

‘Neutral’ experts? How input of scientific expertise matters in international environmental negotiations

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Abstract This contribution analyses under what conditions expert input is most likely to be regarded by government representatives as useful and how government representatives use input provided by experts. It widens the analytical lens examining multilateral negotiations within the United Nations Framework Convention on Climate Change (UNFCCC) between 2009 and 2011. The findings confirm the importance of deep knowledge, long-term involvement in the policy subsystem and networks. This research illustrates the importance of policy-entrepreneurial strategies such as proactively approaching government representatives and volunteering knowledge. Joining government delegations can increase expert input as they may gain access to the negotiation text. It is crucial to provide input early on in the negotiation cycle before the national negotiation position is decided. Scientific consensus on climate change facilitated by the Intergovernmental Panel on Climate Change (IPCC) resulted in a convergence of the actor’s beliefs towards understanding climate mitigation and adaptation as normative imperative. Actors, however, interpret expert input based on the consensual IPCC findings differently depending on their conflicting political objectives. Thus, instrumental and political use of expert input by the interest groups overlaps in the UNFCCC.

Keywords Experts · International negotiations · Climate change · Research utilisation · Influence · Agency · Policy entrepreneurs

Abbreviations

AOSIS	Alliance of Small Island States
COP	Conference of the Parties
EU	European Union
IPCC	Intergovernmental Panel on Climate Change

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LDC	Least Developed Country
MP	Member of Parliament
NGO	Non-governmental Organisation
UNFCCC	United Nations Framework Convention on Climate Change

Introduction

Experts are important actors in shaping political decisions in many areas of ‘low politics’ such as environment, climate change, sustainable development, human rights, economic development or trade across multiple levels of governance (Biermann 2001, 2002; Gulbrandsen 2008; Jasanoff 1990; Lahat 2011). These global challenges are highly complex without an ‘easy fix’ that could be delivered by one country alone. Consequently, they require international cooperation, evidence-based decision-making and especially in-depth specialised knowledge to determine countries’ national interests and enable them to negotiate successfully with other actors, making expert input very relevant. Pointing towards the problem of climate change and providing scientific evidence is absolutely crucial, but it is not sufficient to influence policy making towards implementing a solution. Natural and social scientists frequently wonder how they can best present their research findings to maximise the impact of their policy implications. It is, however, very difficult to navigate the complex decision-making structures dominated by vested interests, political negotiations, bargaining among stakeholder groups (Betsill and Corell 2008) and a social construction of science (Haas 2004; Jasanoff 1990).

This contribution analyses how government representatives use the input provided by experts and examines under what conditions expert input has the highest chances of influencing policy making on the international level. It contributes to theory by providing a close analysis of how input from experts as independent variable prompts government delegates to reflect on the expert input as dependent variable. A better understanding of *when* and *why* government representatives reflect on expert input can contribute to identifying overall factors and conditions relevant for influencing the process (and thus potentially outcomes) of negotiations on large-scale, complex challenges of the twenty-first century such as climate change.

Experts are individuals feeding knowledge into the policy-making process based on their own research. They include scientists, policy analysts and researchers in governmental and non-governmental organisations (Weible 2008: 616). Expert-based information is different from local knowledge, which is based on trial-and-error learning (Adams 2004; Van Kerkhoof and Lebel 2006; Weible 2008: 616) and can be defined as “content generated by professional, scientific and technical methods of inquiry (...), [which is often] based on accepted analytical approaches as defined by professional peers” (Weible 2008: 616).

This article contributes to our understanding of expert input on the international level. It specifically responds to the call put forward by Weible et al. (2012) to empirically test when individuals are more likely to influence the policy-making process. It presents a case study on the use of expert input in international climate negotiations. It specifically analyses how government delegates regard the input by experts in the UNFCCC negotiations towards a treaty capable of preventing the worst consequences of climate change, the ‘post-Kyoto agreement’. This is a relevant case of policy making on the international

level that unites characteristics of global governance such as common-pool resources, common action problems (Ostrom 1990) and the institutional constraints inherent in multilateral negotiations and decision-making (Biermann 2012). It thus widens the analytical lens to also include the international level, which has taken a side-role in other empirical and theoretical studies with few notable exceptions (Auer 1998; Betsill and Corell 2008; Stone 2000).

The case study focuses on direct expert input into the UNFCCC negotiations, which has so far been widely neglected in the empirical literature. It does not provide another empirical study to the literature on the IPCC, which indirectly influences the UNFCCC negotiations as expert body (e.g. see Boehmer-Christiansen 1994a, b; Skodvin 2000; Underdal 2000), or the climate regime in general (e.g. Andresen 2013; Betsill and Corell 2008; Biermann et al. 2010; Gulbrandsen and Andresen 2004; Mitchell et al. 2006). Instead, it rather fills a distinctive gap in the wider literature on how government representatives perceive and use expert input as dependent variable. The case study is particularly relevant as climate change is regarded as ‘super-wicked’ (Levin et al. 2012: 124) and ‘malign’ (Miles et al. 2002) problem making expert influence less likely than in other issue areas such as the ozone regime. Climate change is defined as super-wicked problem given that “time is running out; those who cause the problem also seek to provide a solution; the central authority needed to address them is weak or non-existent; and irrational discounting occurs that pushes responses into the future” (Levin et al. 2012: 124). This makes climate change negotiations the least likely area for experts to provide input that is used by government representatives—and thereby an interesting test case to determine potential routes of influence even under the most difficult circumstances. Wider implications would be careful inferences that these routes of potential influence are more likely to be also valid for other cases that are less difficult than climate change negotiations.

Theory-based (Weible 2008; Weible et al. 2012) and empirical work improved our understanding of the role of expert knowledge and the use of evidence in policy making on the national level in developing countries such as India (Biermann 2001, 2002) and developed countries such as Norway, Sweden (Gulbrandsen 2008), the United Kingdom (Owens 2010) and the USA (Jasanoff 1990) in subsystems such as marine protection areas (Weible and Sabatier 2005); biotechnology (Montpetit 2011) and water governance (Beveridge 2012). A gap remains in the literature on empirical studies examining how government representatives involved in international negotiations use expert input. Weible et al. (2012: 6) point out that individuals matter in the policy making process and that actors seeking to shape policy interact in issue-specific policy subsystems spanning the national, subnational and local level. This contribution thus widens the concept of policy subsystems to include the international level that influences domestic policy making (Bernstein and Cashore 2012). The climate change regime is such an example of a diverse and increasingly fragmented policy subsystem (Biermann 2012).

The key research question is what individual factors and conditions *enable* an expert to make a contribution to international negotiations that is *regarded* as relevant and useful by government representatives and how these use scientific input. This research finds that individual factors matter regarding how well experts communicate their findings to government representatives and as how useful the expert input is regarded. Individual expert input matters if government representatives perceive them as trustworthy and ‘neutral’ actors, if experts make use of their personal networks to government representatives early in the negotiation process and act as policy entrepreneurs by actively promoting their research findings.

The next section of this article examines the theoretical and empirical literature on expert participation and the different uses of expert knowledge in policy making across different levels of policy making. The third section provides an overview of the climate change negotiations as suitable case study. The fourth section outlines the methodology used. The fifth section presents and discusses the empirical findings of the case study, both on when government delegates regard the input of experts as most useful, and how the input is used in the negotiations. The conclusion reviews the findings and discusses implications for further research.

Expert input in policy making

Strategies that help experts increase their likelihood of influencing policy

Academic research on expert input to policy making dates back several decades (Haas 1990; Jasanoff 1990; Kingdon 1984; Underdal 2000). This review focuses on the framework presented by Weible (2008; Weible et al. 2012) as most suitable basis for the empirical analysis and further theory development. The literature on experts providing input to policy making distinguishes three key strategies making influence more likely (Weible et al. 2012). First, experts need deep knowledge of their policy subfield, which means awareness of their own underlying beliefs, have detailed analytic knowledge of their field and be aware of local and temporal framework conditions as well as potential influences from interdependent policy subsystems (Weible et al. 2012: 9–13). This deep knowledge needs to coincide with long-term participation of experts in the policy subsystem, allowing them to establish a trustful relationship with other actors (Weible et al. 2012). Building such networks to government representatives is the third crucial strategy that makes influence more likely. When experts have established a relationship based on trust and reputation, their input is more likely to be taken into consideration in policy making (Weible et al. 2012).

Experts furthermore can improve their chances of providing input to policy making by acting as agents of change, facilitating learning and the political or instrumental use of knowledge (Weible 2008) depending on their own objectives. Such policy entrepreneurs are individuals proactively working “from outside the formal governmental system to introduce, translate, and implement innovative ideas into public sector practice” (Roberts and King 1991: 152). They are characterised as ‘political fixers’ with a deep understanding of political dynamics, awareness of the key players and a clear intent to influence the policy process (Young and Mendizabal 2009: 2). Thus, ‘expert’ policy entrepreneurs act as knowledge brokers and ‘teachers’, actively promoting the advantages of their favoured policy proposal (Bomberg 2007; Stone 2000). Experts can be found in most international negotiation groups: as state representatives, as members of research and independent NGOs or within interest groups such as environmental NGOs (Stone 2000; Young and Mendizabal 2009). In a domestic context, they contribute to policy making in an individual capacity or as members of scientific advisory bodies.

Political and instrumental use of expert-based information

Decisions in policy making are not necessarily based on scientific knowledge alone. Government representatives also need to consider normative aspects (Weible et al. 2012: 11) and political preferences, local knowledge, traditions and values. As all knowledge, scientific knowledge is socially constructed and needs to be interpreted in its social and political context (Jasanoff 1990). Therefore, taking into consideration normative

assessments helps mitigate the inherent bias in academic disciplines (Cohen 2006) if these predominantly focus on specific aspects of a policy problem or if they are constrained by methodological limitations.

In his review on expert-based information and policy subsystems, Weible (2008) distinguishes three categories for assessing the input of expert-based knowledge: learning, political use and instrumental use. Learning can happen in different ways, but usually requires a longer time period and overwhelming scientific evidence (Weible 2008). As this contribution focuses on the question of how government delegates regard and use the input of experts (what can potentially result in learning later on), the preliminary steps of political and instrumental use are more relevant. Decision-makers may use scientific input strategically and selectively to justify or legitimise their policy preferences (Weible 2008).

Instrumental use of scientific expertise refers to direct influence of expert knowledge on the policy making process. It is more likely to occur in professional forums where interest coalitions cooperate with scientists (Weible 2008: 620). Montpetit (2011) empirically examined the relationship between science and politics as well as the role of science within politics and finds a predominantly political use of scientific knowledge. The ‘sedimentation’ approach emphasises the importance of mounting scientific evidence provided by different individuals (Weiss 1977, 1979) resulting in scientific consensus in support of a policy change. This points towards the relevance of epistemic communities (Haas 1990, 1992). Epistemic communities consist of experts sharing normative, principled and causal beliefs based on consensual knowledge with common notions of validity or a common policy project drawing on shared values, interests and a commitment to produce and apply knowledge (Haas 1992: 2). They provide input to international negotiations on the domestic and international level via actively participating in the policy process. This review leads to the hypothesis that government representatives should regard the input provided by those experts as most relevant who possess deep knowledge and have been involved in the policy subsystem over a long time to build networks. It also leads us to expect that the knowledge would be used politically based on whether it coincides with or further underpins political objectives. The following sections provide an overview of the climate change negotiations within the UNFCCC and analyse the role of experts and their influence on international negotiations.

The climate change negotiations

Climate change emerged as important challenge of the twenty-first century on the global agenda next to poverty alleviation (Stern 2006). The international climate change negotiations are a suitable case study choice as they display most central characteristics for expert involvement identified as relevant by the academic literature: scientific evidence plays an important role as basis for decision-making (Skodvin 2000), it involves scientific uncertainty (IPCC 2007; Thompson 2010) and collective action problems as for most public goods with short-term national costs and long-term global benefits (Ostrom 1990; Stern 2006). The negotiations are complex and require specialised knowledge given the diverse technical issues involved such as carbon accounting for land-use changes, monitoring and verifying of emissions, market-based instruments, climate finance and technology transfer (Depledge 2005; ENB 2009a, b; 2010, 2011).

Policy subsystems can either be unitary, collaborative or adversarial (Weible 2008: 622). The UNFCCC can be classified as an adversarial policy subsystem as it consists of competitive coalitions of countries with similar beliefs that coordinate closely in negotiation blocs. There is a low compatibility of beliefs among coalitions. While most

developing countries share the belief that it is the historical responsibility of industrialised countries to mitigate climate change, industrialised countries hold the belief that the major emitters of the twenty-first century, which are the developing countries, also need to take on legally binding emission reductions (ENB 2009a, b, 2010, 2011). Thus, the policy images are debated and a win–lose perspective on policy designs is dominant (Weible 2008: 622). The premises that authority is centralised but fragmented within the policy system and that venues are flexible (Weible 2008: 622–625) are less applicable. Other than in the national context, there is no government-type central authority among sovereign country representatives in multilateral intergovernmental negotiations, which are characterised by flat hierarchies and the interaction of multiple interests and stakeholders (Betsill and Corell 2008). Due to the need to find consensus in the UNFCCC negotiations, there is no dominant coalition as each country and coalition has a de-facto veto power.

Despite the efforts of climate diplomats to achieve a comprehensive post-Kyoto agreement limiting the emissions of greenhouse gases to sustainable levels (IPCC 2007; Stern 2006), a small group of states drafted the Copenhagen Accords at COP-15 in December 2009. Experts and other non-governmental actors provided continued input at COP-16 in Cancun/Mexico and COP-17 in Durban/South Africa (UNFCCC 2010c; UNFCCC 2011a, b). The negotiation process of the UNFCCC centres on the COP as major annual meeting and several preparatory meetings. In these meetings, diplomats and national experts meet on the technocratic level to discuss negotiation topics in their specific subfields of expertise within their given negotiation mandate. These are for example concerned with further commitments under the Kyoto Protocol, reducing emissions from deforestation and forest degradation as well as technology transfer. Between 2009 and 2011, the UNFCCC negotiation process was organised into four major negotiation streams. Each group, which is further split into contact groups, worked on negotiation text relating to the tasked specific ‘technical’ issues such as climate finance, technology transfer or forestry. This negotiation text is forwarded to the political level, the meeting of the ministers or heads of states at the COP. The climate change negotiations within the UNFCCC can thus be understood as a policy subsystem with even more issue-specific sub-subsystems.

There are different negotiation blocs within the UNFCCC negotiations. In order to achieve an outcome, all states need to agree within the consensus-based decision-making structure. The UNFCCC can be regarded as typical UN negotiation setting. The failure to agree official rules of procedure has left the UNFCCC with working rules of procedure that effectively grant every country a veto; therefore, the need to gain consensus is especially central (Kjellen 2007). Experts have the option of either aligning themselves with a negotiation bloc or remaining ‘neutral’ to be able to provide input to different negotiation blocs. The interest groups are split up along the negotiation blocs of countries grouped together based on their shared negotiation objectives. During the negotiations, these negotiation blocs frequently speak with one voice and articulate their negotiation bloc’s common position (ENB 2009a, b, 2010, 2011). The six major negotiation blocs are the European Union with 27 members, the Umbrella Group with 8 members, the Environmental Integrity Group with 3 members and the G77+ China group with 155 members. The next sections present and discuss the empirical findings.

Methodology

The analysis on how governmental representatives perceive the input of experts is based on empirical data collected by the author at the UNFCCC negotiations in Barcelona

(November 2009), Copenhagen (December 2009) and Bonn (April 2010, June 2011, June 2012, May 2013) and interviews with European policy makers (April 2012 to September 2013) and at the Rio+20 UNCSD summit on sustainable development in Rio de Janeiro (June 2012). The author interviewed (partly multiple) representatives of 26 different countries. Thus, the sample accounts for 13 % of the overall population of 196 countries represented in the UNFCCC.

To account for the diverse perspectives of government representatives from each major negotiation bloc, semi-structured interviews of approximately 30 to 40 minutes were conducted with randomly chosen representatives of each negotiation bloc selected based on their active participation in the negotiations. The interview sample accounts for at least 6 % of the country population within each subsample. The interview sample includes both accounts from civil servants (37 interviews), who conduct the majority of the negotiations and are the primary access point for experts seeking to provide input, and politicians (11 interviews) who ultimately make the decisions prepared by civil servants and lend democratic legitimisation to the input provided by various stakeholders. Table 1 provides an overview of the negotiation blocs, countries (population) and the number of interviews conducted.

The researcher explored the ego perceptions of experts by conducting 46 structured and semi-structured interviews with non-governmental experts on their activities, the input they provide to the national and international level and the strategies they use. 33 experts self-identified as academics working in higher education or for a research institute, and 13 experts emphasised their double affiliation as academics and representatives of special interest non-governmental organisations. They were selected based on their visible participation in the UNFCCC negotiations. This interview-based approach was supplemented with participant observation by the researcher.

The responses of government representatives and experts were analysed using a sequential triangulation strategy (Creswell 2009) of ego and alter perceptions (Gulbrandsen and Andresen 2004). Thus, the interviews focused on how government delegates regarded the input of experts, i.e., the alter perceptions. These were compared with the experts' ego perceptions of their influence. There is a bias in the interview sample towards industrialised countries and towards the EU. The interview material was analysed using the qualitative software NVivo to determine patterns and relevant concepts (King et al. 1994) and is presented with detailed quotes and in aggregate form similar to Lawhon's (2012) approach.

Table 1 Overview of interview sample according to countries

Negotiation bloc (number of members)	Number of countries interviewed (percentage of sample population)
European Union (27)	9 (33 %)
Umbrella Group (9)	3 (33 %)
Environmental Integrity Group (3)	1 (33 %)
G77+ China (65) (excluding LDC and AOSIS countries)	6 (9 %)
Alliance of Small Island States (40)	4 (10 %)
Least developed countries (50)	3 (6 %)
Total number of countries represented in sample (total population: 194)	26 (13 % of country sample population)

The overall sample of 48 interviews includes interviews with more than one representative, especially from the EU

The following section presents and discusses the findings. It analyses how government representatives perceive the input by experts and under what conditions they are more inclined to act upon it.

Strategies for experts to effectively provide input into negotiations

Government representatives regard individuals with detailed knowledge of the issue area in which they are providing advice as experts. These hold higher research-based degrees in their area and either work for universities, independent research institutes providing policy-relevant advice or for government departments. Experts are individuals who share the objective to be neutral observers of the negotiation process, driven by individual initiative and proactive involvement (RINGO 39 12/2009; participant observation Copenhagen 12/2009 and Bonn 6/2011). In the UNFCCC negotiations, the majority of experts participate as delegates within the Research and Independent NGO constituency sharing the norms of objective, peer-reviewed research and commitment to scientific inquiry. Experts at UNFCCC are individual actors pursuing their own scientific interests.

Personal capabilities, policy-entrepreneurial strategies and networks

How effectively experts communicate their research findings to government representatives depends on their personal capabilities and the strategies they pursue. The majority of experts attending UNFCCC negotiations only observe, network or conduct research (UNFCCC 2010a, b). This section focuses on non-governmental experts seeking to influence the negotiations. Objectives and motivations are most commonly facilitating an outcome that contributes to limiting the negative consequences of climate change to levels recommended by the IPCC. Furthermore, experts try to change government's positions on issues or contribute to the negotiation text (interviews with experts 2, 5, 7, 17, 20, 24, 28, 30, 35 6/2010).

Input to the negotiations can be most obviously provided through side events, publications and engaging in capacity-building activities with governments, especially from developing countries. Many experts and their institutions distribute hard copies of their publications at exhibition booths such as the World Resource Institute and the University of California or are engaged in side events such as the Overseas Development Institute on the effectiveness of climate financing; the University of Leeds on the economics of low carbon cities; and the University of Oxford on climate vulnerabilities in island states (UNFCCC 2011c). Government delegations especially value expert input as means of capacity building,¹ both before and during the negotiations. While also developed countries use experts as advisors, especially developing countries with limited resources rely on research input and capacity building to form their national position and to prepare for the negotiations:

They provide input in terms of research, reports, and experts. We are working together with many experts from research institutions, universities [and] think tanks (...). They help us with background information and technical knowledge. The

¹ These experts are for example professors in country delegations from Boston University (Pakistan), Columbia University (Papua New Guinea), Greifswald University (Belarus), University of Lisbon/University of Southampton (European Community), Lund University (Netherlands), or from universities in the countries they represent, UNFCCC (2010a, b).

negotiations are so complex, so we need somebody who knows what is required by science as a goal that is independent from the rich countries interests—and it is hard to have an eye on everything.

(LDC 1 4/2011)

The expert's expectations match the government representatives' emphasis on expertise, experience, networks and proactive engagement. 88–95 % of the 40 experts furthermore agreed on the relevance of expertise, the outgoing personality of the expert as basis for acting as policy entrepreneur and the reputation as expert. Particularly, the reputation is linked to the network and can be regarded as proxy for long-term engagement and in-depth knowledge of the policy subfield. Joining government delegations offers access to the informal negotiations, the outcome text and senior decision-makers:

Professors and researchers provide up to date expert knowledge. And by providing this scientific basis, we have a large influence and can shape the national position if we are proactive and contribute early in the process. Later on, when I used my excellent network to people working for government and managed to get into the delegation, I can take influence by negotiating on behalf of [my country]. For example, I have direct access to the negotiation text. When I make a proposal in my contact group, the chair asks me how I would like to phase the proposal, which should be agreed with other members of the Umbrella Group.

(Expert who joined a G-8 government delegation; Umbrella Group 2 12/2009)

To influence government delegations, experts must proactively engage with the government delegates in their network (EU 1 4/2010; EU 2 11/2011; Germany 12/2009; Japan 12/2009; Latin America 4/2010; Umbrella Group 4/2011):

For technical details, we have expert advisors in EU delegations, especially where the ministries do not have the specialised expertise. We do not beg them to help us. We have a good relationship that is built on trust and personal relations with a number of experts, who frequently offer their opinions on proposals, provide us with data and policy recommendations. Usually they approach us with the information they have to offer, and we look at the information and use it to decide on our position.

(Ireland 12/2009)

This is also confirmed by an expert who joined a G8 government delegation:

I myself work for a Research NGO and I managed to get the government to invite me to represent them here at the negotiations (...). Thereby I can make a big contribution to influence the negotiation process. I have been out there, done research in the field and know the data very well. I know what I am talking about and I can directly introduce the research results into the negotiation process and thereby convince other governments I am negotiating with to do more.

(Expert who joined a G-8 government delegation; Umbrella Group 2 12/2009)

While joining government delegations is the most effective way of influencing negotiations as individual expert, their neutrality is being contested when having to represent a national position that contradicts research findings. An alternative approach is contributing without joining government delegations. The Meridian Institute is a research institute providing negotiation training to government delegates while its experts remain independent. This model allows acting as policy entrepreneur and introducing negotiation text for example at

COP-17, when delegates from the Meridian Institute were involved in drafting a ‘Joint Declaration of Intent on REDD+ in the Congo Basin between Central African and donor countries’. It was ultimately supported by the EU and other countries (EU 7 12/2011).

Why timing matters

Experts can influence different stages of the negotiation cycle, which can be understood as five central segments similar to the policy cycle (Everett 2003). The first segment is recognition of the problem and agenda setting on the national level. After consultation and capacity building, the national position is formed. Once decided, it is very difficult to change (AOSIS 4/2010; EU 1 4/2010; Germany 12/2009; Ireland 12/2009; Latin America 4/2010):

Experts have a large influence providing research input early on, when we decide on our national and regional bloc position. The closer we come to the negotiations, especially large ones, the less influence they can have since the countries positions are fixed and cannot simply be changed during the negotiations since the regional bloc position has also already been agreed upon in the European Council.

(EU 1 4/2010)

Governments carry their national position into the regional organisation meetings (e.g. EU, AOSIS, G77+ China), where a negotiation bloc position is formed and modified (LDC 2 4/2010; Umbrella Group 4/2010; Vanuatu 12/2009). Consequently, the influence of experts diminishes with each step in the negotiation cycle with the largest potential influence early on in the negotiations:

We especially need their input early in the process, directly after the last COP when we sort out the negotiation results and try to decide on our position for the next year. This position is then discussed with other governments in the European Council and then we agree on an EU position.

(Ireland 12/2009)

Scientific studies particularly from public universities in the respective countries are influential as well as experts who are actively seeking to provide input:

As soon as we have need for data and information that is not within the capacity of our ministries, we outsource this service. We pay universities, think tanks and independent experts to provide research input, as we need it. (...) We also include academic experts in our delegation. (...) But we do not ask them to join us; we nominate them if they request us to do so. But all in all, academics have a considerable influence on the national position, providing scientific input and expertise before and during the negotiations.

(Latin America 4/2010)

Thus, government delegates regard expert input early on in the negotiation cycle as most useful as they can more readily incorporate it into their negotiation position. The next section evaluates to what extent the empirical findings confirm the hypotheses put forward by the theory-based literature.

Discussion of the empirical findings on how negotiators perceive expert input

Overall, the hypotheses proposed by Weible et al. (2012) regarding the importance of deep expertise, long-term involvement and networks can be confirmed also for expert input on the international level within multilateral negotiations. Deep expertise and in-depth knowledge regarding a specific policy area are crucial to provide input to the negotiations that the government delegates regard as useful. Negotiators in UNFCCC negotiations (with climate change policy as a policy subsystem) tend to be very specialised in their negotiation field, which could be considered as a sub-subpolicy system such as emission trading or measuring, reporting and verification of greenhouse emissions. The subareas are so specialised that a carbon accounting specialist does not necessarily know much about climate finance and vice versa; thus, experts also need to be very specialised within the sub-subsystem, while broad knowledge is less useful. Furthermore, developing countries and small states frequently lack this specialised knowledge and therefore require capacity building in the form of specific expert input on these negotiation issues.

Close networks to government representatives are essential as they tend to involve experts they already know and have worked with previously. These also wait for input from experts, making experts most successful who take the initiative and offer their expertise proactively (EU 1 4/2010; EU 8 4/2012; Ireland 12/2009; LDC 1 4/2010; Umbrella Group 4/2010). To be accepted into government delegations, experts need to establish a high level of trust into their ability to safeguard confidential government information and to represent the government's position even if it diverges from their beliefs or research findings (AOSIS 1 12/2009; EU 1 4/2010; Germany 12/2009; Iran 12/2009; Japan 12/2009; UAE 12/2009; Umbrella Group 4/2010). This level of trust requires a close network and 'strong ties' (Granovetter 1973; Weible et al. 2012: 14). The hypothesis put forward by Weible et al. (2012: 13–14) that weak ties are more effective to influence policy making is not supported by the empirical findings for expert input in the UNFCCC as governments require strong ties, trust and 'true' useful expertise to accept experts into their delegations to let them negotiate on their behalf.

Different types of networks can be distinguished. The findings indicate that epistemic communities of academics that belong to the same discipline (Haas 1992) are not particularly relevant. Experts act rather as individuals providing input with little coordination between them and other members of their epistemic community (participant observation at mitigation roundtables, Bonn 6/2011; Yamin and Rambharos 2011). Networks that involve experts, government representatives and other (non-) governmental actors sharing beliefs, values and policy objectives (Weible et al. 2009) are crucial. These networks are close-knit with frequent interactions at various UNFCCC meetings on the technical level. Therefore, actors know each other well. This is also reinforced by negotiation dynamics within negotiation blocs such as G77+ China, the EU and the Umbrella Group where countries share similar, negotiation objectives on overall targets and instrument design. Long-term involvement is also an important condition for experts to provide useful input into the negotiations.

The findings confirm Weible et al.'s factors for influence (Weible et al. 2012) and allow expanding on their list of factors by adding that experts should take on the role of policy entrepreneurs and actively market their knowledge. Acting as policy entrepreneur and making use of windows of opportunity (Weible et al. 2012: 15) are crucial as the potential to provide input is not constant across the different stages of the negotiation cycle. Weible et al. (2012) suggest a long-term perspective of a decade for knowledge to diffuse into the subsystem and learning to occur among the individuals involved. This holds also true for

UNFCCC negotiations, where especially the 2007 IPCC report had a strong influence on government's negotiation positions, but the two years before the crucial climate summit in Copenhagen in 2009 were insufficient for the positions of key actors to change or adapt accordingly. However, by 2011, the scientific consensus of limiting mean temperature increases to 2 °C was widely accepted within the UNFCCC (ENB 2009a, b, 2010, 2011). So in conclusion, the three key strategies for experts to influence policy making can also be confirmed for international multilateral negotiations at the example of the UNFCCC climate change negotiations between 2009 and 2011. The following section examines how this input provided by experts is used instrumentally or politically by government representatives (Haas 2004; Jasanoff 1990; Weible 2008).

Use of expert knowledge by government representatives

Within the UNFCCC negotiations, government and experts alike emphasise boundaries. Both distinguish between the technocratic/ technical expert level, where civil servants from the relevant government departments represent the country in specialised working groups (EU 5 12/2011; EU 6 12/2011), and the negotiations on the political high-level where ministers or heads of states represent their country on overall political objectives. The findings illustrate a differing use of knowledge based on which level a government representative operates. Civil servants on the technical level emphasise the instrumental use of knowledge, as they are predominantly concerned with providing policy options based on available scientific evidence. Politicians as higher-level government representatives and decision-makers, however, need to take political aspects into account and thus use scientific input differently. Politicians made no distinction between knowledge provided by experts versus input from interest groups (High-level representative EU 4/2012; Minister from AOSIS country 4/2010; MP 1 4/2012; MP 2 6/2012; MP 3 7/2012; MP 4 7/2012; MP 5 9/2012; MP 6 9/2012; MP 7 9/2012; politician from Sweden 2012; senior-level advisor UK 3/2012). They emphasised a political use based on what information helps them to underpin their political objectives.

Instrumental use of expertise by civil servants

While some non-governmental constituencies within the UNFCCC such as Environmental NGOs or Business and Industry NGOs engage in advocacy for their objectives either as organisation or in close collaboration within their negotiation blocs, experts as members of Research and Independent NGOs occupy a distinct position given that most government delegates characterise their representatives as impartial, neutral normative authorities as opposed to interest groups classified as lobbyists²

Other delegates directly working for government have a high appreciation for our expertise and neutrality. This is why they frequently ask us for more input and background information. They are also happy when we take the initiative and propose possible compromises that are in line with what science demands. They see us as a kind of neutral authority.

(Expert who joined a G-8 government delegation; Umbrella Group 2 12/2009)

² The majority of the civil servants interviewed mention or confirm this view.

The information they provide is regarded as unbiased towards serving certain interests (interview with delegate from AOSIS 2 4/2010; EU 1 4/2010; EU 2 11/2011; Germany 12/2009; Ireland 12/2009; Japan 12/2009; LDC 1 4/2010; Latin America 4/2010; Umbrella Group 1 4/2010; UAE 12/2009). Thus, government delegates attribute the highest credibility to input by experts representing a university or research institute as compared to experts representing interest groups such as NGOs:

We regularly consult with researchers from think tanks and universities, at rare occasions also from environmental NGOs. The problem with environmental NGOs is that they are often biased, and therefore the information they are providing is not as useful as the information provided by experts representing research and independent NGOs, who are neutral.

(EU 1 4/2010)

This empirical research finding of government delegates' positivist view regarding experts does not particularly match the academic literature on the political use of knowledge but rather points towards an instrumental use (Weible et al. 2012). From a constructivist point of view, knowledge is frequently contested and its presentation is influenced by underlying values and shared beliefs among members of an epistemic community (Haas 2004). Knowledge is not necessarily objective or neutral (Jasanoff 1990; Young and Mendizabal 2009), especially in its policy implications (Sharman and Holmes 2010). Some epistemic communities frame nuclear power, carbon capture and storage, geo-engineering and first generation biofuels as viable measures to mitigate climate change. How well risks, uncertainties and costs to other generations, populations or ecosystems are communicated can have a major impact on how politically acceptable these approaches are. Furthermore, experts need to be aware that their research findings may be framed as politically favourable by environmental activist groups, industry or governments as they may scientifically underpin and legitimise their political objectives (Haas 2004; Gulbrandsen 2008). This can lead to an uneasy relationship (Underdal 2000) and political research utilisation (Weiss 1979). Consequently, knowledge is not necessarily objective, neutral and instrumentally used, but can also be contested and used strategically to advocate certain political measures favoured by an epistemic community (Haas 2004; Jasanoff 1990) or political actor (Weible et al. 2012).

Combined with the finding that experts at UNFCCC do not form an epistemic community, but are rather individual representatives of different epistemic communities, questions of accountability and transparency need to be addressed (Mason 2005; Jasanoff 2012) as the line towards lobbying and advocacy (Gulbrandsen and Andresen 2004) may be blurred. This may happen intentionally in the case of experts working for government, industry or special interest NGOs as the experts have to represent the official position of their employer, or unintentionally in the case of experts participating via research and independent NGOs in their personal capacity. The self-understanding of the interviewed experts was closer to the constructivist, political-institutional perspective of science that is framed in a certain way and rarely exists in a 'neutral' vacuum (Jasanoff 1990). In the structured and semi-structured interviews, 28 per cent of experts identified themselves as both academics affiliated with a university and as engaged with environmental NGOs or other interest groups. However, most experts also regarded themselves as personally convinced holding underlying beliefs that coincide with the expertise they contribute to the negotiations:

You can also convince them to do more and raise their targets with convincing and methodologically sound researched information.

(Expert 41 12/2009)

Civil servants hold the positivist view of science as neutral, dispassionate and trustworthy information, what matches with popular perceptions of science (Ozawa 1991; Weible 2008: 616). The civil servant's point of view could further be understood as engaging in 'boundary work'. Scientists involved in the policy-making process are known to resort to boundary work, which refers to ascribing their work in a binary science-policy continuum to the science-end as purely scientific to shield it from political interests and being used as justification for pre-existing political objectives at the policy-making end of the continuum (Haas 2004: 571; Jasanoff 1990). By emphasising the importance of 'neutral' experts as advisors and taking a positivist point of view, civil servants are engaging in such 'boundary work' (Jasanoff 1990). On one end of the continuum are independent experts without their own negotiation objectives providing reliable, 'true' scientific input as credible, unbiased authority. At the other end of the continuum are 'lobbyists', representatives of interest groups who may have expertise on the issue or not. Civil servants regard their input as biased in support of their specific negotiation objective and usually treat it with special caution. The interviewed civil servants decisively framed the key factor for defining someone as an expert with accordingly high impact on their position as an individual, usually an academic, working for an university or research institute, who has 'scientific knowledge to contribute' in terms of capacity building:

Scientists have a different status than Environmental NGOs—they have something to contribute and many delegations rely on their help to prepare for the negotiations, master the technical details that are so important and to get training for their less experienced delegates.

(UAE 12/2009)

In conclusion, civil servants regard the input from experts as 'neutral' and thus instrumentally use knowledge (Weible et al. 2012). Thereby they set up a binary boundary between the 'neutral' and trustworthy experts and the 'biased' lobbyists from special interest groups.

Political use of expertise by politicians

The research findings indicate that civil servants use input provided by experts instrumentally. As soon as discussion points touch the 'political sphere', i.e., where there are no scientific or technical arguments in support or against the proposition, civil servant negotiators tend to leave the issue to the political level (participant observation by the author in Copenhagen, 12/2009; Bonn, 4/2010; 6/2011; also UNCSO in Rio de Janeiro, 6/2012). The political level describes issues requiring value judgements linked to voter preferences, national and economic interests. This distinction is important as the technical and the political levels deal differently with scientific input.

Based on the literature developed in a national context on research utilisation (Jasanoff 1990; Montpetit 2011; Weible 2008; Weible et al. 2012: 11; Weiss, 1979: 429), we would expect a political use of expert input in the climate change negotiations, at least by politicians on the political level. Interview data collected as control measure in a national policy-making context suggests that politicians do use and admit to using expert input to further their political objectives. Key contributions to the academic literature predict that the political use of knowledge and scientific input as a 'weapon' against opposing interest groups (Weiss 1979) is highest in adversarial policy subsystems (Weible 2008: 628) such as the UNFCCC,

which contains negotiation groups with diverging interests. Montpetit (2011) also arrives at this finding when analysing 17 biotechnology subsystems in a national context.

The empirical analysis however finds no evidence in support of this proposition in the international context of multilateral climate change negotiations. There are a number of factors that may explain this finding. First, although the UNFCCC can be classified as adversarial policy subsystem (Weible 2008) due to different negotiation blocs holding diverse shared beliefs and values, the IPCC has a reconciling role as it represents a scientific consensus that is accepted by all actors in the policy subsystem. We would expect this scientific consensus rather in a unitary policy subsystem (Weible 2008). The negotiation blocs hold different beliefs regarding distributive issues about who should take action on climate change, when and to what extent. Both civil servants and politicians active in the climate negotiations, however, also share the belief based on the IPCC's scientific consensus that climate change is a threat and that mean temperature increase must be reduced to a level that limits negative consequences to the earth system (ENB 2009a, b, 2010, 2011; participant observation by the author in Barcelona 2009; Copenhagen 2009; Bonn 2010, 2011). Thus, the scientific consensus has permeated into the negotiations as a political consensus. This is reflected in the Copenhagen Accords and the Cancun Agreements (UNFCCC 2010c): for the first time all countries, including the developing countries, agreed that global mean temperature increases must be limited to 2 °C. Unlike in the domestic debate in the United States where climate sceptics doubt the existence of climate change and portray "global warming as democratic scam" (GCS 2013), government representatives in the international negotiations share the belief that climate change is a real threat, refer to the IPCC for evidence, and are less inclined to use scientific findings and expert input as a weapon.

This shared belief based on the scientific consensus for climate change results in a different political use of expert input. Both politicians and to a limited extent civil servants use expert input to underpin their positions in the same way, but draw different normative political interpretations from the same expert input. Developing countries represented by the G77+China coalition focused on historic responsibilities of developed countries to reduce emissions: "stressing that the current level of ambition from developed countries is 'unacceptable', [the African Union] emphasised the need for ambitious numbers in line with the science" (ENB 2009a: 4) and G77+ China representatives urge "Annex I parties to close the gap between the current emission reduction pledges and what is required by science" (ENB 2010: 12). In many of the contact groups negotiating the text countries discuss "ways to increase Annex I parties' level of ambition in order to close the gap between parties' pledges and what science requires" (ENB 2009a: 4).

At the same time, developed countries including the EU promote their "experience with a top-down approach, which looks at science for defining the scale of necessary emission reductions, and then work bottom up to identify how emissions could be reduced and under which sectors" (ENB 2009a: 5). Developed countries use scientific evidence based on the IPCC to argue for a comprehensive climate treaty that includes the developing countries. Science itself is less used as 'weapon' in a politicised context but rather as argumentative and interpretative tool to underpin the governments' or negotiation bloc's positions:

The work of experts and the IPCC as the intergovernmental agency providing the IPCC reports had a very large influence on the countries positions, certainly on the [country] and the EU position. After all, this is the reason we are here and negotiating—to do something about climate change. And to do so, we need scientific targets and input.

(EU 1 4/2010)

The IPCC's ability to play this reconciling role is to a certain extent based on its institutional set-up requiring consensus by both the scientific community based on an extensive and open peer-review process and by governments for information to be included in the major assessment reports (Skodvin 2000). Finally, experts have a certain control about the way their input is used by governments depending on how they participate in the negotiations. They cross a threshold towards a more political use of their input when joining government delegations, which may require them to provide the 'right' science is in line with government objectives:

The government representatives expect us to represent the [national] position, once it has been decided upon. Sometimes, it is not always possible to take on the position necessary to address climate change issues appropriately, and then, we have to advocate the compromise position of the government.
(Expert who joined a G-8 government delegation; Umbrella Group 2 12/2009)

It could be argued, however, that experts would not choose to join government delegations without sharing their beliefs and objectives, i.e., when their research findings and personal convictions would not widely match the government's negotiation position. In this case, the political and instrumental use of expert-based knowledge (Weible 2008; Weible et al. 2012) would not remain distinct, but converges. If experts would not want their input to be 'misused' for political ammunition, they would in their own interest opt to remain representatives of research and independent NGOs and not join government delegations.

A second explanation for the limited tension between instrumental and political use in this case study on the international level is the aspect of timing. Instrumental use can turn into political use as the negotiations progress. The same scientific advice from the same expert can initially be used instrumentally by civil servants to propose a negotiation position for their country at the beginning of a negotiation cycle. As politicians get involved to decide on the negotiation position and as the negotiations within the UNFCCC progress, the instrumental use shifts towards a political use to also justify (ideally coinciding) political objectives.

Conclusion

The objective of this article was to empirically examine the conditions under which expert input has the highest chances of influencing policy making on the international level and how government representatives use the input provided by experts. It thus widened the analytical lens of the literature on expert influence in policy making focused on the national level (Montpetit 2011; Weible 2008; Weible et al. 2012; Weiss 1977) to also include the international aspect of multilateral negotiations. It confirms the importance of deep knowledge, long-term involvement in the policy subsystem and networks as key factors for experts to successfully provide input (Weible et al. 2012). A key finding is the importance of policy-entrepreneurial strategies such as proactively approaching government representatives and the potentially high influence when experts join government delegations as this may grant them access to the negotiation text.

The use of scientific evidence by policy makers depends on whether the negotiations are conducted on the technical level by civil servants or on the political level by politicians. The case study on the international climate change negotiations between 2009 and 2011 uncovered that civil servants predominantly use the scientific input instrumentally, i.e., as 'neutral' input from a positivist perspective to gain a better understanding of technical issues as opposed to the input by interest groups. Politicians tend to engage in political use of the

expert input to underpin their political objectives on the political level. Although the UNFCCC can be classified as an adversarial policy subsystem (Weible 2008), the scientific consensus on climate change facilitated by the IPCC resulted in a convergence of beliefs that action to mitigate climate change and to adapt to its consequences is a normative imperative. However, the beliefs on how exactly this should be achieved are highly controversial. This constellation results in a convergence of instrumental and political use of expert input by all coalitions as these interpret similar expert input based on the consensual IPCC findings depending on their political objectives. Generalisations of qualitative findings based on a single case study are difficult and limited (King et al. 1994), however, the findings' applicability could be further tested in other policy fields on the international level. Especially climate change is a particularly 'malign' (Miles et al. 2002) and 'super-wicked' (Levin et al. 2012) area where expert influence is less likely to occur. Thus we would expect to find better conditions in other policy areas more receptive to scientific input such as the ozone regime.

Three points for further discussion emerge from the research. First of all, how can the accountability and legitimacy of experts be improved (Gulbrandsen 2011) given the tendency of government representatives to engage in boundary work and use scientific information to bypass deliberative processes and underpin their position as 'what science demands' (Jasanoff 2012)? Secondly, experts need to find a balance between their understanding as actors with specific beliefs (Weible et al. 2009) that channel into interests from a constructivist point of view (Jasanoff 1990) and government's tendency to boundary work and utilise their research for political reasons. The peer-review process (Jasanoff 2012), openness regarding diverging research findings and underlying assumptions certainly play a role in this debate. Finally, this research illustrated that experts play a key role not only in creating and disseminating scientific knowledge, but also in increasing the impact of their knowledge by actively seeking out government representatives and presenting their findings while maintaining their academic 'neutrality' as a first step towards influencing policy making. Policy implications of these findings are strategies how experts can proactively support policy measures to address climate change. Given that climate change is a particularly difficult issue area, a promising way forward for domestic and international climate legislation is to create path dependencies, increase support of key actors over time and expand the population supportive of the proposed hardly to reverse policy as proposed by Levin, Cashore, Bernstein and Auld (2012). Experts can play a key role in facilitating the transfer of policies across horizontal and vertical levels of governance. They can furthermore make use of their credibility and reputation to propose policies with cobenefits for economic development and climate mitigation that are difficult to reverse via in-built sustainable path dependencies that also facilitate investment decisions in clean technologies for private actors. Experts can also be supportive in devising strategies for 'snowballing' these policies to other countries using international negotiation forums such as the UNFCCC.

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