recent shift to more empirical<sup>34</sup> and quantitative<sup>35</sup> approaches has failed to altogether eliminate some of the more persistent epistemic challenges in the study of regime effectiveness, including identification of the purpose of cooperation and of causal connections between governance systems and subsequent behavioral or physical change (Dai, 2008:158).

While the conceptual limitations of this line of research are thus readily apparent,<sup>36</sup> the work to date reflects a sophisticated intellectual effort to determine whether international environmental cooperation plays a role in shaping collective action and social practices. Progress has been made, in particular, when it comes to distinguishing normative and utilitarian motives for state behavior (Young 2002) and extending the perception of environmental compliance beyond binary treaty observance to a more managerial process focused on clarity, capacity, and priority (Chayes et al., 1995; Brunnée et al., 2002; critically Koskenniemi, 1992: 147), in which soft incentives and facilitation play as much a role as traditional legal coercion (Karlsson-Vinkhuyzen et al., 2009; Skjaerseth et al., 2006). More recently, scholars have responded to the rapid growth in environmental regimes by focusing on regime fragmentation and overlap, discussing options to manage conflicts and leverage synergies between multiple levels of governance and concurrent governance systems (Biermann et al., 2009; Keohane and Victor, 2010; Selin and VanDeveer, 2009).

Overall, there can be little doubt that our comprehension of international environmental cooperation has been greatly advanced, from the earliest stages of diplomatic negotiations to the final application and enforcement of individual arrangements. Nonetheless, studies of regime performance have so far failed to yield a set of clear and robust generalizations about the conditions for successful environmental governance (Young, 2010: 7). In particular,

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<sup>32</sup> Greene (1996): 200; Haas et al. (1993): 7 ("observable political effects"); Raustiala et al. (1998): 1; Young (1996): 10 ("behavioural effectiveness").

<sup>33</sup> See, e.g. Carroll (1988): 276 ("when measured against getting the problem solved, and that should be the only real measure"); Endres et al. (2000): 73 ("[u]nter der Wirksamkeit eines Vertrages verstehen wir, daß sein Abschluß ... zu einer Wohlfahrtssteigerung ... führt"); Helm et al. (2000): 635 ("perfect regime"); Keohane (1996): 14 ("[t]he proof of effectiveness is to be seen in the improvement of the targeted aspect of the natural environment"); Levy (1996): 395; Oberthür (1997): 47 ("die Verhaltenswirkungen, die im Sinne einer Problemlösung positiv zu bewerten sind"); Raustiala et al. (1998): 1 (ability to "help solve environmental problems"); Susskind (1994): 12 ("tangible environmental improvements"); Young (1994): 3 ("[a]n effective governance system is one that channels behavior in such a way as to eliminate or substantially to ameliorate the problem that led to its creation"); Young (1996): 8-9 ("problem solving" and "goal attainment"); Young et al. (1999): 5.

<sup>34</sup> See, e.g., Miles et al. (2002).

<sup>35</sup> See, e.g., Breitmeyer et al. (2006); Hovi et al. (2003); Mitchell et al. (2006).

<sup>36</sup> As Bernauer (1995): 356 has phrased it, "[t]he authors ... refer almost interchangeably to institutional effect, impact, effectiveness, institutional roles or functions, success or failure, and compliance, as well as to actor behaviour and the state of the natural environment."



aspects other than compliance and effectiveness, such as economic impacts, fairness, and legitimacy, have received less systematic consideration in the absence of large, integrated research networks (Mitchell, 2008: 93).<sup>37</sup> Future work is likely to address such remaining gaps while further improving the clarity and transparency of analysis. Standardized definitions of key concepts, more rigorous comparison of findings across projects and disciplines, and use of advanced methods such as statistical analysis, simulations, and integrated case studies will help aggregate cumulative knowledge about the dynamics that affect regime formation and implementation (Young, 2010: 21-24). In the meantime, however, the research agenda remains heterogeneous, underscoring the earlier assertion that no single approach can capture the diverse ways of looking at international environmental cooperation,<sup>38</sup> calling instead for a case by case determination of suitable evaluation criteria.

### 3.2.2 *Survey of Existing Literature on Climate Cooperation*

Where studies have sought to evaluate different options for international climate governance, parallels to the substance and rationale of the foregoing criteria are readily apparent. To the extent that such analysis has gone beyond the simple dichotomy of “top down” and “bottom up” categories, central categories – such as the effectiveness in addressing climate change – recur throughout pertinent literature; additional criteria are assembled in a more eclectic fashion, with research guided less by systematic considerations and variedly focusing on distributional and economic impacts, regime coherence, institutional capacity, and other considerations held to have an impact on climate governance. In the absence of large-scale coordinated research work, most benchmarks applied to the study of international climate cooperation reflect a more pragmatic and spontaneous approach than comparable research on domestic climate policies and measures, or indeed international environmental governance. Although offering unquestionable flexibility, this approach to the discussion of alternative governance frameworks again suffers from drawbacks in terms of comparability and systematic accumulation of knowledge. Drawing on brief summaries of relevant literature, the following subsection will seek to identify guiding criteria for the evaluation of international governance options for climate change mitigation and adaptation. Only five research efforts have sought to define such criteria; interestingly, four out of five have been conducted at academic institutions or think tanks in the United States, and the fifth is directly connected to a project in the U.S.

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<sup>37</sup> By contrast, where comprehensive research has been undertaken the criteria applied are so far-reaching as to render their subsequent application more difficult outside of the specific project context, see the detailed set of 30 criteria applied by Jacobson et al. (1998): 536, covering the nature of the activity being regulated, the way the regime is designed, the international environment, and the characteristics of the countries that are subject to regulation.

<sup>38</sup> See, however, efforts such as the “Oslo-Potsdam Solution” to performance measurement through performance scores, Hovi et al. (2003).



*Thirteen Plus One: A Comparison of Global Climate Policy Architectures (Aldy et al., 2003)*

In an early article reviewing the Kyoto Protocol – the fate of which was still unclear at the time the article was written – as well as 13 alternative policy architectures for international climate cooperation, the authors base their evaluation on six “key performance criteria” (Aldy et al., 2003: 374):

- *Environmental outcome*:<sup>39</sup> the likely magnitude of environmental outcomes, taking into account temporal delays, leakage effects and the challenges involved in measuring highly uncertain variables against a counterfactual baseline;
- *Dynamic efficiency*: achievement of maximum aggregate net benefits, covering actions, impacts, benefits, and costs that occur over very long time horizons, and accounting for uncertainties due to the intertemporal nature of the problem;
- *Cost-effectiveness*: the least costly means of achieving a given target or goal, regardless of whether it is efficient in terms of the net benefits achieved through this cost;
- *Equity*: distribution of the benefits and costs of policy action, both cross-sectionally and over time, necessitating the identification of international, intra-national, and intergenerational distribution effects guided by a subset of criteria including responsibility for the accumulation of greenhouse gases in the atmosphere, ability to pay for response measures, accrual of benefits from policy action, and the trade-off between present distributional and intergenerational equity;
- *Flexibility*: ability to adapt to new information through sequential decision-making that facilitates the modification and adaptation of policies as new information reduces uncertainties;
- *Participation and compliance*: ability to deter free riding behavior through either non-participation or non-compliance, taking into account trade-offs between “narrow-but-deep” and “broad-but-shallow” cooperation.

In the remainder of the article, the authors apply the foregoing six criteria to the Kyoto Protocol and 13 alternative frameworks for climate cooperation proposed in academic literature. None of the assessed frameworks score high on all criteria, leading the authors to identify certain inherent trade-offs in their conclusions (Aldy et al., 2003: 394).

*International Climate Efforts beyond 2012: A Survey of Approaches (Bodansky, 2004)*

For this policy paper prepared on behalf of the Pew Center on Global Climate Change, the author proposes general criteria that could be used to evaluate alternative frameworks for international climate cooperation beyond 2012. Unlike the other studies mentioned here, the

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<sup>39</sup> The authors point out that, from an economic perspective, measuring dynamic efficiency would obviate this criterion; yet it is nonetheless included, as it better reflects the priorities of some participants in the debate.



author distinguishes “policy” and “political” criteria. Policy criteria relate to the intrinsic characteristics of the proposed framework, and include (Bodansky, 2004: 5):

#### *Policy Criteria*

- *Environmental Effectiveness*: primarily relates to the stringency of the surveyed approach, but also includes corollary aspects such as controlling leakage, stimulating long-term technological change, and ensuring adequate enforcement;
- *Cost-Effectiveness*: ability to reduce emissions at lower cost than comparable proposals;
- *Equity*: Perception that a proposal is sufficiently equitable or, at the least, not demonstrably unfair;
- *Dynamic Flexibility*: commitments can be scaled up or down, or otherwise modified, to allow easier reassessment and revision in light of new scientific and economic information;
- *Complementarity*: facilitates linkages among multiple regimes or approaches.

By contrast, political criteria relate to whether a proposed cooperation framework fits with the political and institutional context, determining the ability to negotiate and implement future climate efforts (Bodansky, 2004: 5-6):

- *Continuity*: ability to build on, or remain within, the UNFCCC and Kyoto Protocol architecture;
- *Economic Predictability*: ability to limit unpredictable cost variables such as economic and population growth, and the rate of technological change;
- *Compatibility with Development Goals*: ability to help advance, rather than compete with, development priorities such as economic growth and poverty reduction.
- *Implementability*: compatibility with the capabilities and limitations of the institutions on which implementation and compliance will depend, including ease of monitoring and predictability of compliance.

As the author notes, some of the foregoing assessment criteria may be complementary, such as cost-effectiveness and environmental effectiveness, while others may give rise to tensions, for instance, certainty of mitigation cost and certainty on environmental benefit (Bodansky, 2004: 6).

#### *Modelling Economic Impacts of Alternative International Climate Policy Architectures* (Bosetti et al., 2008)

In this discussion paper, a group of Italian authors have sought to provide a quantitative assessment and comparison of competing architectures for climate cooperation beyond 2012. Drawing on the work conducted in the Harvard Project on International Climate



Agreements, they assess eight possible successors to the Kyoto Protocol based on four criteria (Bosetti et al., 2008: 11-19):

- *Relative environmental effectiveness*: the degree to which the problems associated with climatic change are addressed, measured as temperature change above pre-industrial levels in 2100;
- *Economic efficiency*: the cost implications of the proposals, measured as changes in Gross World Product (GWP) under each proposal with respect to the status quo over the next century, discounted at a 5% discount rate;
- *Distributional implications*: the distribution of the costs and benefits of climate change and climate change policy, assessed by an index that represents the concentration of income between regions of the world, and shows inequality in income distribution at the end of the century; and
- *Potential enforceability*: the degree to which a proposal limits incentives to free ride and is enforceable, measured by changes in global and regional welfare with respect to the status quo.

Based on these indicators and a set of modeling tools, the authors arrive at quantitative scores for each of the foregoing criteria. As part of their conclusions, they submit a number of general recommendations, including the need to strengthen the ambition of all surveyed proposals and the expedience of incorporating gases other than CO<sub>2</sub> as well as the forestry sector. Likewise, they affirm trade-offs between the different criteria, and find that only cooperation on technological research and development will be sufficiently attractive in economic terms to be global and self-enforcing, yet virtually ineffective in addressing climate change (Bosetti et al., 2008: 21).

#### *The Regime Complex for Climate Change (Keohane and Victor, 2010)*

With this recent paper drafted for the Harvard Project on International Climate Agreements, the authors draw on their earlier work on regime complexes – defined as loosely coupled sets of specific regimes and hence closer to the concept of a governance “architecture” defined in Box 1 – and propose evaluating these on the basis of six criteria, with each running from dysfunctional to functional (Keohane and Victor, 2010: 19-20). The criteria are:

- *Effectiveness*: appropriateness of, and level of compliance with, rules, and ability to thereby create net benefits for members;
- *Coherence*: degree to which the various regimes that form part of the broader climate change regime complex are compatible and mutually reinforcing, as opposed to incompatible and mutually harmful;
- *Accountability*: degree to which relevant audiences, including states, non-governmental organizations and the public, have the right to hold elements of the regime complex to a set of standards, to judge whether relevant actors have fulfilled



their responsibilities in light of these standards, and to impose sanctions if they determine that these responsibilities have not been met;

- *Determinacy*: degree to which rules have a readily ascertainable normative content, reducing uncertainty and thereby improving long-term planning and investment;
- *Sustainability*: degree to which elemental regimes represent a coherent equilibrium and are hence politically more stable and resilient to shocks;
- *Epistemic quality*: consistency between rules and scientific knowledge, and capacity to revise both rules and terms of accountability of decision makers accordingly.

Applying the foregoing criteria to the existing climate change regime complex centered on the UNFCCC and the Kyoto Protocol, the authors conclude that none of the current institutions obtain high rankings on any of the six criteria. In addition, the authors point out that these criteria are particularly useful when applied to a complex of loosely coupled elements rather than a single, integrated scheme.

*Designing an International Climate Regime: Moving the UNFCCC Forward*  
(Moncel et al., 2011)

In a joint effort to examine proposals “that are relevant to the design of an institutional architecture”, the World Resources Institute (WRI) and the United Nations Environment Programme (UNEP) have recently launched a project to survey academic literature as well as proposals by non-governmental organizations (NGOs) and governments based on a set of criteria that “are necessary for any future regime to be politically, economically, socially, legally, and environmentally sustainable.” Specifically, the project will base its assessment on the following criteria:

- *Ambition*: the ability of the regime to effectively elicit and deliver actions by countries in a manner commensurate with the best available scientific information, both with a view to the timeframe and the range of measures required;
- *Equity*: the perceived legitimacy of an agreement by all parties, encompassing both equity of process and equity of substance.
- *Implementation*: the ability of governments to enforce within their jurisdiction rules agreed nationally or internationally, including the capacity to put rules and regulations into force, to monitor and track adherence to the rules, and to enforce compliance or remedy noncompliance where it arises.

According to the project leaders, the foregoing criteria are “fundamental to ensuring legitimacy and effectiveness of any agreed outcome.” While they acknowledge that other criteria could be selected, they affirm their belief that these criteria capture the “essence of a long-term, enduring, and sustainable climate regime”, and aim to provide more complete definitions and context behind each definition in the upcoming working paper (Moncel et al., 2011: 2).





### 3.2.3 Interim Conclusions

As the foregoing subsections have shown, efforts to evaluate alternative frameworks for international environmental governance and climate cooperation share a number of characteristics. Unsurprisingly, both areas of research are guided by the same overarching concern about the ability of governance frameworks to achieve what is typically their primary *raison d'être*, the alleviation of an environmental challenge. In the literature on alternative climate policy frameworks, the corresponding criteria have different designations, ranging from environmental outcome and environmental effectiveness to level of ambition, but what they have in common is an underlying preoccupation with how cooperation is able to address the problem of climate change. In the broader work on the performance of international environmental regimes and institutions, this focus on effectiveness has seen a greater level of differentiation and methodological sophistication, with more recent studies distinguishing the actual achievement of environmental outcomes from the preceding ability to elicit compliance and behavioral change. Of the five surveys of climate policy architectures, four single out this latter aspect to formulate a separate criterion related to implementation, which comprises aspects of compliance and enforcement, but also of administrative and financial capacity. Arguably, this reflects the greater complexity and scale of climate change and of appropriate response measures, at least relative to many other environmental challenges.

In domestic environmental policy, the economic impact of specific instruments features prominently in the debate on their respective merits and shortcomings. For international institutions and regimes, it becomes significantly more difficult to estimate the economic cost of achieving an agreed objective, let alone to measure costs against benefits in an issue area where both are highly uncertain and spread out over an extended period of time, necessitating application of inevitably controversial discount rates. As a result, few studies of the performance of international governance frameworks incorporate an economic criterion, and to the extent they do, they largely limit themselves to broad indicators such as the use of market mechanisms or other flexible approaches. Still, three of the studies proposing criteria for the assessment of climate governance frameworks explicitly mention cost effectiveness or economic efficiency, and two go even further to calculate aggregate welfare effects of alternative models of cooperation. A fourth study incorporates economic considerations, but rather in terms of the predictability of costs rather than a genuine cost benefit analysis.

Given the changing nature of scientific knowledge about climate change, but also the potential for technological innovation and other unforeseen developments, a majority of studies also include aspects of flexibility or adaptability, again resonating with similar work in the broader study of international environmental governance. Likewise, equity concerns – variously defined as the distribution of costs and benefits, fairness, and legitimacy – are mentioned in most studies, reflecting the disproportionate importance these issues have held



in the international climate discussion. Of the proposed sets of criteria, two also list regime coherence or complementarity, acknowledging the existence of more than one concurrent forum of cooperation. A related consideration is continuity, that is, the degree to which a cooperation framework can build on existing institutional and regulatory architectures. Surprisingly, only one of the surveyed studies lists participation, that is, the geographic scope and coverage of a climate governance framework. Likewise, only one of the surveyed studies, respectively, lists the criteria of accountability, development compatibility, determinacy, and sustainability. Finally, one study lists epistemic quality, that is, the consistency of environmental objectives with scientific insights and recommendations, but this may be subsumed under the broader categories of environmental outcome and flexibility. All criteria proposed in the studies surveyed in the foregoing section are listed in Table 1 below.





Table 1: Criteria for the Evaluation of International Climate Cooperation

Proposal	Aldy et al. (2003)	Bodansky (2004)	Bosetti et al. (2008)	Keohane et al. (2010)	Moncel et al. (2011)
<i>Environmental Effectiveness</i>					
Environmental Outcome	X	X	X	X	X
Implementation Control	X	X	X		X
Geographic Scope	X				
<i>Economic Implications</i>					
Cost Effectiveness	X	X	X		
Dynamic Efficiency	X		X	(X) <sup>1</sup>	
Economic Predictability		X			
Impact on Development		X			
<i>Fairness and Legitimacy</i>					
Equity	X		X		X
Accountability				X	
Sustainability				X	
<i>Adaptability</i>					
Flexibility	X	X		(X) <sup>2</sup>	
Epistemic Quality				X	
<i>Structural Aspects</i>					
Regime Coherence		X		X	
Regime Continuity		X			
Determinacy				X	

Source: Author, based on Aldy et al. (2003), Bodansky (2004), Keohane and Victor (2010), and Moncel et al. (2011).

<sup>1</sup> Effectiveness as a criterion is defined as including the ability to “create net benefits for members”, a consideration that factors into dynamic efficiency.

<sup>2</sup> Epistemic quality as a criterion also includes an element of flexibility in that it integrates the “capacity to revise ... rules” in accordance with scientific knowledge.



## 4 An Assessment Matrix for International Climate Cooperation

Existing surveys of alternative approaches to international climate governance have already devoted significant intellectual effort to defining generally applicable criteria for the evaluation of cooperative frameworks. What is more, they have been, to a greater or lesser extent, able to build on the cumulative insights offered by previous research on the assessment of domestic environmental policy and international environmental governance. Still, the criteria proposed in relevant literature to date are fairly heterogeneous. Only one criterion – environmental effectiveness – is common to all proposals, and even that is characterized by variations in the conceptual definition and scope. Other criteria, such as economic implications and considerations of equity, feature in a majority of studies, but again, their material content varies substantially. Comparisons across surveys become virtually impossible.

What this section therefore attempts to formulate is an assessment matrix comprised of harmonized criteria drawn largely from the existing literature, but geared towards a pragmatic approach that avoids speculative or highly uncertain concepts and facilitates application without the need for sophisticated models or datasets. Additionally, it will seek to accommodate the trends apparent in recent international climate cooperation described in Section 2.1, notably the emergence of multiple regimes simultaneously addressing the challenge of global climate change, and the shift towards more informal, decentralized approaches to climate governance. In this new reality of horizontally fragmented multilevel governance, where systemic coherence becomes as much a challenge as balancing narratives of equity with broader (and deeper) participation in global climate efforts, the following assessment matrix can hopefully help compare alternative governance options currently proposed by governments, the research community, and other stakeholders.

### 4.1 Defining a Common Set of Criteria

Drawing on the existing body of literature, and also accounting for recent trends in international climate cooperation, the proposed matrix includes the criteria listed in the following subsections. It bears restating that the selection below neither seeks perfect analytical stringency, nor claims to be exhaustive in scope; rather, it hopes to provide a practical framework for the evaluation and comparison of alternative models of climate governance, albeit incorporating the current state of research on the topic, and hence providing some continuity *vis-à-vis* relevant past efforts. None of these criteria is inherently more important than its counterparts; instead, the importance of each criterion will largely depend on the context and priorities of those applying them, with inevitable trade-offs and a need to balance or give weight to different criteria. Following the presentation of the criteria, three case studies will serve as examples for their application to actual institutions.



#### 4.1.1 Level of Ambition

As in the domestic context, international climate governance is not an end upon itself. A central measure of any governance framework needs to be its ability to address the challenges which gave rise to it. In the case of climate cooperation, hence, the primary benchmark can be defined as the suitability of a regime or institution to contribute to the mitigation of climate change and, given the increasingly evident inevitability of some measure of atmospheric warming, the adaptation to its impacts. Unlike most previous studies, however, including the substantial body of research into the performance of international environmental regimes and institutions, it is submitted here that any attempt to capture the expected impacts of a climate cooperation architecture *ex ante*, that is, before actual implementation, is by necessity highly speculative or dependent on the availability of extremely sophisticated modeling capacities and data. As past research has amply shown, even an *ex post* evaluation still faces rigorous challenges in terms of establishing causality and assigning outcomes in an issue area as complex as climate change governance. What is more, identifying the desired or intended environmental outcome is frequently difficult given other competing aspirations, explicit or tacit, of the respective governance framework (Mitchell, 2008: 94).

For the foregoing reasons, the criterion proposed here is “level of ambition”, defined as the ambition of objectives set out under a cooperative framework *vis-à-vis* accepted mitigation and adaptation imperatives. It is an essentially normative criterion, and avoids the discussion about whether changes in state behavior are simply reflections of underlying power structures in international society, or whether regimes and institutions exercise significant influence in their own right (Mearsheimer, 1994). When it comes to climate change mitigation, for instance, the level of ambition can be assessed based on the declared objectives of cooperation. As an external benchmark, the evaluation could draw on widely agreed goals, such as the decision recently endorsed by the international community in Cancún to hold the increase in global average temperature below 2 °C above preindustrial levels.<sup>42</sup> Rather than relying on a static benchmark, however, it may be preferable to measure the ambition of objectives against evolving scientific recommendations, thereby incorporating an element of flexibility and improving the epistemic merits of this criterion.

Ultimately, “level of ambition” is thus not so much a criterion aimed at predicting environmental or behavioral outcomes with mathematical precision, but rather a “first approximation surrogate for effectiveness” (Chayes et al., 1993: 176). Defined this way, it comes to encompass the criteria of environmental outcome and epistemic quality listed in Table 1 above.

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<sup>42</sup> See Decision 1/CP.16, FCCC/CP/2010/7/Add.1, 15 March 2011 (“Cancún Agreements”), para. 4. In the context of adaptation, no similar benchmarks have been defined, except perhaps the decision to provide certain financial transfers through mechanisms such as the Adaptation Fund, see also OECD, 2008: 27.



#### 4.1.2 *Compliance Facilitation and Control*

Because the achievement of an agreed objective is intrinsically linked to the design of the accompanying cooperation framework, the evaluation will also need to factor in aspects such as the clarity and determinacy of commitments, the robustness of incentives for compliance, the mechanisms - whether facilitative or coercive – to address non-compliance, as well as the provisions set out to ensure sufficient transparency of efforts undertaken by participants. It is also here where the legal nature of commitments and procedures – binding or voluntary – can be subsumed, without prejudice to whether legally binding commitments are more likely to promote compliance or deter their adoption in the first place. And while the domestic capacities of regime participants are not initially a consequence of the regime design, provisions to address capacity constraints and promote capacity building may count towards the overall ambition of a regime or institution. Similarly, experience suggests that procedures to ensure accountability and stakeholder participation are likely to help achievement of the objectives of cooperation, and should therefore be taken into consideration when assessing the level of ambition. Under this definition, “compliance facilitation and control” incorporates the criteria of implementation control, accountability and determinacy listed in Table 1 above.

#### 4.1.3 *Institutional Capacity*

Ambitious objectives and procedures to ensure their achievement are necessary, but not sufficient, criteria for the performance of a governance framework. Increasingly, climate cooperation involves sophisticated responses and mechanisms which call for some form of institutional capacity, be it to monitor implementation by participants, perform procedural functions, or facilitate the operation of regime elements. For instance, the UNFCCC and the Kyoto Protocol have seen the creation of an infrastructure with proprietary resources and a staff of several hundred experts,<sup>43</sup> bringing technical knowledge, an institutional memory and professional routines to the climate negotiations and specific aspects such as the carbon market established by the flexible mechanisms. Another aspect that can be considered in this context is the relevance of climate change to the mandate of an institutional architecture: would climate change be its central focus, or merely one of many competing issues to which institutional and political resources are allocated? To some extent, this criterion encompasses aspects of regime continuity and implementation proposed by the studies assessed in Section 3.2.2.

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<sup>43</sup> According to the UNFCCC Secretariat, its staff of “around 500 international civil servants works towards the UNFCCC’s goals ... Among other things, the staff supports climate change negotiations, organizes meetings and analyses and reviews climate change information and data reported by Parties”, see UNFCCC, 2010.



#### 4.1.4 Participation and Inclusiveness

Given the projected emission trends around the world, long-term stabilization of greenhouse gas concentrations will not be achieved, or will only be achieved at an unacceptably high level of emissions or cost, unless there is sufficiently broad participation in cooperative efforts to address climate change (OECD, 2009: 23-24). In particular, all major emitters – including most developed and many emerging economies – would need to be included in a future climate architecture to effectively mitigate global greenhouse gas emissions. Moreover, if only some countries or regions participate in the cooperative framework, certain sectors of the economy – such as energy-intensive industries – in those countries or regions would be at a disadvantage *vis-à-vis* competitors in excluded countries, resulting in political pressures and an increased risk of emissions leakage, where emission reduction in participating countries may be offset by higher emissions in others. Past experience suggests there is a tradeoff between broad participation and level of ambition, however: because participation in international environmental regimes is voluntary, there is a tendency to create arrangements that are shallow in terms of substance in order to make them palatable to all the relevant actors (Young, 2010: 16). This criterion takes up the notion of geographic scope included in Table 1 above.

#### 4.1.5 Systemic Coherence

With the growing number of distinct regimes active in the area of climate change, concerns about potential interactions, such as an overlap of activities and mandates, are acquiring increased weight. As recent studies have observed, international cooperation on climate change can range along a continuum in which one extreme is a comprehensive and integrated governance system for the entire issue area and the other extreme is total fragmentation (Keohane et al., 2010). Conflicts and tensions between different institutional arrangements can potentially compromise the effectiveness of cooperation. At the same time, properly integrated regimes will ideally complement each other and leverage synergies (van Asselt, 2011). This underscores the need to ensure some level of coordination between institutions, for instance by adopting mandates that specify clear and separate responsibilities, or by including conflict clauses and procedures that address potential overlaps.

But systemic coherence is not purely an issue at the level of institutions active in the area of climate policy: regimes may also interact with each other at a material or conceptual level, be it horizontally between regimes devoted to different issue areas such as climate change and international trade, or vertically at different levels of implementation. On the latter, because climate policies and measures ultimately have to be carried out and enforced at the domestic level, successful cooperation frameworks need to take into account potential interactions with local or regional rules and institutions. Again, however, a trade off may exist between high levels of integration and more loosely organized, flexible cooperation.



Typically, integrated arrangements will be more cumbersome and time-consuming to establish and more apt to entail compromises that dilute the content of their substantive provisions (Young, 2010: 12). "Systemic coherence" hence also incorporates aspects of flexibility and regime coherence mentioned in Table 1.

#### 4.1.6 Political and Economic Feasibility

Perceptions of equity and fairness are clearly important for the acceptance of and adherence to a cooperative governance framework. Likewise, the expected economic burden and the distribution of costs and benefits will have a strong influence on whether regime participants are willing to enter cooperative efforts in the first place, and whether the regime is sustainable in the medium and long term. Both dimensions involve inherently contingent, epistemologically complex and highly debatable considerations. Any definition of fairness, for instance, will be invariably subjective, and hence cannot be adequately captured through anything but the most differentiated and concrete (e.g. survey-based) conceptual framework. Likewise, cost benefit analyses require essentially contested decisions on how to value current and future benefits of adaptation and mitigation, the application of controversial discount rates, as well as calculations of distant, highly uncertain costs. For these reasons, the proposed assessment matrix includes a broader and more intuitive category of "political and economic feasibility", which loosely incorporates the criteria of cost-effectiveness and dynamic efficiency, equity, and sustainability listed in Table 1

### 4.2 Assessment Matrix

Table 2: Assessment Matrix for the Evaluation of International Climate Cooperation Frameworks

Level of Ambition		
<i>High</i>	<i>Medium</i>	<i>Low</i>
Compliance Facilitation and Control		
<i>Strong</i>	<i>Medium</i>	<i>Weak</i>
Institutional Capacity		
<i>High</i>	<i>Medium</i>	<i>Low</i>
Participation and Inclusiveness		
<i>High</i>	<i>Medium</i>	<i>Low</i>
Systemic Coherence		



High	Medium	Low
Political and Economic Feasibility		
High	Medium	Low

Source: Author

### 4.3 Case Studies

Drawing on the assessment matrix set out in the preceding passage, the following sections will apply the proposed criteria to three existing institutions engaged in international climate cooperation, albeit to varying degrees and with very different mandates and functions. Each is representative of a distinct approach to governance, allowing for useful insights into the analytic value of the specific criteria incorporated in the matrix.

#### 4.3.1 United Nations Framework Convention on Climate Change (UNFCCC)

With its aspiration of universal membership and emphasis on the sovereign equality of all states, the United Nations have represented the most comprehensive effort at multilateral cooperation in the history of international affairs. Clearly, this broad scope has afforded the UN an unrivalled degree of legitimacy, yet the procedures and routines through which it operates have also it an unwieldy and inefficient institution in the eyes of critics. In many ways, the foregoing characteristics – both positive and negative – also extend to the UNFCCC, which was already described in further detail in Section 2.1 above. While the UNFCCC itself only sets out modest obligations for its state parties, limiting itself to broader procedural requirements, general objectives and a number of guiding principles, it has nonetheless exerted a profound impact on climate cooperation.

Not only does it enjoy one of the largest memberships of any multilateral treaty, but it has also created a sophisticated framework for formal negotiations and technical implementation, endowed with an infrastructure comprised of a professional staff of experts, established routines, and substantial financial resources. In nearly two decades of evolution, moreover, the UNFCCC has become a repository of knowledge, with a database of openly accessible documents and data that greatly enhance the transparency of the regime. And yet, despite these undeniable advances, the UNFCCC has also faced significant challenges in achieving meaningful progress on actual greenhouse gas mitigation at the level of urgency and ambition called for by climate science; likewise, its parties have been unable to agree on a shared vision regarding the future direction of climate cooperation, evidenced by stalled negotiations and an inability to reach consensus on central issues.





Level of Ambition		
<i>High</i>	<i>Medium</i>	<i>Low</i>
No quantified emission limitation and reduction objectives, but comprehensive system of principles, procedures and general commitments		
Compliance Facilitation and Control		
<i>Strong</i>	<i>Medium</i>	<i>Weak</i>
Established procedures to monitor the observance of commitments; dispute settlement provisions; capacity building obligations		
Institutional Capacity		
<i>High</i>	<i>Medium</i>	<i>Low</i>
Large secretariat with expert staff (~500) and established professional routines; substantial annual budget (2010: ~45 mio. EUR)		
Participation and Inclusiveness		
<i>High</i>	<i>Medium</i>	<i>Low</i>
Near universal participation with 194 parties, covering >99% of global greenhouse gas emissions		
Systemic Coherence		
<i>High</i>	<i>Medium</i>	<i>Low</i>
Comprehensive regime built on one international treaty, with common institutions, principles and objectives; potential for tensions with other regimes (e.g. international trade) is low due to the general nature of obligations		
Political and Economic Feasibility		
<i>High</i>	<i>Medium</i>	<i>Low</i>
High perceived legitimacy and equity (e.g. principle of "Common but Differentiated Responsibilities"), but cumbersome decision making process and procedural requirements e.g. for amendments		





#### 4.3.2 Major Economies Forum on Energy Security and Climate Change (MEF)

Launched by the United States in 2009, the Major Economies Forum on Energy and Climate (MEF) succeeded the Major Economies Meeting (MEM) initiated in 2007. Rather than serving as a venue of formal negotiations, the MEF is intended to facilitate “dialogue among major developed and developing economies” and “advance the exploration of concrete initiatives and joint ventures that increase the supply of clean energy while cutting GHG emissions.” Participation extends to 17 major economies in the developed and developing world, jointly accounting for three fifths of global GHG emissions. Past meetings have seen Heads of State and Government adopt political declarations on aspirational objectives, such as the need to limit increases in global average temperatures above pre-industrial levels to 2°C, and launch partnerships for low-carbon and climate-friendly technologies.

Unlike the UNFCCC, however, which is a binding international agreement and a forum of formal negotiations, the MEF and its activities are purely political in nature. Still, it has arguably complemented negotiations under the UNFCCC by giving participating states an additional venue to share views, identify common interests and address potential or existing conflicts, all in a less formal atmosphere and with fewer actors who may slow down or halt deliberations. Recent meetings have clearly served as an opportunity for states to compare positions and discuss technical details in preparation of formal negotiations. Also, the lack of independent resources and staff as well as the limited membership limit the prospects of the MEF as a central driving force for global climate cooperation.



Level of Ambition		
High	Medium	Low
Aspirational objectives only		
Compliance Facilitation and Control		
Strong	Medium	Weak
No compliance mechanisms due to absence of binding commitments		
Institutional Capacity		
High	Medium	Low
No standing body with designated staff and financial resources; forms part of the broader work portfolio of government officials		
Participation and Inclusiveness		
High	Medium	Low
17 major economies covering more than 75% of global greenhouse gas emissions, with additional countries invited on an ad-hoc basis		
Systemic Coherence		
High	Medium	Low
Aims to complement the formal negotiations under the UNFCCC by fostering dialogue on divisive issues		
Political and Economic Feasibility		
High	Medium	Low
Informal nature and absence of binding commitments reduce political and economic barriers to cooperation, but limited participation and absence of legally defined procedures reduce perceived legitimacy		



#### 4.3.3 *International Energy Agency (IEA)*

Although an autonomous intergovernmental organization in its own right, the International Energy Agency (IEA), was established 1974 within the framework of the Organisation for Economic Co-operation and Development (OECD). It currently acts as energy policy advisor to 28 member countries in their “effort to ensure reliable, affordable and clean energy for their citizens”, focusing on the three objectives of energy security, economic development and environmental protection. With a staff of 200, primarily composed of energy experts and statisticians, the IEA works on energy efficiency and climate change policies, market reform, energy technology collaboration and outreach to non member countries, especially major consumers and producers of energy such as China, India and Russia. Compared to the OECD, which has limited rulemaking powers, the IEA is even more constrained in its ability to be a forum for international negotiations or set out rules and standards.

Accordingly, its role is generally considered that of an information provider and database, for instance with influential publications such as the annual “World Energy Outlook”, not of a direct venue for political engagement and deliberation. Different parallel fora have drawn on the resources and expertise of the OECD and the IEA, and could continue doing so for their mitigation-related work; in the context of the Heiligendamm Process (HDP) launched by the Group of Eight and Major Emerging Economies (G8+5), for instance, the OECD was tasked with supporting the dialogue, and IEA and OECD expertise helped advance the corresponding agenda. Also, the Group of Twenty (G20) has drawn on the resources and expertise of the IEA and the OECD when addressing the elimination of fossil fuel subsidies.



Level of Ambition		
High	Medium	Low
		No mitigation or adaptation commitments
Compliance Facilitation and Control		
Strong	Medium	Weak
		No procedures related to mitigation or adaptation commitments
Institutional Capacity		
High	Medium	Low
	Expert staff (~200) and designated financial resources, but mandate not specifically focused on climate change; no negotiation mandate	
Participation and Inclusiveness		
High	Medium	Low
	28 member states, with membership covering most of the OECD members and approximately 35% of global GHG emissions	
Systemic Coherence		
High	Medium	Low
	Can complement – and has done so in the past – definition and monitoring of commitments under other regimes; provision of relevant data and research	
Political and Economic Feasibility		
High	Medium	Low
	Absence of binding commitments increases political and economic feasibility of cooperation, yet narrow mandate with past focus on conventional energy sources have caused controversy; limited membership also likely to affect perceived legitimacy	



## 5 Conclusion

Clearly, no single approach to the study of an area as complex as international climate cooperation can hope to capture all relevant variables, or anticipate future trends and emerging priorities. What the foregoing exercise has attempted is to build on an interdisciplinary survey of approaches to the evaluation of environmental governance frameworks, both at the domestic and the international level, drawing on the criteria established in those contexts to propose a uniform assessment matrix for alternative approaches to climate cooperation. Future application of this matrix to existing and proposed climate governance frameworks will determine whether the criteria identified in the foregoing section offer a suitable frame of reference for the evaluation and comparison of contending climate architectures, regimes, and institutions. Given the current proliferation of existing and proposed venues to advance climate governance, such a framework would seem both timely and useful. As always, however, this first attempt at a systematic approach marks only one stage in an ongoing and open intellectual process.



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