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Analyzing climate and energy policy integration: the case of the Mexican energy transition

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ABSTRACT

One of the main challenges faced by climate policy makers today is to design and implement policies capable of transferring climate policy goals into sectoral actions towards transformational pathways. Hence, climate policies need to be of cross-cutting character, lead to coherence with sectoral goals and reconcile diverging sectoral interests. Against this background, Mexico has undertaken significant efforts to reform its energy sector, including goals for clean energy and energy efficiency, and the adoption of implementation mechanisms via the Law for Energy Transition of 2015. Furthermore, Mexico has introduced a complex climate governance system, including ambitious mitigation goals. In this paper, we applied concepts of climate policy integration to analyse whether integration between the policy subsystems of energy and climate change occurred in Mexico in terms of political discourse and negotiation, policy goals and instruments, and implementation; as well as the factors at work that lead to climate policy integration. We find that on the level of political discourse and negotiation, an integration process between the energy and climate subsystems occurred, influenced by the availability and market maturity of clean energy, mitigation scenarios and external events, such as the 2015 Paris Climate Change Conference. However, a combination of decisions on integrated climate-energy policy outputs, and preparing the public administration system for the implementation of integrated policies, is needed to enable appropriate institutional mandates, budgets and instruments and avoid institutional fragmentation. Omitting to take these decisions was identified as a major shortcoming in the political-administrative system, preventing higher levels of climate policy integration.

Key policy insights

- The Mexican Energy Transition Law shows that policy windows can be used by policy makers to attain integrated energy-climate policy outputs and to advance national mitigation and energy sector goals.
- In order to make full use of integrated policy decisions, the administrative system has to follow suit by also introducing mandates, budgets and policy instruments of an integrative character.
- Climate policy integration in practice implies identifying and using the full potential of policy windows in order to ensure the raising of ambition under the Paris Agreement as well as achievement of sectoral policy objectives.

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1. Introduction

Virtually all countries face the challenge of translating domestic climate policy goals into effective policy approaches and instruments on the sectoral level in the context of their nationally determined contributions (NDCs) under the 2015 Paris Agreement (Michaelowa, Allen, & Sha, 2018). While climate policy development and implementation typically originate in environmental policy communities, the success of these plans and programmes critically hinges on the cooperation and, arguably, transformation of other sectors (German Advisory Council on Global Change, 2011). As one of the approaches to address this type of challenge, policy integration has been advocated since the early 1980s, however with limited empirical success, despite conceptual advancements (Candel & Biesbroek, 2016; Jordan & Lenschow, 2010; Lafferty & Hovden, 2003; Persson et al., 2018; Peters, 1998; Tosun & Lang, 2017; Underdal, 1980). More recently, the concept of climate policy integration (CPI) has sparked an intense debate in the scholarly literature and has gained prominence in policy circles (Adelle & Russel, 2013; Ahmad, 2009; Dupont & Primova, 2011; Mickwitz et al., 2009; Rietig, 2012).

The relevance of CPI can be shown by highlighting some of the implications that arise in cases where CPI is not addressed properly. Policy development in economic sectors, that often cannot be impacted by climate policy without integration, can hamper or enable national mitigation goals. For example, renewable energy policies, if initiated for purely economic and energy supply reasons, can contribute to emission reductions. Conversely, the use of fossil fuels can be increased through supportive policies, which increases overall emissions, as the case of Germany's GHG emission gap towards its 2020 emission reduction goal shows (BMU, 2018). In either case, climate policy objectives were not integrated into a sector-spanning policy objective and could therefore not effectively steer other sectors towards achieving a climate target.

This article analyzes integration processes between energy and climate policy subsystems at the federal government level in Mexico. This case is ideally suited to demonstrate the relevance of CPI, both conceptually and in practice. We chose Mexico as a case study for its international significance as a major emitter and economic player, the ambition of its energy sector reform (International Energy Agency, 2017; Pascual, Victor, & de Castro, 2018) and its reputation as a leader, especially among emerging economies, in climate policy development (Figari, 2015; Ramírez, 2014).

Energy production in Mexico has historically relied mostly on fossil fuels, with oil at 67.8% and natural gas at 17.8% of the total energy mix in 2015 (International Energy Agency, 2017). The energy sector thereby accounts for 70% of the national total of GHG emissions (INECC, 2018), and according to the latest available GHG emission inventory of 2013 (INECC, 2015), electricity generation annually emitted 127 MtCO₂e. According to IEA (2017), the national electricity mix is composed of 81% fossil fuels (60% natural gas, 11% coal, 10% oil), 3.8% nuclear and the remainder of renewable energy types (10% hydro, 2.6% wind, 2% geothermal, 0.5% biofuels & waste, and 0.1% solar). In this case study, we focus on the electricity sector, which was allocated the largest sectoral target under the NDC of 31% GHG emission reduction by the year 2030, relative to a business-as-usual scenario of 202 MtCO₂e in the same year (Federal Government of Mexico, 2018).

At first glance, the climate and energy policies of the Mexican government appear to be interwoven to a certain extent, as the policy documents and their chronology of release suggest. In 2013, Mexico issued a substantial reform package for the energy sector (Ibarra Sarlat, 2017), which was originally intended to break up monopoly structures and boost oil production. Subsequently, clear targets and governance structures for clean energy development were formulated in the Energy Transition Law (LTE in Spanish) of 2015 (Mexican Congress, 2015), marking an important step towards promoting climate friendly energy production and use. Three years prior, Mexico issued the General Climate Change Law (LGCC in Spanish), which establishes a conditional GHG emission reduction target of 30% below business-as-usual by 2020, as well as a long-term target of 50% reduction by 2050 compared to 2000 (Presidencia de la República Mexicana, 2012).

Taking these policy developments as our starting point, our guiding research questions are as follows: Are recent efforts by the Mexican government to promote a clean energy transition an effect of climate policy integration processes? What interactions between the two policy subsystems of energy and climate took place, and what were the outcomes of such interactions? Can climate policy integration contribute to raising ambition in the energy sector concerning climate change mitigation, in accordance with Article 4.3 of the Paris Agreement? (UNFCCC, 2015).

The remainder of this article proceeds as follows. In Section 2, the concept of CPI is briefly summarized and our framework for analysis is presented, introducing: policy discourse and negotiation; policy goals and instruments; and subsystem involvement and governance arrangements, as elements determining the degree and impact of CPI. Section 3 introduces our data and methods, followed by Section 4, the empirical analysis of energy and climate integration processes in Mexico, employing the introduced framework for analysis. We close in Section 5 with concluding remarks and policy recommendations.

2. Climate policy integration and policy change

Currently, countries worldwide are faced with the challenge of developing and implementing policies to address climate change that are cross-sectoral in nature, feature a lack of central coordination and have a high degree of ambiguity regarding solutions. The combination of these challenges has earned the development of climate policies the term of a 'super-wicked' problem (Levin, Cashore, Bernstein, & Auld, 2012). The quest for sector-integrating policy solutions is not a new phenomenon, as the disparity between different economic and societal sectors in policy-making is a common finding in policy studies (Trein, Meyer, & Maggetti, 2019). Against this backdrop, different concepts of policy integration have been developed (Bauer & Rametsteiner, 2006; Candel & Biesbroek, 2016; Cejudo & Michel, 2015; Tosun & Lang, 2017), among them climate policy integration (CPI). We regard climate policy as being oriented towards constantly increasing the ambition of climate mitigation. Due to this focus on ambition and departure from business-as-usual pathways of development, approaches aiming at explaining policy change (e.g. Workman, Jones, & Jochim, 2009) should inform our understanding of CPI. Consequentially, we understand CPI as the increasingly ambitious integration of multiple policy goals, governance arrangements and policy processes related to climate change mitigation and adaptation and other policy domains (cf. Di Gregorio et al., 2017). The need to increase climate mitigation ambition is unmistakably clear: it is a core principle of the Paris Agreement (Article 4.3), which calls for the continuous progression of NDCs to reflect the 'highest possible ambition' of countries (UNFCCC, 2015). Importantly, significantly reducing GHG emissions necessarily implies definitive departure from a 'business-as-usual' scenario in most countries, which highlights the need for policy change (Rogelj et al., 2018).

CPI can refer to vertical or horizontal modes of integration. Vertical integration is understood as the extent to which the energy sector has taken up procedures that facilitate the adoption and implementation of climate policy goals, indicated through the formulation and implementation of climate change plans in the energy sector, including targets, timetables and reporting schemes (cf. Adelle & Russel, 2013; Di Gregorio et al., 2017; Lafferty & Hovden, 2003). Horizontal integration refers to the institutional interaction across climate and energy sectors, indicated by the extent to which these are included in a cross-sectoral strategy.

We argue that the CPI literature can be fruitfully combined with the policy change literature in order to grasp the challenge of CPI holistically and contribute to identifying explanatory factors that enable it. This allows us to focus not only on the means, but also on the ends, of CPI: achieving a departure from business-as-usual through climate policy interventions. In this argumentation we follow calls for the combination of policy integration studies with theories of the policy process (Lang & Tosun, 2014).

Departing from CPI and policy change studies, we develop a framework for analysis to guide our case study. We assume the following (non-exhaustive) list of elements to determine the degree and impact of CPI: Policy discourse and negotiations; policy goals and instruments; and subsystem involvement and governance arrangements.

2.1. Policy discourse and negotiations

Policy discourse and negotiation processes between actor groups in the political arena are central in the process of CPI (United Nations, 2018). Resulting decisions on climate and energy policy necessitate prior judgements on the most appropriate course of action. Such judgements by policy makers and the general public are determined by competing values, beliefs, ideas, interests and knowledge claims, and thus by arguments and debates, both in policy-specific contexts as well as within society as a whole (Scrase & Ockwell, 2010). Furthermore, major external events, the influence of interest groups and the presence of synergies between climate

and energy goals shape the judgements on what is deemed to be the appropriate policy solution and therefore, ultimately, the outcome of discursive processes. Analyzing how these elements shape the definition of policy problems and solutions, i.e. the policy frame, is essential for understanding under which circumstances CPI can be successful. In the course of discursive processes, policy frames can converge and lead to integrated policy decisions between energy and climate subsystems. This requires that the actors of climate and energy policy subsystems reach common understandings of the nature of policy problems and solutions, and recognize the need for a cross-cutting policy solution, building on the understanding that no single sector can solve the climate change problem alone (Candel & Biesbroek, 2016; Lovell, Bulkeley, & Owens, 2009). In order to capture this element empirically, we propose two indicators: First, we ask whether or not a common policy framing is articulated in the climate and the energy sector, or by one sector jointly for both (indicator issue framing). Second, we determine whether there is agreement or disagreement among policy actors on the need for a cross-sectoral policy approach (indicator cross-sector agreement).

2.2. Policy goals and instruments

The level of CPI furthermore depends on the policy design, which comprises the specific policy goals and instruments. Policy goals reflect the specific concern and level of ambition of a certain policy. As policy goals concerning the cross-cutting problem posed by climate change are adopted in a range of policies in different subsystems, possibly using different frames and scales, it is essential that these goals are aligned and coherent (Adelle, Pallemmaerts, & Chiavari, 2009; Candel & Biesbroek, 2016). To assess this coherence, we asked whether mitigation goals are coherently reflected in energy sector goals and vice versa (indicator policy goals), and whether policy instruments were available that enable integrated goal attainment between energy and climate policy subsystems (indicator policy instruments).

We follow Candel and Biesbroek (2016), who suggest different types of indicators related to policy instruments that can be used to assess the level of CPI. First, the deployment of instruments by one or all subsystems: The level of CPI increases with the number of subsystems that deploy climate policy instruments and hence adopt climate mitigation and adaptation as a goal, resulting in diversified climate policies across different climate and energy subsystems. Hence, we ask if climate change mitigation and adaptation are addressed by only one, several or all policies of the climate and energy subsystems. Second, the consistency of policy instruments: The level of CPI depends on the consistency and coherence between energy and climate policy instruments and their goals.

2.3. Subsystem involvement and governance arrangements

The dimension of subsystem involvement captures the range of actors and institutions that are involved in climate policy as a cross cutting policy problem (Candel & Biesbroek, 2016). In this section we analyse the involvement of both subsystems through the public administration in the course of policy implementation. Focusing on energy and climate subsystems, we emphasize the density of interactions between the subsystems as an indicator for CPI. This is important as the level of CPI depends on dominant subsystems with high intentionality engaging with each other in frequent interactions while entertaining less frequent interactions with less engaged subsystems (cf. Candel & Biesbroek). To assess this, we asked whether actors from energy and climate subsystems participated in consultations and joint processes and whether collaborative and (in)formal networks were in place among them. But not only the existence of networks across subsystems matters, so too do their quality and effect. We assessed the quality of interactions by asking whether the results of consultations were taken up in the policy process.

Furthermore, the level of CPI depends on the existence of specific governance arrangements in the context of which climate and energy subsystem actors can engage with each other and foster integration, including institutions from government, the private sector and civil society.

Institutions, sectors and actors can be involved horizontally and vertically in policy integration (Lafferty & Hovden, 2003). The effectiveness of integration depends on an authoritative long-term climate change policy, the presence of a climate change specific authority mandated to supervise, coordinate and implement climate

change policy, the requirement for sectoral ministries to report to a central authority, a central authority with the mandate to oversee and monitor CPI processes, and a clear indication of sectoral responsibility for overarching goals (cf. Di Gregorio et al., 2017; Jacob & Volkery, 2004; Lafferty & Hovden, 2003). Hence, we asked if an integrated governance system is in place which safeguards the aforementioned functions (indicator governance).

3. Data and methods

Data was collected through interviews, media and document analysis (official reports, declarations and laws). We conducted 39 qualitative expert interviews with representatives of the Mexican public administration, academia, NGOs, private sector and international cooperation organizations (see supplemental material for an overview of interviewees and institutional affiliation). The interviews were held in a semi-structured way, with a main set of 5–6 questions guided by the framework presented in Section 2. As interviewees report events and processes according to their perceptions, validating these with documentary and media analysis proved to be an important step.

Semi-structured interviews were chosen as an adequate tool for conducting expert interviews, since they can detect both specific and context-related knowledge and thereby address both the practical and discursive consciousness of the interviewees (Meuser & Nagel, 2010). Interviews were recorded, transcribed and anonymized (see supplemental material for an overview of interviewees and institutional affiliation). The interview data gathered was analysed using qualitative content analysis (Baur & Blasius, 2014). A deductive development of categories was complemented by taking into account theoretical considerations.

4. Evaluating climate and energy policy integration in Mexico

4.1. Policy discourse and negotiation

The interaction between climate and energy policies can be divided broadly into two phases. Phase 1 from 2006 to 2012 is marked by the presidency of Felipe Calderón, the adoption of the national GHG reduction target (2010) and the subsequent release of the LGCC (2012); phase 2 from 2012 to 2018 is marked by the presidency of Enrique Peña Nieto. Generally speaking, and transcending these phases, interviewees confirmed that, at the presidential and cabinet level, climate change and clean energy are usually articulated together, and hence understood as integrated, albeit in a general way. Looking at the details of discourse dynamics according to respective actors, their venues and specific timings, a more differentiated picture emerges, as will be shown in the following sections.

4.1.1. Phase 1: Calderón presidency (2006–2012)

During the Calderón presidency, a strong discursive driver came from the highest level, as the president appeared personally convinced that climate change posed a serious threat and that national action needed to be taken (interviews 2,9,18). Valenzuela and Studer (2016) describe this period as one in which the development of clean energy was directly linked to the mitigation of climate change. Thus, we observe a strong commitment towards CPI on behalf of the executive. The intra-governmental discourse on aligning energy and climate policies, however, was still relatively narrow thematically and involved only few government officials. Furthermore, two levels were discernible: The presidential level, where climate and energy were relatively strongly connected; and the ministerial level, where the policies were treated in a rather segregated way. An explanation offered for this segregation was the lack of mutual understanding and compatibility of arguments (interview 29): whereas energy policy actors and ministerial staff defended 'oil as the basis of the Mexican economy', stated that 'welfare and climate protection will affect this negatively' (interview 4), and used energy sector metrics to formulate policy goals, climate policy actors highlighted the reduction of GHG emissions as a priority (interview 2). This is despite statements which claim that, on the level of discourse among senior public administration staff, mutual learning processes did take place, for instance, through

joint participation in UNFCCC Conferences of the Parties (COPs), leading to the convergence of concepts related to climate and energy.

Since the Mexican government framed climate change predominantly as an environmental problem, it mandated the Secretariat of Environment and Natural Resources (SEMARNAT) to develop the first Special Programme for Climate Change (PECC in Spanish) and lead the development of the first national mitigation target presented to the UNFCCC in 2010. Most interviewees stated that the negotiations concerning the LGCC from 2011–2012 were remarkably harmonious, enjoying almost universal support in Congress (interviews 2,5,18,19,25). While some interviewees assumed that this was due to the omission of legal stipulations leading to sectoral transformation, others viewed the law as a fundamental basis for climate integration processes with the energy sector (interview 30, see also Section 4.2).

In sum, in terms of the articulation of a common policy framing during phase 1, we observe that it was predominantly the political discourse at the executive level that framed climate change as deeply connected to electricity generation and use and which involved only a limited number of stakeholders to participate in this debate (indicator issue framing). Mitigation of climate change was institutionally still regarded as a predominantly environmental problem, implying that GHG emissions in the energy sector could be reduced through the coordinating efforts of the secretariat for environment. Interviewees stated that there was only limited understanding of the mutual dependency between climate change mitigation goals and energy sector goals (indicator cross-sectoral agreement). Consequentially, the mandate for climate policy implementation was given to SEMARNAT, which, however, had limited administrative capacity and political weight to overcome sectorial barriers in implementation. The underlying challenge that an environment related ministry is charged with solving a problem that originates in a different sector, namely reducing emissions from the energy sector, stayed in place. While CPI started to enter the political discourse, the institutional changes were not yet in place.

4.1.2. Phase 2: Peña Nieto presidency (2012–2018)

The presidency of Enrique Peña Nieto marked a departure from the framing of climate change as linked to electricity generation and use, to rather emphasizing energy security and economic aspects as the primary goals of the sector, reflecting Peña Nieto's personal convictions (see also Valenzuela and Studer (2016)). However, at a political discourse level, clean energy and climate change were still explicitly linked to each other, as reflected in arguments brought into the political discourse in the media (Excelsior, 2013, 2015, 2017).

Zooming in on specific developments in clean energy, the discourse and resulting framing by legislative and non-governmental actors in energy and climate subsystems took interesting and dynamic turns. As one of the landmark developments, the energy sector reform of 2013 framed energy sector developments in terms of economic and market based principles, and pursued a revitalization of the oil and gas sectors (interviews 4,8; Hernandez, Roux, & Rivera, 2017). By 2014, when most legal documents for the energy sector reform were passed, discussions of an integrated nature involving climate and energy for the formulation of the LTE emerged for the first time in the legislative body, based on advocacy efforts by NGOs, and to a certain extent also by business groups with an interest in clean energy and efficiency technologies (interviews 5, 18, 19). In these discussions, policy champions, such as the chairperson of the special commission on climate change (Senate of the republic of Mexico, n.d.)¹ who could moderate between competing arguments of climate and energy coalitions, played decisive roles towards the development and approval of the LTE. The discourse was highly dynamic, involving the opposing industries, which posited that climate change mitigation actions were detrimental for economic competitiveness, as well as NGO and business actors using argumentative frames that highlighted the economic benefits of clean energy and energy efficiency and associated climate mitigation effects (interviews 18,19). Eventually, an external event, COP 21 in Paris in 2015, provided the opportunity for the government to present legislation for clean energy and energy efficiency (the LTE), and to promulgate accordingly in the light of global visibility.

On the one hand, climate policy actors played a decisive role in the development of the LTE, including definitions of clean energy sources, respective goal setting, as well as legally stipulating that measures in the energy sector should contribute to achieving the aims of the LGCC. On the other hand, the implementation of climate policy in general still proceeds through the National Climate Change System (SINACC), which is

institutionally decoupled from the LTE, where the mandate was given to the Secretariat of Energy (SENER). Interviewees from government and policy advocacy groups stated that, in the arena of public administration, a proactive approach by SEMARNAT to climate policy making in the energy sector was viewed critically by SENER officials during the LTE formation process, which indicates a low scoring on the indicator 'cross-sectoral agreement' (interviews 13,21,24).

In sum, it becomes apparent that policy makers in 2015 reached an understanding that clean energy, energy efficiency and climate policy need to be conceptualized together, which resulted in the promulgation of the LTE as policy output (indicator issue framing). However, the indicator 'cross-sectoral agreement' is only partially fulfilled, as the institutional divide between the SINACC system based on the LGCC and the LTE was not sufficiently addressed.

4.2. Policy goals and instruments

4.2.1. Policy goals

A comparison of goals in climate and energy policy documents in terms of temporal sequence and contents shows a lack of coherence, which is expressed in different metrics used and ambition level of goals. For instance, mitigation goals for the energy sector in the first PECC 2009–2012 do not coincide with the 35% renewable energy goal of the Renewable Energy and Energy Transition Finance Law of 2008 (LAERFTE in Spanish).

Interviewees confirm that this was due to a purely consultative approach by the climate policy subsystem with energy sector actors, which did not have any leverage for increasing the ambition of climate mitigation policies, compared to the existing ones that were provided by the energy ministry (interviews 7,9,18).

Subsequent energy sector policy documents no longer contain climate-related metrics in their goal formulations. Energy sector targets are not converted into GHG metrics (i.e. information on how the energy sector goals contribute to the national mitigation targets contained in the GLCC is lacking). The lack of clarity surrounding data and assumptions underlying the national mitigation targets contained in the NDC and LGCC was emphasized by all interviewees from the energy sector. Policy goals are therefore not aligned and coherent, as climate goals are not included into energy sectoral plans. With the reflection of the LGCC's climate goals in the energy sector's LTE, the first signs of creating this coherence can be detected (indicator policy goals).

4.2.2. Policy instruments

The LTE of 2015 established the governance framework for the energy transition of Mexico (including mandates and tasks for energy and climate related institutions) and enshrined the clean energy targets, as well as the procedure to determine GHG thresholds and standards for the electricity sector. Through its legal attributes, it determines much of the actual integration process at the level of implementation. The planning instruments introduced by the LTE for clean energy expansion, as well as for energy efficiency, however, do not include GHG emissions or mitigation targets as planning parameters. This was identified by interviewees (31,34,37) as a main reason for fragmentation between the climate and energy subsystems. Without GHG emissions as the planning parameter, it remains unclear how the policy instruments of clean energy auctions and certificates can enable integrated goal attainment, i.e. how they account for the climate change target.

The PECC is the main implementing instrument for Mexico's climate policy. It is issued every 6 years as a special programme, and directly linked to the national development plan (Federal Government of Mexico, 2014). The fact that the PECC is institutionally anchored in the (sector-wide) national development plan creates the potential for creating an instrument that is geared towards pursuing integrated goals. However, as the legal mandate for the development of the PECC is limited to consultative processes by SEMARNAT with sectors (Presidencia de la República Mexicana, 2012), the link between the PECC and national planning is still weak. Proposals for high ambition mitigation actions can in principle be brought forward by SEMARNAT, but were considered in reality by the sector secretariats only to minor degrees and did not result in new and additional policy proposals (interviews 13,18,24).

Still, negotiations and consultations with SENER were more dynamic in comparison with other sectors due to ongoing development of the LTE and the recognition of its mitigation relevance (interviews 13,24). Positive impacts at the sector levels related to increased awareness of climate change and the building up of capacities

and staff in the related sectoral secretariats, which grew from no staff at all to small teams in certain sectors (interviews 2, 24).

In sum, climate and energy sector metrics do not always concur and a trend of ambition raising of clean energy goals has not been discernible since 2008 (indicator policy goals). Policy instruments have been introduced in both subsystems and are relevant for mitigation in the energy sector in particular with regard to the LTE, but relations with the climate subsystems are not formalized. Cross-sectoral elements have developed, such as through the PECC, but without a legal mandate to serve as an instrument to raise the ambition of climate goals and with severely limited resource availability. We therefore see only a weak coherence of policy goals, since climate goals are not expressed through climate metrics and the influence of climate policy in the energy sector is not formalized. Policy instruments such as those contained in the LTE, which would enable integrated goal attainment between energy and climate policy subsystems, are not yet effective, as an integrative institutional set-up is lacking (indicator policy instruments). Reasons offered to explain this situation relate to different mandates and authorities for goal and instrument development in the respective sectors and the resulting lack of incentives to work across institutional boundaries (interviews 21,27).

4.3. Subsystem involvement and governance arrangements

In the course of the energy sector reform of 2013, several new institutions were created to regulate the electricity market, to safeguard the matching of electricity supply with demand, and to regulate fossil fuel exploitation and distribution. In terms of legal mandates, these institutions are almost completely disconnected from the implementation process of climate policy, even though interviewees from these institutions recognized the implicit connections with climate change mitigation (interviews 32,37). Explanations for this disconnect relate to lack of cross-sector understanding by legislators and underlying traditions of drafting legislation according to sector boundaries, including preferences for sector specific mandates and budget mechanisms over innovative cross-cutting approaches (interviews 7, 14, 16).

The Consultative Council for the Energy Transition, which makes recommendations to SENER on actions necessary to achieve clean energy and energy efficiency goals as established through the LTE, is an exception. Climate policy actors participate in the Council, although participation is limited to information dissemination and collaboration on data and emission factors (interviews 11,21). The format and process of the Council does not allow energy-related decisions to be taken from a climate change mitigation point of view, and hence shows a lack of vertical integration.

Through the promulgation of the LGCC in 2012, several official government bodies were established, making up the National Climate Change System (SINACC in Spanish). This system connects with the energy subsystem through the multi stakeholder forum and the Intersectoral Climate Change Commission (CICC in Spanish) and its working groups.

SINACC general meetings include all levels of government (federal, state, legislative and executive) and convened annually over the period 2014–2018. This forum has the potential for horizontal policy integration by allowing for greater exchange of different viewpoints and policy discourse than in other SINACC bodies (interviews 29, 30). There is, however, lack of clarity surrounding follow-up actions to such processes. Still, this continuous communication helps to advance mutual understanding of the climate-energy interface and is done to bring new policy initiatives onto the agenda, for instance, setting objectives for the NDC in the energy sector.

The CICC comprises 14 governmental departments, and has the mandate to mainstream climate change into policies as well as to formulate new policies. The annual CICC reports do not give any account of discussions and possible controversial or noncontroversial points raised during meetings, but are restricted to reporting on progress in its work programme. Many interviewees were critical of the role and performance of the CICC in comparison to expectations and stated goals in the constituting documents, as well as a disconnect from ongoing policy discussions outside of the CICC, such as debates about the LTE in 2015 (interviews 18,21,25,26,35). Based on most interviewees, the CICC lacks incentives to motivate the sectors to really participate in the climate change policy process. The main instrument for cross-sectoral work and mainstreaming with the energy sector is the CICC working group on mitigation, assessed by interviewees (interviews 2,9,13,24) as important for the formulation process of the PECC, but hampered by decreasing budgets, as well as by limited

Table 1. Synopsis of main policy reforms and governance elements assessed against CPI elements.

	Phase 1: Felipe Calderon presidency 2006–2012			Phase 2: Enrique Peña Nieto presidency 2012–2018	
CPI summary evaluation	Climate policy benefited during this phase from the strong political will from the top down, however without much horizontal or vertical integration with energy sector policies, which would have been noticeable in inter-sectoral discourses or political debates. Even the general climate change law was approved without much debate and unanimously voted for in congress. The renewable energy target of 35% was first introduced but without much integration with energy and climate policy communities.			Generally, arguments from the president linked the energy sector rather with economic development than with climate policy, but for CPI it was more important what happened in the legislative arena: climate policy was integrated via a law making process which culminated in the 2015 energy transition law. This happened in less top-down ways than the processes in prior phase, but nonetheless very important for CPI as it gave room for policy advocacy groups to integrate climate policy in the legislative outputs. A dichotomy between integration in the legislative process and fragmentation in the public administration process becomes visible.	
Policy and governance milestones	Renewable energy law of (LAERFTE, 2008)	Special climate change programme (PECC I, 2009–2012)	General law on climate change (LGCC, 2012)	PECC II (2014–2018) and National climate change system (SINACC, 2012)	Law for the energy transition (LTE, 2015)
Discourse and negotiation	Principally initiative of president Calderon, arguments linking climate change and energy came from top down, without broader discourse and negotiation. Main fossil fuel based energy storyline continued as source of national wealth and energy supplier.	Executive decision without prior discourse and negotiation.	Almost universal approval in the legislation, to further Mexico's role as international climate policy leader subsequent UNFCCC COP 16. No specific discourse or negotiation around integrating climate and energy.	Executive decision without prior discourse and negotiation	Marked the final step of the energy sector reform begun in 2013 and spurred intensive discourse and negotiations around clean energy definitions, targets and GHG emissions. Main argument: linking renewable energy and efficiency with climate change: good for climate and economy. Opposing arguments from industry associations: alleged deteriorating effect of RE deployment on the economy and the environment. Decision by president pro LTE in the light of nearing UNFCCC COP 21.
Goals and instruments	35% renewable energy, limit of 65% fossil fuels	Mitigation target based on energy sector program (2007–2012) and LAERFTE: reduction of 29,9 MTCO ₂ in 2012	Conditional mitigation target of 30% below business as usual by 2020 and 50% GHG emissions reduction by 2050 compared to 2000. Electricity generation from clean energy sources should reach 35% by 2024.	Reduction of 83 MtCO ₂ e until 2018 through measures in the energy sector.	35% of clean energy in the national energy matrix by 2024. Climate policy targets of the LGCC should be supported.
Subsystem involvement and governance	No direct involvement of SEMARNAT in the implementation of LAERFTE	Interactions between energy and climate through PECC working groups: identification	No direct interactions or involvement as result of LGCC enactment.	Interactions between energy and climate through PECC working groups: identification	LTE established the multi-stakeholder forum for the energy transition, including climate policy actors to exchange

(Continued)

Table 1. Continued.

Phase 1: Felipe Calderon presidency 2006–2012	Phase 2: Enrique Peña Nieto presidency 2012–2018
(including target setting) and measurement of mitigation actions.	(including target setting) and measurement of mitigation actions. Regular meetings of energy and climate stakeholders in SINACC bodies with lacking evidence of policy proposals or change. information, views and progress of LTE implementation. Lacking evidence of vivid policy discussions and resulting proposals.

effectiveness as decisions are taken from the top-level, and bottom-up working groups face challenges in making a difference. Agreement among Ministers to form and maintain such working groups can be hampered by diverging interests and priorities of sector goals, and of course staff and resource constraints (which also reflect shifting political priorities) (interview 9).

Both the SINACC and the CICC therefore have the potential for horizontal integration, as their institutional set-up is oriented towards enabling sector-spanning planning. However, these institutions remain too weak to truly deliver horizontally integrated policies, as they are still hampered by sectoral interests, a lack of transparency, and resource constraints (indicator subsystem involvement). Evidence of informal network relations between the two subsystems were not identified in the past, even though, since mid-2016, SEMARNAT has placed much more emphasis on facilitative and communicative processes to engage with sectoral stakeholders from the energy sector (interview 30).

With respect to the direction of governance, the trend within the SINACC governance system seems to point towards fragmentation, which means that sector secretariats are implementing their own sectoral programmes, and the coordination function of the CICC has only minor impacts. Generally, interviewees described the situation between the two subsystems as ‘friendly, but distant’, with clearly separated mandates in institutional and political terms, hence not allowing for much interaction (indicator governance) (interview 29). The SINACC system features integrative governance mechanisms (the CICC and SINACC meetings), but falls significantly short of horizontally integrated, cross-sectoral policy development and implementation. In the energy subsystem, the Consultative Council for the Energy Transition serves as an information exchange forum, with very limited decision-making space for climate policy. Networks do exist, as well as learning processes through exchange and communication, but these do not yet result in policy outputs. Spanning the two subsystems, the governance direction is towards fragmentation, rather than integration.

4.4. Summary

The analysis shows that the degree of CPI across the three elements is varied (Table 1). The highest level of CPI occurred during policy framing and negotiations, in particular for the LTE, while it is weaker at the level of policy goals. The policy instruments analysed show a medium level of integration. For subsystem involvement and governance arrangements, a relatively weak level of integration can be identified.

5. Conclusion

This article analysed policy integration between energy and climate policy subsystems in political discourse and negotiation processes, as well as in terms of implementation through public administration and governance arrangements. The Mexican case study shows that policy integration between climate mitigation and energy is key to enabling countries to raise the ambition of their climate policies and related energy and climate outcomes, namely, to achieve increasingly higher deployment of clean energy, and avoid emitting higher amounts of CO₂. We find that policy integration indeed took place at the level of policy discourse and negotiation, but that integration at the stages of policy goals and instrument formulation only partly took place. On the level

of implementation via public administration, CPI is lacking, leading to an institutional fragmentation of climate mitigation and energy policies. This has the consequence that integrated climate-energy policy objectives are not furthered by the public administration, with the implication that important functions of climate policy are not implemented in an integrated way with the energy sector. This relates among other things to the absence of GHG emission parameters in the planning instruments of the energy sector or the lack of cross-boundary legal mandates for designing integrated climate-energy sector programmes. This has negative effects on cross-sector collaboration, ultimately leaving political institutions incapable of implementing truly integrated policies, as well as raising mitigation ambition by going beyond mere cross-referencing between existing energy and climate goals, as is currently the case. In order to refine existing CPI approaches, we propose to include the following elements into future conceptual and practical considerations.

5.1. Policy discourse and negotiation

During the early stages of policy discourse and negotiations, the question of how these processes can be used to work towards more integrated policy decisions is crucial. How actors influence this phase is therefore an important question. Advocacy groups were identified to be of key importance to the process. They can influence discourse and negotiation processes by providing timely and precise information to the right actors at the right moment in time (Crewe & Young, 2002). Identifying the drivers that change the policy process is essential for being able to strategically influence the political will of the government (Maetz & Balie, 2008), as well as for the identification of champions in the political process. To this end, advocacy groups should increase political actors' awareness of the need to reflect integrated policy making in budgets, institutional mandates, and policy feedback loops via monitoring and evaluation. Prior to deciding which institution will be mandated with oversight and implementation, institutional fit needs to be carefully checked: while ministries of environment are often mandated with standard development and monitoring, they are rarely capable of influencing sectoral policies. To also achieve this, it may be advisable to provide coordinating entities, such as the presidency and the governing bodies mentioned below, with the relevant mandates and resources.

5.2. Policy goals and instruments

In order to achieve major impacts in the sectors where a deviation from business-as-usual and transformational change is needed, a cross-sectoral plan, such as the PECC, might not be sufficient. Instead, it could be transformed into an instrument that aggregates and flexibly integrates developments in the sectors, assisting and informing sectoral policy actors on the management of mitigation actions, and helping with monitoring and reporting. If legal instruments are created, it is important that these are specific to the intended purpose and have clear institutional responsibilities and instruments for implementation. While the LGCC was important in reflecting political will to address climate change, specific sectoral instruments, mandates and responsibilities as well as strong monitoring and evaluation are still needed to safeguard implementation towards mitigation goals. GHG emissions will need to be integrated as planning parameters and indicators into the policy instruments of the energy sector.

5.3. Subsystem involvement and governance arrangements

The governing bodies of climate change (CICC) and those of the energy sector (Consultative Forum for the Energy Transition) need to be more synchronized with each other in terms of clarified procedures for decision making and agenda setting. Budgets, capacities and mandates for effective policy making processes leading to tangible outputs need to be prepared and provided. Such a governance system will need to have a central steering element: the CICC may need to be upgraded to make policy interventions in sectors that underperform in terms of emission reductions, based on sound monitoring and evaluation as well as consultative processes with the respective sectors. Beyond that, the sector departments should retain authority over policy implementation processes.

The Mexican case has shown that effective climate policy integration with the energy sector is a key component for the NDC planning and implementation process, which requires an integrated type of political decision making on the one hand, as well as proper synchronization with the public administration institutions for climate and energy policy on the other. This article has shown that the key element for countries wishing to review their climate and energy policy frameworks is to link on the one hand the political decision-making level, and on the other, the level of implementation through public administration. With regard to the political system, integrated decisions could be fostered by influencing discourse and negotiations through informed arguments and apt political strategies. With respect to the level of public administration, legal mandates, responsibilities and budgets can be tailored towards more integrated climate – energy policy implementation.

Note

1. A special commission is, in the Mexican legislative system, a non-permanent body with a lifetime defined by the achievement of the special objective.

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