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Ingold, Karin; Pflieger, Géraldine

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Two Levels, Two Strategies: Explaining the Gap Between Swiss National and International Responses Toward Climate Change

Karin Ingold
University of Bern, Institute of Political Science and Oeschger Centre for Climate Change Research, Fabrikstrasse 8, 3012 Bern, Switzerland. E-mail: karin.ingold@ipw.unibe.ch

Eawag, Department of Environmental Social Sciences, Dübendorf, Switzerland

Géraldine Pflieger
University of Geneva, Department of Political Science and International Relations, Av. Du Pont-d'Arve 40, 1204 Genève, Switzerland

University of Geneva, Institute of Environmental Science, Geneva, Switzerland

Abstract

In a complex and multilevel regime, countries' national and international strategies to address climate change may considerably differ. Adopting an actor-centered approach, the aim of this article is to outline and understand the potential difference between a nation's domestic climate policy and its position in the international climate regime. We adopt social network analysis focusing on actors' identification, their relational profiles, interests, and resources. Through survey data and content analysis, we focus on those actors' positions within Swiss national and foreign climate policy. Results show that it is crucial to identify actors that participate in both the national and foreign policymaking. But participation on two levels seems to be a necessary but not sufficient condition. Actors should play a central role in both processes, and defend similar policy interests on the two levels, in order for them to be able to coordinate actions and produce coherent outputs in overlapping subsystems.

Keywords: Multilevel governance; policy output; climate change; social network analysis; Switzerland; two-level game

Introduction

In a complex and multilevel regime, countries' national and international strategies to address climate change may considerably differ. Adopting an actor-centered approach, the aim of this article is to outline and understand the potential difference between a nation's domestic climate policy and its position in the international climate regime.

Following Putnam (1988), domestic politics and international relations are often entangled and two policymaking processes may mutually influence each other. An important role is played by national actors who are also involved in foreign policymaking and thus suffer from double accountability: to their constituencies and

to their peers, with the potential to shape or coordinate policy outcomes on both a national and international levels (Avery 1996). Newer studies, drawing on multilevel governance and the ecology of games, point to the fact that the same actor simultaneously participating in various processes that are shaped by different rules could produce very different actions and draw in different interests in each of those processes (Klijn, Koppenjan, and Termeer 1995; George 2004; Hoberg and Morawski 2008; Smaldino and Lubell 2011; Leifeld and Schneider 2012). This is why two embedded or overlapping subsystems have the potential to produce very divergent policy outputs or outcomes (Capano and Howlett 2009).

Here, we thus ask what might explain the different policies that are defended within the national and international sphere: is it the result of very different actors participating in both processes? Or, do actors who take part in both not have the power to coordinate actions across two levels? Or, do they defend very divergent interests in each process?

To answer those questions, we adopt social network analysis focusing on actors' identification, their relational profiles, interests, and resources. Through interviews, survey data, and content analysis, we focus on those actors' positions within national and international climate politics. Studying Switzerland constitutes an interesting case for several reasons: the unique position of Switzerland was that the content of its climate policy varied strongly between the domestic scale—with a weak commitment to mitigation policy and tools such as a CO_2 tax—and the international scale—with a strong involvement in the field of mitigation and adaptation. Furthermore, the Swiss domestic climate policy followed a typical industrial country perspective, focusing considerably on climate mitigation whilst fuel consumers (transport, energy, and industry representatives) tried to extensively influence the policy outputs. Internationally, and since 2001, Switzerland has been integrated in the Environmental Integrity Group (EIG) of the United Nations Framework Convention on Climate Change (UNFCCC)—also including Mexico, South Korea, Monaco, and Lichtenstein. The Group is unusual within the UN climate regime architecture because it mainly aimed for a strong focus on adaptation measures and stronger responsibility by developed and emerging economies in promoting new adaptation funding schemes. Switzerland was one of the driving forces within this group and thus promoted a completely different policy strategy (focusing on adaptation) toward climate change than in its domestic agenda.

Background

In the early 1990s, the proposed project of imposing a CO_2 tax in Switzerland failed. Afraid of a second policy deadlock, the government adopted a different strategy in 1995: private partners were included in the design of the new CO_2 act mandating a 10% CO_2 emissions reduction by 2012, compared with 1990 emissions. In 2002, a report showed that the voluntary agreements planned thus far would be insufficient to achieve the necessary reduction (Prognos2002). In such a situation, the act foresaw the introduction of the incentive CO_2 tax. Importantly, together with the tax, Switzerland also planned introducing tradable carbon permits.

The idea was to link the Swiss carbon certificate market to the European scheme of tradable permits. Furthermore, Swiss sectors exempted from the tax should have compensated their exemption by their activity on this market.

At the same time, the Swiss Petrol Union launched the "climate penny" project to avoid the introduction of a tax on motor fuels. Under this, each liter of fuel would be "taxed"[1] with one penny, and the income generated thereby was used to finance national and international projects to reduce CO_2 emissions. As the voluntary agreements were no longer a sufficient solution, the actors had to decide between supporting the tax and the climate penny. Finally, in March 2004 the Swiss government decided in favor of an intermediate solution including a tax on combustibles and the penny on motor fuels. This policy output can be categorized as "modest" mitigation policy: Switzerland was only able to fulfill Kyoto targets taking forest sinks and international emissions' reductions into account[2].

Within the UN framework convention on climate change, Switzerland participated in the creation of the Environmental Integrity Group (EIG) with Mexico, South Korea, Monaco, and Lichtenstein. Switzerland and the EIG are not members of one of the major alliances or blocks that emerged during the UNFCCC negotiations, such as the blocks representing the European Union or the G77. Therefore, it is argued that "Switzerland has no choice but to defend its interests with innovative ideas" (Arquit-Niederberger and Schwager 2004, 107). In relation to mitigation issues, the position of Switzerland was quite close to that of the EU. The country supported the 2 degrees goal and aimed at reducing its emissions by 20% by 2020 (level 1990), and by 30% if other industrialized countries engaged in equivalent objectives and if newly industrialized nations also undertook a legally binding commitment. The objectives of Switzerland were more innovative in the field of climate adaptation. In 2009, at the Copenhagen Conference, the mandate of the Swiss government included the proposition of a global CO_2 levy to finance adaptation. The specificity of the Swiss position was not only to promote adaptation funding, but also to finance instruments and mechanisms for the management of loss and damages related to climate change. Switzerland thus aimed at bringing in its expertise from the insurance and banking sector by defending an innovative and original position on adaptation finance.

As a result, Switzerland's position in national climate policy design differs considerably from its position on the international level. First, whereas the role of market-based instruments is highly contested on the national level, Switzerland's delegation tried to promote the introduction of incentive measures and finance mechanisms in international climate negotiations. Second, while Switzerland's climate policy on the national level has been almost exclusively focusing on climate *mitigation* for decades, Switzerland elaborated funding scheme solutions that would

[1] The climate penny is not an incentive tax, but a promotional measure to subsidize national and international emissions' reduction projects.

[2] "Kräftiges Wirtscahftswachstumstellt Kyoto Ziel in Frage," Media Communication published 19.11.2010, Swiss Federal Office for the Environment; www. bafu.admin.ch, consulted July 2012

incentivize the private sector to promote international *adaptation* measures with their international partners in the EIG group.

The policies and related negotiations we investigate in this article took place at two different points in time: the design of the policy on the national level occurred around the year 2005, when Switzerland first revised the CO_2 act and introduced the tax in combination with the tradable permits and the climate penny. The international policy formulation during the COP in Copenhagen and Cancun happened in 2009 and 2010. Seen from a temporal perspective, the national position could have impacted the position of the Swiss delegation also in international negotiations. As this was not the case, the question arises whether the divergence in position is a consequence of divergent negotiation topics at the two levels, or of different negotiation cultures within the Swiss political elite on the national and the international levels. Below, we develop those thoughts and outline some theoretical arguments which could account for the difference between Switzerland's national and international position in climate change policy.

Theory

Regarding policy outputs, there is convincing evidence of policy learning, diffusion, and spill-over effects across policy levels, domains, and countries (Jones and Jenkins-Smith 2009; Gilardi 2010; Kay 2011). However, those influences are not limited to the products of policymaking, but also hold for political bargaining and decision-making processes. Although several theories and frameworks focus on actors and their role in order to explain such mutual influence mechanisms among different processes (Hooghe and Marks 2003; Marks, Hooghe, and Blank 1996; Sabatier and Jenkins-Smith 1993), there are two diverging views on how much actors might coordinate actions across levels. For instance, in multilevel governance and the "ecology of games", actors are involved in different "games" or "arenas" at the same time (Dutton, Schneider, and Vedel 2012; Lubell, Henry, and McCoy 2010). Those "games" can be characterized by very heterogeneous institutions and rules, which is why the same actors tend to behave differently and defend divergent interests (Moravcsik 1993; Lubell et al. 2012).

Putnam (1988) also argues that actors involved in foreign policymaking produce different policy outputs in the absence of domestic pressures and vice-versa; *but* this is not true in two-level games where both spheres are entangled. In such "overlapping or nested subsystems" actors are functionally interdependent, which might result in coordination and feedback from one system to the other (Jones and Jenkins-Smith 2009; Zafonte and Sabatier 1998). Finally, also Lisowski (2002) applies the two-level games metaphor for US climate politics and its repudiation of the Kyoto Protocol and convincingly demonstrates how President George Bush Jr. legitimizes his international approach with domestic evidences.

All of the authors emphasize the crucial role of actors participating in several processes and on different levels. Thus, the absence of such actors might be one explanatory factor for the production of divergent outcomes and outputs of two-level games. From this, we deduce our first hypothesis:

H1: The difference in policy outputs between the national policy formulation and the position within international negotiations stems from the fact that hardly any actors simultaneously participate in both policy processes.

However, if we did find evidence of actors participating in both processes, they might suffer from the burden of two-level accountability: toward both domestic citizens and international peers (Papadopoulos 2010). Actors that are capable of harmonizing domestic and foreign policy outputs may thus possess high levels of power in order to do this. In their seminal work, Stokman and Zeggelink (1996) differentiate between two dimensions to be taken into account when assessing policy actors' political power: their ability to influence and access decision making, as well as the resources at their disposal. Diverging outputs on both levels thus allow us to assume that there are no such actors holding sufficient political power to coordinate policy outputs on both levels. From those insights, we deduce our second hypothesis.

H2: The difference in policy outputs between the national policy formulation and the position within international negotiations stems from the fact that very few actors have the power and ability to link both processes and thus influence coordinated policy outputs on the two levels.

A political subsystem or domain is characterized by actors who defend their preferences or interests in order to impact policy outputs (Knoke and Laumann 1982; Sabatier and Weible 2007). From a game theoretical point of view, however, actors may adapt their action decisions and preferences depending on the interest they have in the game-related issue, as well as the institutional and contextual settings at stake (Dutton, Schneider, and Vedel 2012). We thus conclude with our third hypothesis stating that:

H3: The difference in policy outputs between the national policy formulation and the position within international negotiations stems from the fact that the same actor participating in both processes defends very divergent preferences and interests on the two levels.

As a first step, we thus focus on actors participating in both processes. Once we find evidence for that (and thus potentially rejected our first hypothesis), we then investigate the power structures and policy preferences of those actors.

Case and Methods

The global climate regime is characterized by horizontal and vertical fragmentations where different state and nonstate actors intervene on different decisional levels (Ingold 2014; Ingold and Fischer 2014; Ingold, Balsiger, and Hirschi 2010; Prell, Hubacek, and Reed 2007). To account for this structural complexity, different

policy scholars have adopted a network approach (Ingold 2010; Newig and Fritsch 2009): in order to better reconstruct decision-making processes and stakeholder intervention (Knoke et al. 1996; Krackhardt 1990; Knoke 1990; Kriesi 1980),various studies have proven that social network analysis (SNA) provides an impressive toolbox for the empirical analysis of social network structures and their relevance for opportunities and behavioral choices of persons integrated in policymaking. We apply SNA and the methods used here in a descriptive way as we are not interested in the investigation of direct causal links or chains. The aim of this article is *to explore and understand* the potential differences in policy output production across two decisional levels.

Comparable datasets on policy networks are rare, not least because gathering data at various points in time is highly demanding and resource consuming. In that sense, the dataset at our disposal is exceptional. It is comprised of comparable network data in a policy domain collected at two different periods. The first dataset covers the decision-making process on policy instruments within the context of Swiss national climate politics between 2002 and 2005. It was gathered through face-to-face interviews in 2004 and 2005 (see Ingold 2008; 2010). The second dataset on the preparatory phase of the Swiss position at the Conferences of the Parties (COP) 16 in Cancun in 2010 stems from a written survey sent out by post in the beginning of 2011.

To identify key actors involved in the respective policymaking processes, we relied on a combination of positional, decisional, and reputational approaches. In line with Knoke et al. (1996), formal organizations, rather than individuals, are the unit of analysis. Actors in this research were therefore defined as organizations participating in the policymaking processes and, following the decisional approach, actors formally implicated in climate policymaking were identified. The first list of actors was then complemented with actors holding an overall strategic position or being mentioned as very powerful during initial expert interviews. This left us with a set of 35 actors for the national decision-making process and 50 representatives of these organizations were interviewed. For the preparatory phase of the COP 16, questionnaires were sent to 22 actors and the response rate of this survey was 70% (complete actors list in appendix). Both surveys were thus based on questionnaires designed in the same way and containing batteries of questions to investigate actors' relational profiles and policy preferences.

Based on a list of all actors participating in the respective decision-making process, interviewees were asked to identify those actors with whom they *collaborated intensely* (relational profiles). Furthermore, actors were asked to rank the policy options under discussion in the respective process (policy preferences). For the national decision-making process, they ranked the following policy instruments evaluated during the preparliamentary phase of 2004: voluntary agreements, CO_2 tax, climate penny, and tradable permits. For the preparatory Cancun negotiations, they had to give their opinion on the different adaptation (fast-start finance, green climate fund, and insurance mechanisms) and mitigation (global CO_2 tax, involvement of emerging economies in mitigation, expansion of clean development

mechanisms and carbon markets, and prevention of deforestation) mechanisms proposed by Switzerland.

Results

Before concentrating on actors' collaboration, power, and preferences, we focus on the question of who participated in both processes. As illustrated in Table 1, only 12 actors participated in both, Swiss national and foreign climate policymaking. This corresponds to half of the actors involved in international negotiations and one third of the actors involved in national decision making. Three of them are industry and private sector representatives; three are scientific institutions; two are green NGOs; and four are federal agencies (see appendix).

Table 1 about here

Collaboration Within and Across Networks

In both networks, we asked actors to indicate with whom they collaborated strongly during the respective decision-making processes. Furthermore, and for the second survey about the preparatory phase of the Cancun negotiations, we asked actors to also indicate with whom they shared collaboration links in the former national decision-making process about the CO_2 law between 2002 and 2005. Even though those two processes happened at two different times, we could identify which actors were involved in both domestic and foreign policymaking. In sum, we had three different policy networks: first, the domestic decision making about policy instruments to be introduced under the CO_2 law between 2002 and 2005; second, the preparatory phase of the Cancun negotiations; and third, a combined network of actors involved in both processes through collaboration relations.

For the latter (see Figures 1 and 2), there are three sets of actors worth mentioning at this stage: First, one category of actors involved in both processes seemed to be strongly integrated, but linked to their peers only: the green NGOs WWF and Greenpeace (GP) to pro-ecology actors; and the two business representatives Economiesuisse and the Petrol Union (PU) to pro-economy actors. These actors thus demonstrate the link between the national and the international policy processes, but were however only closely linked to members representing the same actor type on the national level. Inputs from international negotiations may thus only be shared with national actors having the same policy preferences.

Figures 1 and 2 about here

Second, one group of actors was only formally involved in the international preparatory phase, and had very few links to national decision making. This group consists of science and insurance representatives dispatched at the left end of the graph, such as Swiss RE, Meteo CH, or ETHZ.

Third, the most important role was played by the Federal Office for the Environment (FOEN), which seems to hold both networks together. The FOEN could thus be a potential policy broker within both networks, what will be elaborated below.

Structural Power and Reputational Resources

"*Betweenness centrality*" is the most prominent centrality measure used to study power and dominance, as it indicates an actor's strategic position between other actors in the network. It shows the structural advantage of an actor in the network and is thus in line with what Stokman and Zeggelink (1996) defined as access relations within policy formulation. Betweenness centrality measures the number of times an actor is on the shortest path between two other actors within the collaboration network. Concretely, this means that actors with high betweenness centrality scores have the potential to link other actors which would otherwise not be connected. Actors with high betweenness centralities thus have the opportunity to gate keep, control information flow among otherwise disconnected others, and potentially impact decision making.[3]

Only few actors in the national process had a betweenness centrality above the mean (see Table 2). Most of them, and particularly Economiesuisse, the Petrol Union, and the Agencies for the Environment (FOEN) and for Energy (SFOE), were also present in the second international policy process. Those organizations thus link different unrelated actors through collaboration ties and do this in both the national and the international settings.

Table 2 about here

In contrast to betweenness centrality, *reputational power* is not a network measure and reflects a cognitive approach to power and resource analysis. Here it constitutes the second power dimension defined by Stokman and Zeggelink (1996), namely resources enabling actors to act and influence policymaking. Participants to the survey evaluated the general reputational power of all actors integrated in the corresponding process when answering the question: "Considering the list of all actors integrated in the respective policy process, who are, following you the three most important actors?" Reputational power scores then reflect the number of times an actor was mentioned as most important, expressed in percentages (see Table 2).

[3]The two measures are complementary: reputational power indicates in a subjective manner which institutions are seen as powerful by the other actors in the network, while the centrality measure shows which actors hold a control position over others (Scott 2000).

The analysis of reputational power shows a different picture to that of centralities: actors having a rather weak betweenness centrality (such as HEV, TCS, EnAW, and SVP nationally; DEZA and EDA internationally), and thus being poorly interlinked within the collaboration network, may nonetheless be seen to be important by the other actors (indicated by a high reputational power score). Nationally, the actors being seen as most relevant for climate policy design include the business association Economiesuisse, the Swiss Agency of Energy (SFOE), and the Christian-Democratic People's party (CVP). Internationally, the Swiss Agency for Development and Cooperation (DEZA) and the State Secretariat for Economic Affairs (Seco) are perceived as powerful. The Swiss Agency for the Environment (FOEN) is the only actor being perceived as important in both processes and at the two levels.

Policy Preferences

Through the following steps, actors' preferences about the different policy options were aggregated (Nohrstedt and Ingold 2011; Nownes 2000). First, we calculated the Manhattan distance measure by creating a matrix with actors in the first column and the respective preference for each policy option (on a four-point Likert scale) in the first row[4]. Manhattan distance then transforms this matrix into an actor × actor matrix, where every cell indicates the overall preference distance between two actors. The minimum distance in the matrices is 0, the maximum is 16 for the national, and is 32 for the international process among every pair of actor. A multidimensional scaling (MDS) then attributes a relative preference distance to every actor in the space. Table 1 summarizes the relative distances for all three categories of actors: those integrated in the national climate change process, those integrated in the Swiss position on international climate change policy and, finally, those actors integrated in both.

In Swiss national climate policy, industry representatives and center-right parties seem to prefer the climate penny, which is expressed through an alignment on the belief continuum toward –1 (Table 1). Green NGOs, left parties, and some federal agencies however are in favor of a strong national mitigation policy and the introduction of a CO_2 tax (represented with a position toward +1 on the belief scale in Table 1).

The results for the preparatory phase of the COP16 in Cancun are very different: first of all, one notices that the distances are not as extreme as in the national process. All survey participants who evaluated the policy options for the Swiss position in international climate negotiations seem to agree that international mitigation as well as adaptation policies are relevant and necessary. No strong opposition to any of those international measures can be identified. Positions toward

[4] For the national decision-making process, we had four different policy instruments (voluntary agreements, tax, penny, and permits) that could be ranked and that could thus receive a value between 1 and 4. The same is true for the eight policy preferences evaluated for the international level.

0 simply indicate that those actors (typically green NGOs) emphasize—besides climate adaptation—a stronger commitment toward effective mitigation measures.

Discussion

In our *first hypothesis*, we test if the discrepancies of policy outputs on both levels stem from the fact that barely any actor participate in both, national and international climate decision making. We have to reject this hypothesis: 12 actors representing four different organizational types (industry, science, NGOs, and administration) are involved in both processes and would thus have the formal potential to coordinate actions on both levels. But mere participation in several processes does not guarantee that those actors have the power, interest, and capacity to impact upon decision making on both levels in an integrative way.

As shown by the analysis of the collaboration networks, for instance, most actors involved in both processes only seem to be related to their peers (same actor type) in the respective process. This is already one strong indicator that they do not hold enough structural power to link actions and actors across one or more subsystems. Typically Economiesuisse, the SFOE, and the WWF are very central in the domestic process, but not in the foreign policy process. In the foreign process, no actor has significantly high centralities; and, in general, no actor seems to be central in both processes (Figures 1 and 2). There is however, one exception: the FOEN holds a key position in both processes. The strong weight of the federal administration in foreign policy processes has already been confirmed by former research (Ingold and Fischer 2014; Sciarini1995), and also here, and in the case of Copenhagen and Cancun, the consultation process was rapid and was heavily controlled by the FOEN. It is the Minister of the Environment who arbitrates with the agreement of the Federal council (government), which is why the Swiss position remains quite close to that of FOEN and is characterized by pro-climate commitments. But even if FOEN plays the key role in Swiss foreign climate policy, this cannot be confirmed for domestic policymaking where other actors were seen as more powerful.

The international climate change debate is—mainly through the impact of the Intergovernmental Panel for Climate Change (IPCC)—strongly influenced and designed by scientific actors. Swiss researchers are well involved within the IPCC and one would expect that this would also be reflected in the preparation phase for the Swiss position in international climate negotiations. The re-insurance industry is also greatly interested in policy outcomes on the foreign policy level: as an international economic sector strongly affected by climate change impacts and natural hazards such as floods and heat waves, insurance companies have a stake in the development of international climate change adaptation measures and funding. But a strong position of science and insurance representatives in the production of the Swiss foreign climate policy is not visible in our two-level reputational analysis; and it moreover seems that neither science nor insurance industries would be able to bring the knowledge back into the national climate policy, as they have, so far,

played a rather peripheral function in the national decision-making network (see again, Figures 1 and 2).

We can thus confirm our *second hypothesis* and conclude that no actor has the power or ability to influence coordinated policy outputs on both levels.

For the test of our *third hypothesis*, we investigated whether the same actor displays different preferences when acting on two levels. This hypothesis can also be confirmed. On the national level, actors were very clear in their preferences: they were in favor of one set of policy instruments (incentives) or the other (voluntary measures). In Swiss foreign climate policy, preferences seem harmonized: even actors nationally against strong mitigation or adaptation commitments largely supported the instrument mix suggested by the Swiss government. In national policymaking, conflict about policy design is high, because of potential target groups, that is, actors who have to pay or to implement future policy instruments, lobby against the latter. More generally speaking, as soon as potential policy change threatens some actors or actor groups, they start opposing these measures. Policy formulation at the international level follows other rules: the Swiss delegation's choices about what position to defend in international negotiations does not have direct policy consequences for any of the delegation's members. In sum, the difference in the degree of belief conflict at both levels might be heavily influenced by different negotiation cultures, as well as divergent degrees in bindingness of the policy solutions adopted at either level.

Conclusion

This analysis has shown that investigating policy processes on two different levels and over time constitutes a challenge (see also Pralle 2009). Adopting a multilevel perspective, considering that domestic structures matter in such multisphere setting, we investigated national and foreign policymaking.

Overall, we observed a *large difference* among both levels in the structure of the policy process, actors' arrangements, and in the (power) position specific actors represent. Those structural and individual differences are very strong, leading to the conclusion that they serve as an explanation for the policy output discrepancies between national and foreign policy formulation. Domestic structures thus also matter in foreign policymaking (Avery1996), but are not replicated "telquel" on the higher level. In addition to Madden (2014), who convincingly demonstrated the relevance of national institutions and veto-points for the explanation of policy outputs and the adoption of policy tools (see also Pralle 2009 and the relevance of agenda-setting and issue attention over time), the here presented study has shown how crucial it is to identify actors that participate in both spheres, also taking into account their political power and resources (see Putnam 1988, 445). Participation on two levels seems to be a necessary but not sufficient condition. Actors should play a central role in both processes, and defend similar policy interests on the two levels in order for them to be able to coordinate actions and produce coherent outputs in overlapping subsystems. We are aware, however, that this is a descriptive analysis

and that the causal link between structures and outputs should still be systematically proven.

Furthermore, social network analysis (SNA) has proven to be an appropriate method to be applied to such a multilevel decisional setting, as it gives the researcher the possibility of drawing relations among time and space and to identify actors located within two or more networks. The aim of this research was to understand and lay-out structural and attribute-based factors in overlapping subsystems. In future research, and when focusing on causal links, social network analysis would also provide tools and models for doing so.

The case of Swiss climate policy and the discrepancy between the national and international position and strategy is rather special. In future research, it would thus be of particular interest to investigate actors' configuration and a single actors impact upon national and foreign policymaking within the same multilevel regime *in a different context*, for example, that of countries with more homogenous approaches on both levels. Besides from predominantly concentrating on negotiators' strategies and domestic structures, such an analysis would then account for country-specific institutions, this being the third element put forward by Putnam (1988) when investigating the creation of large win-sets in two-level games. This would then allow for the testing of hypotheses in a comparative setting; allowing for further confirmation of the added value of policy process theories and formal network analysis for multilevel policy investigations.

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Appendix: Actors’ List

Full Name	Abbreviation	Actor Type	Involvement in Processes
Economiesuisse, Swiss Business Federation	**Ecosuisse**	1	2
Swiss Association of Chemical and Pharmaceutical Industry	**SGCI**	1	2
Swiss Mechanical and Electrical Engineering Industries	**Swissmem**	1	1
Assoc. of the Swiss Cement Industry	**Cemsuisse**	1	1
Swiss House Owner Association	**HEV**	1	1
Association for Ecological Integration in Business Management	**OEBU**	1	1
Swiss Touring Club	**TCS**	2	1
Association for Transport and Environment	**VCS**	2	1
Road Traffic Assoc.	**FRS**	2	1
Swiss Federation of Trade Unions	**SGB**	3	1
Association of Trade Unions	**TravailSuisse**	3	1
Energy Agency for the Economy	**EnAw**	2	1
Agency for Renewable Energy	**AEE**	2	1

Petrol Union	**PU**	2	2
	Energieforum	2	1
Christian Democratic People's Party	**PDC**	5	1
Free Democratic Party	**FDP**	5	1
Social Democratic Party of Switzerland	**SP**	5	1
Swiss People's Party	**SVP**	5	1
Green Party of Switzerland	**Grüne**	5	1
Private Scientific Organization	**Infras**	6	1
Private Scientific Organization	**Prognos**	6	1
Factor AG, Private consultant firm	**Factor**	1	1
Forum for Global and Climate Change	**Proclim**	6	2
Advisory Board on Climate Change	**OcCC**	6	2
Swiss National Science Foundation Competence Centre on Climate Change	**NCCR**	6	2
Greenpeace	**GP**	7	2
World Wildlife Fund Switzerland	**WWF**	7	2
Green NGO	**Equiterre**	7	1
Swiss Federal Office for the Environment	**FOEN**	4	2
Swiss Federal Office of Energy	**SFOE**	4	2
State Secretariat for Economic Affairs	**SECO**	4	2
Federal Department of the Environment, Transport, Energy and Communications	**UVEK GS**	4	2
Federal Finance Administration	**EFV**	4	1
Swiss Agency for Development and Cooperation	**DEZA**	4	3
Swiss Private Bank Union	**SPBA**	1	3

Appendix: Actors' List; cont.

Full name	Abbreviation	Actor Type	Involvement in Processes
Federal Office for Migration	**BFM**	4	3
Federal Office for Agriculture	**BLW**	4	3
Federal Office for Meteorology and Climatology	**MeteoCH**	4	3
Swiss Federal Office for Civil Aviation	**BAZL**	4	3
Federal Department of Foreign Affairs	**EDA**	4	3
Swiss Federal Institute of Technology	**ETHZ**	6	3
Swiss Alliance of Development Organizations	**Alliance Sud**	7	3
Swiss Reinsurance Company	**Swiss RE**	1	3

Legend to Appendix: Column Actor Type

1= Industry and Private Sector Representatives
2= Transport and Energy Representatives
3= Trade Unions and Consumer Protection
4= Federal Administration and Confederation
5= Political Parties
6= Science
7= Green NGOs

Column Involvement in Processes

1= Only National
2= Both
3= Only Swiss Foreign Climate Policy

Table 1: Clusters of Actors in Swiss National and Foreign CC Policy Based on Beliefs

Process Involvement		Belief MDS National CC Policy	Belief MDS Foreign CC Policy
	Ecosuisse	–0.226674199	0.65

Both processes	**SGCI**	0.552091241	1
	PU	–0.321665198	0.66
	Proclim	0.554830492	0.31
	OcCC	0.511774123	0.31
	NCCR	0.22452797	
	GP	0.451409727	0.23
	WWF	0.178739235	0.18
	FOEN	0.361067593	0.34
	SFOE	0.124492967	
	SECO	–0.026673712	0.34
	UVEK GS	0.51202029	
Only national CC Policy	**Swissmem**	–0.157758623	
	Cemsuisse	–0.119442351	
	HEV	–0.272213846	
	TCS	–0.322696537	
	FRS	–0.271957397	
	Energieforum	–0.225837544	
	FDP	–0.321427166	
	SVP	–0.270329297	
	Factor	–0.227479041	
	EFV	0.158581719	
	OEBU	0.221499845	
	VCS	0.11928343	
	SGB	0.370335549	
	TravailSuisse	0.509672701	
	EnAw	0.243292451	
	AEE	0.610045612	
	PDC	0.183548647	
	SP	0.371871144	
	Grüne	0.511299551	
	Infras	0.511382699	
	Prognos	0.177863672	
	equiterre	0.153671488	
Only international CC Policy	**BAZL**		1
	SwissRE		0.44
	No belief indications for the following actors: DEZA; SPBA; BLW; ETHZ; BFM; EDA; MeteoCH		

Table 2: Betweenness and Reputational Power Analysis

Process Involvement		Betweenness National	Betweenness Foreign	Reputation National (%)	Reputation Foreign (%)
Both processes	***Ecosuisse***	**11.7**	**7.3**	**94**	36
	SGCI	0.1	0.1	45	0
	Proclim	0.4	0	27	7
	OcCC	0.1	**7.1**	18	7
	NCCR	0	0	0	0
	GP	0.1	**9.4**	24	0
	PU	**5.2**	0	**100**	
	WWF	**34**	0	**70**	43
	FOEN	**20.6**	**25.4**	**79**	**100**
	SFOE	**12.2**	0.1	**70**	7
	SECO	2.6	1.4	21	**79**
	UVEK GS	1.2	1.2	**61**	36
Only national CC policy	**Swissmem**	1.2		39	
	Cemsuisse	1.6		36	
	HEV	0.4		**57**	
	TCS	0.1		**60**	
	VCS	1.2		30	
	FRS	**7.5**		48	
	EnAw	2.9		**66**	
	AEE	0.5		18	
	Energieforum	1.5		33	
	PDC	**9.9**		**60**	
	FDP	2.3		**54**	
	SVP	0.1		**57**	
	Infras	0.5		39	
	OEBU	1		18	
	SGB	0		3	
	TravailSuisse	0		0	
	SP	0		**51**	
	Grüne	0.3		24	
	Prognos	0.1		42	
	Factor	0		33	
	Equiterre	0.2		3	
	EFV	0.1		0	
Only	**DEZA**		1.7		**71**
	BAZL		0.2		7
	BLW		0		14
	ETHZ		0		14
	BFM		0		0
	EDA		0.1		**64**
	MeteoCH		1.7		14

International CC policy	***SwissRE***		**6.1**		**21**
	SPBA		0		0

Note: numbers in bold indicate scores above average.

Figure 1: Joint Collaboration Network of National and Foreign CC Policy—Centralities in National Network

Node size: Betweenness centrality in national collaboration network (black nodes indicate actors only internationally; blue nodes actors only nationally active; red nodes are actors integrated in both processes)

Figure 2: Joint Collaboration Network of National and Foreign CC Policy—Centralities in Foreign Network

Node size: Betweenness centrality in foreign collaboration network (black nodes indicate actors only internationally; blue nodes actors only nationally active; red nodes are actors integrated in both processes)