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ORIGINAL ARTICLE

Integrated climate governance in regions? Assessing Catalonia's performance using the 'climate learning ladder'

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Abstract While developing climate change policies, regional governments and agents may have different purposes, follow different strategies, and use different appraisal procedures than those of national governments or other regions within the same countries. Climate change adds an additional source of *problematisation* to the functioning of traditional nation-states structures, not only at the international level but also with regard to their relations with sub-national agencies. This paper tests this hypothesis by analysing the emergence of climate strategies and capacities in region of Catalonia, north-east Spain, through the use of a novel integrated assessment tool called the 'climate learning ladder' that looks at four main dimensions: (1) how perceptions on climate change have evolved in this region since the beginning of the 1990s, (2) what type of incentives or systems of sanctions have triggered climate action, (3) what specific options are available or have been developed, and (4) what new institutional arrangements have been put in place during this time. Results indicate that although in Catalonia distinctive climate appraising processes have been tried, new measures have been implemented and new institutions have been created, not much of a distinctive progress regarding *Integrated Climate Governance* (ICG) has been achieved. Furthermore, this research shows that so far the main incentives which triggered climate action and innovation have been largely exogenous to the region.

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Introduction

One of the lessons learned from the outcomes of the CoP15 meeting in Copenhagen in December 2009 is that alternative ways of dealing with climate change are urgently needed, if human societies are to transform their patterns of development in time to avoid a global catastrophe. On the one hand, prevailing modes of interaction between climate scientists, policy makers, and the public show many limitations when it comes to supporting decisions that can yield fast, significant, and transitional changes to mitigate and adapt to climate change. On the other, many bottom-up local and regional actors encounter numerous difficulties in articulating their strategies in a way which is coherent and synergetic with global strategies, as well as between different domains, various governance levels, and between mitigation and adaptation.

With this concern in mind, the concept of *Integrated Climate Governance* (ICG, Tàbara 2009) was developed within the EU ADAM project (www.adamproject.eu). This concept is simply a heuristic device to help examine and reframe many practices that occur at the interface between the development of tools and methods for climate risk assessment, the design and implementation of policy measures, and the communication and engagement of relevant stakeholders. ICG is not a predefined goal or an already existing practice, but must be understood as an analytical concept that can help identify what is missing in the transition-oriented processes working at the interface between science, policy, and the public. In particular, much of what is lacking has to do with the development of

transformative capacities that may emerge from an adequate or different type of interactions between these three domains of action—and which cannot arise from them separately. It is also based on the assumption that integration between different governance levels and domains is not only possible but necessary to turn many of the current climate risks into opportunities for sustainable development and the restoration of the global ecosystems.

Local and regional levels provide unique grounds in which ICG strategies can be tested, and then, up-scaled to develop wider ones in conjunction with national or international goals and measures ('laboratories of democracy', Gupta 2007b). However, such a challenge requires concrete tools and methods which can take into account how public perceptions, incentives, as well as realistic options for individual and institutional transformation can be integrated into a coherent framework. Many of the current tools which now address climate risks and policies options tend to adopt a top-down, expert, or quantitative modelling approach, which makes it hard for local and regional communities and policy makers to use them (see Parry et al. 2007; Carter et al. 2007; Christensen et al. 2007). It is often difficult for outside expert communities to understand such tools or even when they do, they do not integrate adequately the existing science. Most of the current climate appraising tools and methods: (1) do not address issues of culture, power, agents' motives and the potential change in institutions and individual behaviours; (2) usually concentrate on the representation of biophysical impacts rather than in the representation of the social and political systems –including institutional arrangements- which need to be transformed; (3) tend to be based on simplistic assumptions about human behaviour values and motives (e.g., in economics using the idea of the 'representative agent' following economic rationality); (4) generally focus on one single problem domain, scale or governance level; and (5) ignore the possibility of social learning (e.g., project present state of affairs into the future), do not consider surprises, and are based on the linear continuity of present social-ecological trends; and in sum (7) reinforce existing interpretative frameworks, core values, and regimes, rather than seeking to reframe and problematise these in order to support individual and institutional reorganisation and change.

Against this background, a new pragmatic procedure or 'tool' called the 'climate learning ladder' was developed (Tàbara et al. 2010). This appraising method was based on Participatory Integrated Assessment (PIA, Salter et al. 2010) and Integrated Sustainability Assessment (ISA, Rotmans et al. 2008), as well as more broadly on the incipient tenets of sustainability science (Jäger 2009; Kasemir et al. 2003). In a nutshell, these new approaches aim to find ways to bridge science, policymaking and communication in a meaningful way to support decisions and concrete actions on complex sustainability issues. Specifically, and within the EU project MATISSE (www.matisse-project.net), ISA was developed as a four-stage procedure of scoping, envisioning, experimenting and learning which combines the three main elements: (1) An integrated multi-scale and multi-domain social-ecological systems analysis, (2) a multi-level and agent-based transition-focused analytical approach, and (3) a cyclical, participatory process-architecture to promote social learning and reframing of the issues at stake among stakeholders through an empowering dialogue, experimentation, and transformative capacity building process. However, and despite these inspiring ideas, one of the lessons learned from the MATISSE project was that there are still no adequate tools to apply such an ambitious approach in many of the fields and contexts in which such transitions are urgently required. In fact, what is needed are 'simple' procedures and tools. In particular, tools and procedures are required that move beyond representation of potential risks and impacts to supporting *agent empowerment*, *learning and transformation*.

In the remainder of this paper, I first introduce the purpose and content of the 'climate learning ladder'. Then this framework is used to structure the analysis of recent policy developments and the building of climate institutions and capacities in Catalonia, an Autonomous Community in the north-east of Spain. The examination of this case serves as a background to reflect on the potential role of regions, and in particular, of regions operating in highly decentralised contexts such as Spain, in becoming more active players in Integrated Climate Governance strategies, and more broadly, in the potential restoration of global ecosystems.

The 'climate learning ladder'

The 'climate learning ladder' was produced as a result of the learning process within the ADAM project (www.adamproject.eu) while reflecting on the requirements for innovative appraising processes and concepts to address climate change at the regional level. The examination of how climate appraisal was carried out in five regions of the World (ADAM 2009; Tàbara et al. 2009) showed that a more integrative, coherent and policy-relevant framework, which could take advantage of the existing multiple regional experiences in climate action, is still lacking. It was recognised that beyond delivering 'more' scientific knowledge on impacts to policy makers, robust strategies aimed at building integrated and transformative capacities to deal with climate change also need to consider many other issues that concern the cultural, social, and political dimensions of the contexts in which such strategies are developed. The following four dimensions were selected to be crucial: (1) How are climate risks and opportunities perceived by the relevant agents and

how can different frames be reconciled and perceptions improved? (2) What incentives—or sanctions- can be developed to trigger action? (3) What types of feasible options and resources for transformation and collaboration are available or can be developed? (4) What new institutional arrangements and feedback learning processes can be put in place to ensure equitable, efficient, and ecologically robust climate actions in the long term? Addressing these four main types of critical questions can be thought of as 'steps' of a hypothetical ladder of climate learning and capacity building in the sense that each step is necessary to develop such capacities in the long term Fig. 1.

The climate learning ladder was devised as a 'simple' appraisal tool: (1) to help policy makers and organisations to identify key decisions about how to build new capacities to deal with adaptation, mitigation or both in an integrated way, (2) to support dialogue and facilitate engagement of stakeholders in developing integrated climate policies, and (3) to contribute to the translation and communication of complexity in a reflective learning mode to different audiences and publics. Although originally the climate learning ladder focused only on adaptation, this procedure can be used also as a rapid appraisal method to support reflection and deliberation on mitigation from an Integrated Climate Governance perspective. Evidently, this framework does not imply that there is any 'fixed' position for any given society in the ladder. Different social and policy activities are taken simultaneously, often recursively and in an interactive way which correspond to distinct 'steps' of the ladder. Hence, such metaphor must be understood only as a simple operational device to communicate a complex array of issues that otherwise would be difficult to communicate.

A questionnaire was developed and used during the ADAM project (Tàbara et al. 2010) and can be used either as a general interview guide to support stakeholder deliberations or simply as an analytical tool to examine the building of capacities to cope with climate change in a bottom-up fashion. This questionnaire was adapted for use in the present study. The questions are grouped into four sets:

- *Perceptions*, *frames and awareness*: These questions explore to what extent climate risks and opportunities are perceived by relevant actors, and how. They also try to identify the different interpretative frames at stake and to what degree these can be reconciled as to decide what measures can be implemented. A discussion on the role of uncertainty, of extreme events, and of the scientific knowledge tools and methods is included.
- *Incentives*, *sanctions and motives:* Incentives and sanctions operating at different governance levels are explored, including specific opportunities or trade-offs to link individual and organisational agency across different domains and scales in an integrated way.
- *Options and resources:* Specific options and measures for individual and organisational transformation and collaboration are analysed, and to what extent these options respond to existing needs. This analysis includes also the examination of the degrees of freedom of agents as well as of their actual resources, including financial, scientific and/or social capital, available to change their practices and engage in transformative activities.
- *Institutions and feedback learning processes.* These questions aim at unveiling to what degree existing

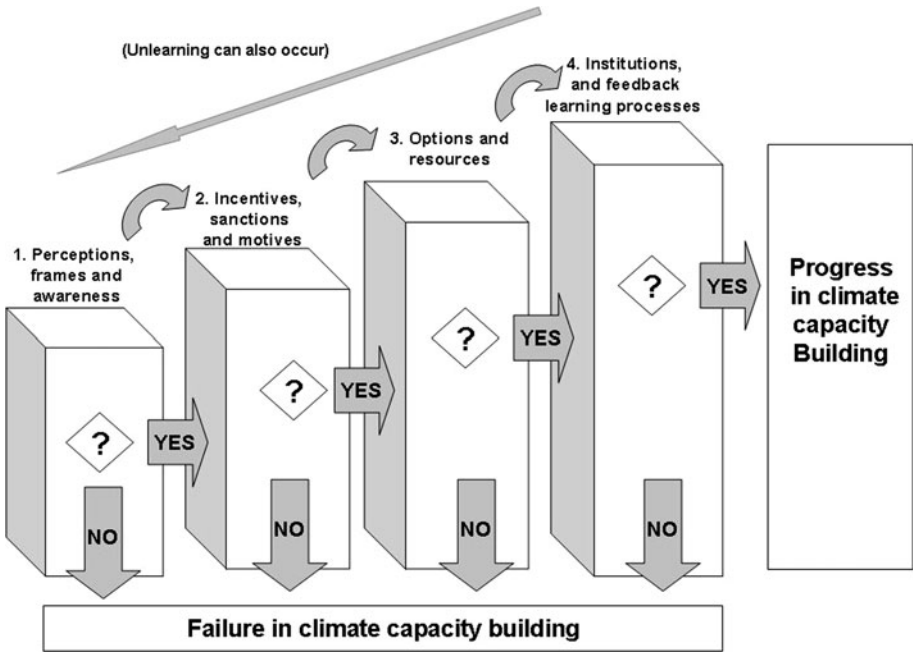

Fig. 1 The climate learning ladder (Tàbara et al. 2010)

institutions redistribute rights and responsibilities regarding climate mitigation and adaptation as to ensure action in the long term or how they can be modified as to mainstream climate concerns into their routine functioning. Specific measures and programmes are explored including systems of collaboration (or compensation) between different levels of governance or across domains.

These questions intend to link the broad concept of Integrated Climate Governance with a very concrete procedure to support reflection and analysis of these issues within particular contexts, as illustrated in this paper for the Autonomous Community of Catalonia. The confluence of multiple levels of governance, the high degree of decentralisation in Spain, and the particular activities carried out by Catalonia within the field of climate can demonstrate the potential, as well as the limitations, for an active engagement in ICG of other regions.

An assessment of climate policy making in Catalonia

Context and methods

This research looks at the policies, strategies, and changes in climate appraisal in Catalonia [population 7.48 million (2009)], an Autonomous Community in the north-east of Spain, with a very high degree of political autonomy. This analysis is framed within the broader context of what climate policies have been carried out within Spain. In particular, Spain is a highly decentralised and still decentralising country, now divided in 17 Autonomous Communities (AC), all of them with their own parliaments and competences on many environmental, planning, and development issues. In Spain, climate change policy has been and to a large extent still is often framed as a cost or as a threat to economic growth (Tàbara 2007) rather than an opportunity for institutional and technological innovation and sustainable development. Thus, the administrative structure of Spain leads to quite uneven levels of climate policy implementation as well as different procedures to attain the climate goals which the different ACs are supposed to achieve.

The origins of the current Catalan climate policy can be found in the creation by the regional government (*Generalitat de Catalunya*) of the Advisory Board for the Sustainable Development of Catalonia (CADS) in December 1998. The CADS reports to the Department of the Presidency and acts with independence and functional autonomy. In 2005, the CADS promoted a large study about the possible extent and effects of climate change in Catalonia. This report was produced by the Institute of Catalan Studies in collaboration with other institutions such as the Meteorological Service of Catalonia plus over 40 experts from a number of other Catalan Universities and now a second report is being produced (Llebot 2005, 2010).

The present work builds upon the results obtained during the preparation of this *Second Report on Climate Change in Catalonia*. In particular, interviews with 21 active regional agents have been consulted and their responses were used to address the different questions contained in the climate ladder. Although most of these agents are active both in research and non-research areas, the majority of the sample correspond to academia (14), but there are others from civic society organisations (4), policymaking (2), and the media (1). All these people except two completed a structured questionnaire with over 80 items on possible impacts, adaptation, and mitigation options, as well as many social and institutional aspects related to the current situation of climate policy in Catalonia and beyond. The information gathered through the questionnaire was obtained between July 2009 and October 2009. In addition, and for the study of perceptions, a large data base containing a total of 3,090 newspaper articles is used as indicator of the regional trends in public awareness in this domain in Catalonia (Tàbara 2010).

In the following sections, I look at the four dimensions or 'steps' of the climate learning ladder to examine the making of climate policies and strategies in Catalonia and provide some of the results obtained from the structured questionnaire. The analysis is also intended to help identify the most critical decisions which would be most needed to deliver long-term capacities to deal with both mitigation and adaptation from an Integrated Climate Governance perspective.

Climate perceptions and frames

A first approximation on how perceptions of climate risks and opportunities have evolved over time in Catalonia can be obtained by looking at the trends in media coverage of climate issues. Previous research has shown that the coverage of media news on climate change can be a good indicator of the perceptions of the general public (Lacey and Longman 1997). In the case of Catalonia, data have been collected from all the news on climate change published by the main four newspapers over the period 1990–2007. A spectacular increase in the communication on climate change by the press can be observed, particularly after 2003: out of a total of 3,090 articles found during this time, 1,581 (40%) correspond to the last 4 years (Fig. 2). Although a more systematic content analysis of this large amount of information is still needed, a first examination of this material (Tàbara 2010) has shown that

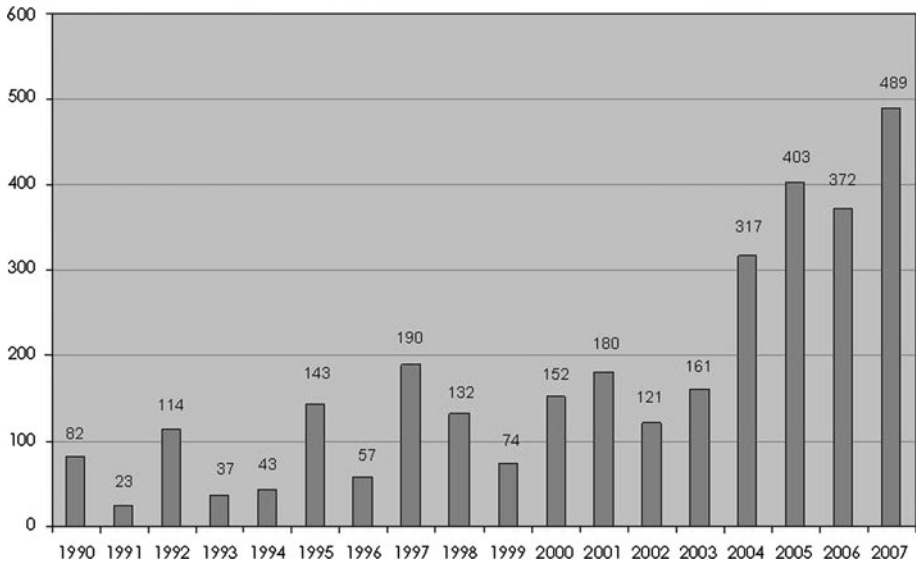

Fig. 2 Total annual number of articles published on climate change between 1990 and 2007 by the four main newspapers in Catalonia (*La Vanguardia*, *El Periódico*, *El País and l'Avui*; Tàbara 2010)

the coverage of climate change in Catalonia: (1) has mostly focused on showing the catastrophic potential of climate change rather than the potential opportunities for development and cooperation, (2) while controversy is still part of the media communication strategy, news now tend to provide more consensus about the existence and the reality of climate change, and in some of the more recent articles, much of the old controversy has disappeared, (3) to some extent controversy has moved more from the science of climate change to the policy, about what measures need to be implemented, (4) particular international 'events' such as key CoP meetings usually trigger the production of climate news, (5) during this period, new interpretative frameworks have also emerged and in particular climate is now not only seen—as it was at the beginning- mainly as a scientific or environmental problem, but increasingly as an economic and social problem. A greater emphasis is therefore now given to economic policies and measures as well as the issue of fairness and global distribution of responsibilities—themes which were almost absent at the beginning of the period, and (6) when it comes to discussing policy actions, most news have covered mitigation and rarely embraced adaptation, although the latter is now receiving greater attention.

Secondly, a poll carried out in Catalonia in late 2006 ($N = 500$; Solà et al. 2008) showed that 78% of the public considered climate change important enough to justify taking action. Latest data on public perception of climate issues in Catalonia show that public awareness has remained high with nearly eight out of ten of the Catalan public stating their concern about climate change in 2009 (DMAH 2010). However, as found at the European level, the economic crisis may have had an impact on present perceptions of climate change: while the crisis has reduced the general sense of urgency—e.g. more emphasis is now placed on unemployment—it may have also increased that dealing with climate change can be a key opportunity to ensure growth and development in the long term (EC 2009).

Finally, if we turn to the more specific views provided by those consulted through the questionnaire (Tàbara 2010), we find that most (12 out of 19) believe that the Catalan society has no intention to change its main economic growth model nor see climate change as an opportunity to reform it. In addition, they believe that the media do not cover climate change in a way which is sufficiently critical, although it is generally quite intelligible for the general public.

In summary, climate concerns are now part of the public perceptions of the Catalan society, although this has not resulted in many specific transformative actions. Moreover, and given the shift in the mass media coverage from the controversies about the science of climate to its policy implications, it may be useful for policy makers to consider focusing their communication efforts precisely on how to reconcile the different frameworks that prevent decisive action and to stress the potential mutual benefits rather than still focusing on the potential costs, impacts and risks.

Incentives, sanctions, and motives

Spain is the country, which increased its greenhouse gas (GHG) emissions most in relation to the Kyoto commitments in the EU, reaching a total of 52.3% increase between 1990 and 2007 despite having agreed to increase them only by 15% by the period 2008–2012 (Table 1; Fig. 3). Realising that Spain would not meet the Kyoto targets, the EU approved a special plan which would allow Spain to augment its GHG emissions by 37% by the year 2012. This new target would be achieved by distributing

Table 1 Emissions of GHG in Catalonia & Spain (source: MMAMRM 2009)

Year	Total emissions Catalonia (Kt CO2 eq)	Total emissions Spain (Kt CO2 eq)	% Catalonia Spain	Catalonia baseline increase	Spain baseline increase
Baseline year (updated)	40.513	290.368	–	–	–
1990	38.363	288.135	13.31	94.69	99.23
1991	38.978	294.650	13.23	96.21	101.47
1992	40.559	302.032	13.42	100.11	104.02
1993	39.244	290.740	13.50	96.87	100.13
1994	42.932	307.043	13.98	105.97	105.74
1995	47.236	319.166	14.80	116.59	109.92
1996	47.133	311.946	15.11	116.34	107.35
1997	48.334	332.714	14.53	119.30	114.58
1998	48.767	343.290	14.21	120.37	118.20
1999	51.605	371.607	13.89	127.38	127.98
2000	53.739	385.768	13.85	132.65	132.85
2001	52.494	386.118	13.60	129.57	132.98
2002	51.562	403.065	12.79	127.27	138.81
2003	54.278	410.258	13.23	133.98	141.29
2004	56.701	426.018	13.31	139.96	146.72
2005	59.224	441.150	13.43	146.19	151.93
2006	57.545	433.070	12.99	142.04	149.15
2007	58.059	442.322	13.13	143.31	152.33

15% which Spain had originally committed, plus an additional 20% that Spain had to purchase through emission permits, and 2% as compensation for growth in forest sinks. Since Spain is so far off track with its international climate commitments and given the pressure exerted by the EU on Spain to reverse this situation, a special state-wide mitigation plan was adopted in July 2007 entailing a series of urgent measures.[1]

The pressures exerted from the EU on Spain led to the need to develop a first mitigation plan in Catalonia, as most of the environment competences are now transferred to the Autonomous government. To achieve this aim, a participatory process called the Catalan Convention on Climate Change (CCCC) was set up. The CCCC was conceived as a public participation and deliberation exercise aimed at engaging actors from industry, public agencies, and civic society to support and give public legitimacy to the approval of the first Catalan plan on climate mitigation, which would however only cover the period 2008–2012. Such a participatory process, which started in October 2007 and ended in February 2008, attracted about 800 participants, and nearly 500 organisations from business, science, NGOs, and local authorities (official figures). The plan was finally approved in September 2008 (GC 2008).

The overall objective of the CCCC was to meet the relative share of the 37% of allowed increase in emissions for Spain which corresponded to Catalonia. Specifically, this meant a proportional effort of reducing a total of 5.33 million tons of expected diffuse emissions by 2008–2012, which relate to those emissions not contained in the EU Emission Trading Scheme and focus on industrial and energy installations. Therefore, this first Catalan mitigation plan concentrated on developing specific targets for the remaining sectors, mostly transport (34.9% of the total target), non-EU ETS industries (21.74%), households (8.39%), and others such as waste (6.10%), services (5.89%), and agriculture (5.82%). However, the total target of 5.33 millions tons of non-emitted GHGs—or its distribution in the different sectors—was not the result of the use of integrated modelling work carried at the regional level but simply the translation of policy targets which had been established at the Spanish level which in turn resulted from the overall framing and pressure exercised by the EU. Data to develop this distribution are based mainly on historical trends of growth in emissions in the different sectors and an

[1] The Spanish government developed an important programme of subsidies for renewable energy with the result that in 2008 Spain accounted for 40% of the world demand for solar cells. This was based on a feed-in-law, which started in 2007 that would offer 44 Euro cents per solar kilowatt-hour (Muñoz et al. 2007). Although it was originally envisaged for small producers, the lack of an adequate regulatory framework could not prevent the concentration of the industry. This scheme could not be maintained and had to be reformed and has been criticised for its negative consequences for companies and the employment in this sector (The Economist 2009) although it triggered the implementation of renewable energy programmes that otherwise would have been very difficult to implement.

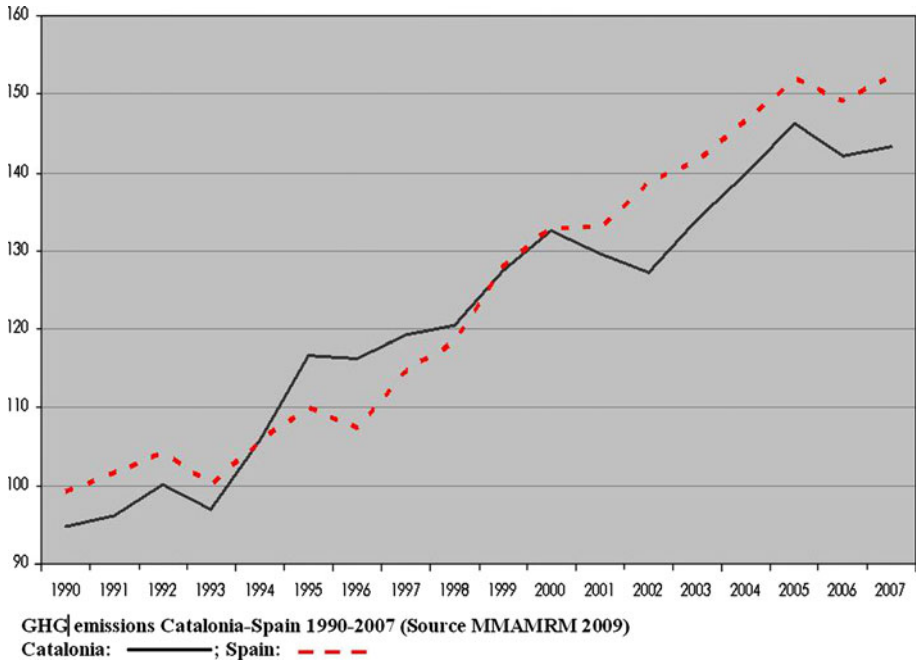

Fig. 3 Evolution of GHG emissions growth Catalonia and Spain 1990–2007 (Source: MMAMRM 2009)

estimation of feasibility for reduction based on the most favourable scenario. With regard to the next period of emission reductions of 2013–2020, the Catalan Government also translated the set targets by the EU level to the regional level. This entails that a second plan of action is envisaged which adapts the EU target of 20% GHG reduction by 2020, and for Catalonia means halting the increase of diffuse emissions by 2012 and committing to a reduction of 4.55% in the following 7 years (2013–2020).

Parallel to that, one of the notable efforts carried out by the Catalan government was oriented towards the development of its own regional GHG inventories for 1990–2007 (Table 1; Fig. 3). Data showed that by 2007 GHG emissions had risen by 43.31% in Catalonia in relation to 1990, and although they are five percentage points below Spain's, they still exceed Kyoto targets by over 28%. The Catalan government also carried out the evaluation of the costs of implementing the mitigation programme, which are currently estimated to be 0.1% of the regional GNP or a total of 196.1 million Euros (27.48 Euros per capita). However, an assessment of the long-term returns that could be derived from the investment in low-carbon and climate technologies and the incentives that should be devised to trigger such investments is still lacking -as in the case of the assessment available for the German Economy (see Jochem et al. 2008).

If we look at the findings obtained from the questionnaire we can see that most of the consulted experts and agents: (1) do not believe that mitigation policies entail more costs than benefits (17 out of 19); (2) reckon that the Catalan society does not generate adequate incentives or sanctions to mitigate (14 out of 19) or adapt (14 out of 19) to climate change; (3) think that the current growth policies being implemented in Catalonia now make both mitigation and adaptation more difficult (16 responses out of 19).

To sum up, the 'sanctions' that Spain had to bear in the form of compensation payments for the excess of emission and lack of compliance with the agreed Kyoto targets seem to have triggered the development of the first mitigation plan at the regional level in Catalonia. Thus, the main drivers for the Catalan mitigation plan were not endogenous to the region but were the result of a top-down strategy set up internationally, and agreed at the national level, with almost no participation of the Autonomous Communities. However, this has not been the case for adaptation where such external pressures are absent. This underlines the existence of several mismatches and 'gaps' in the integration of climate change politics both in time and at different governance levels, a theme which will be discussed in the next section on the potential role of regions in 'Integrated Climate Governance'.

Options and resources

As a result of the Catalan Convention of Climate Change, a total of 974 proposals on possible actions to mitigate climate change were submitted by the participants, either through the workshops or via Internet. At this stage, the public consultation by the Catalan Government only expected people to be active in proposing potential measures, not in participating in the actual decision-making and implementation of the selected measures. The proposals

were then classified with regard to whether they would correspond to the first mitigation plan of 2008–2012 (72% of the total of proposals), or whether would best fit in a post-2012 mitigation plan (14%), to adaptation (3%), or others (11%). These proposals were also classified by sectors yielding the following results: (1) transport and mobility: 30% of the proposals, (2) information and awareness: 18%; (3) energy sector: 13%; (4) households: 13%; (5) waste: 10%; (6) forestry: 6%; (7) farming: 6%; (8) industry: 4%. At the beginning of 2010, the Catalan government claimed to have initiated the implementation of about 88% of these mitigation measures.[2]

On the other hand, and if we examine the opinion of the experts and agents consulted through the questionnaire, we can also see that most believe that Catalonia has many feasible options to mitigate climate change (11 out 19 responses). In particular, the most feasible options have to do with: (1) carrying out climate mitigation assessment of large infrastructures and public works (18 responses out of 19), (2) development of renewable energies oriented to the substitution—not addition—of non-renewable energies (16 out of 19), and (3) reduction of GHGs derived from waste. Other options which also received great support from these experts and agents were to support networks of agents for the transfer of neutral technologies (15 out 19) and renovation in the household sector (14 out of 19). The measure which was considered least feasible was the creation of a regional market for CO_2, while the measures which created a greater polarisation of responses were the creation of CO_2 neutral cities or neighbourhoods, and the implementation of a tax on CO_2 that would cover all sectors.

Regarding adaptation, the experts and agents interviewed believe that Catalonia has many feasible options (11 out 19). Specifically, the most feasible ones are: (1) adapting homes and urban households (18 responses out of 19), developing information and communication systems, including early warning (17 out of 19), (2) implementing decentralised systems of water provision, management, and reutilisation (17 out of 19), and (3) moving urban developments away from the coastline (17 out of 19). Another measure that received good support was the creation of interdisciplinary centres devoted to research, development, and knowledge transfer on climate issues (14 out of 19). In contrast, the measures considered to be less feasible in Catalonia were the reduction of land use requiring irrigation, and changes in the property systems. Finally, in an interview with a policy maker, the Catalan government said they were waiting for clear guidelines about what to do once the EC White Paper on Adaptation had to come into effect, a reactive position that to some extent mirrors the attitude that the Catalan Government initially took on mitigation.

Thus if we only look at mitigation, according to the Catalan public, there is a huge number of options—most likely, a lot more than the Catalan Government is willing to implement. Current practices, such the expansion of the Barcelona harbour and airport, or many others regarding the growth of highways in Catalonia, cast many doubts about the willingness of the Catalan government to actually mainstream climate issues or more broadly sustainability, in the core of its development policies.

Institutions and feedback learning processes

In 2006, two new institutions were created. The Interdepartmental Commission on Climate Change (ICCC) was constituted within the Catalan Ministry ('Department') of Environment and Housing. This commission is intended to decide and promote measures and actions to combat climate change, and given its interdepartmental character, it has a transversal orientation. Among the functions of the ICCC, there are the coordination of the different interventions of the Catalan Government regarding mitigation and adaptation by trying to develop a transversal strategy among the different ministries and agencies and monitoring the implementation of existing policies. The Commission has one representative from each of the main 11 ministries (departments) of the Catalan Government. Second, the ICCC assisted by the Catalan Office on Climate Change (COCC) to which a budget of 1 million Euro was assigned in 2007, the first year in which it became operational.

As it has been shown, the approach chosen by the Catalan government to classify proposals derived from the public during the Convention was a sectoral one and did not include a criteria devoted to institutional reform. In this sense, it is possible to argue that the type of learning from the participatory process of the Convention is only that of single loop learning as the mitigation plan did not really aim at challenging the existing dominant values, institutional organisation or status quo. Some experts and NGOs members criticised that deliberation was used in a quite dramaturgical way (Hajer 2005) in which the setting was carefully orchestrated to do more or less the same, rather than to reflect about doing something truly different, e.g. changing actual institutions, relationships, and practices between agents and between social systems and ecological systems ('*sustainability learning*'; Tàbara and Pahl-Wostl 2007). Nevertheless, once the Convention was finalised and the mitigation plan approved in 2008, a second stage of this process is now underway entailing mostly the engagement of municipal councils as these have the necessary administrative competences to take the necessary actions at the local level. According to the Catalan Agency on Climate Change, at the

[2] Personal communication, head of the Catalan Office on Climate Change.

end of 2008, over 300 municipalities out of a total of 946 already asked the Catalan Government for further assistance to implement specific mitigation measures.

Regarding the results of the questionnaire, most of the experts and agents: (1) do not agree with the statement that Catalonia has the adequate institutions to mitigate or adapt to climate change (12 out 19 responses in both cases); (2) do not agree that the Catalan government is taking an effective policy to contain the emissions of GHGs (13 out of 19) and all do not support the current targets set by the Catalan government on mitigation, which still allow the increase of emissions instead of their reduction (the most supported target by the consulted experts and agents is the reduction of 40% of emissions by 2020).

In sum, and regarding institutional innovation, some degree of administrative reorganisation has been carried out, mainly aimed at providing further transversal coordination between the different agencies and ministries of the Catalan government. However, and while to some extent, some new strategies have been tested and some progress can be observed, the most decisive final or biophysical proof of learning in this domain, which is the actual reduction in GHG emissions, cannot be observed in this region at the moment. In particular, in Catalonia although (1) there is an increasing awareness about climate change risks and potential impacts, (2) new capacities have been stimulated to integrate existing knowledge, and (3) some participatory strategies have been tried to develop a first mitigation plan, one cannot say that these have yet resulted in long-lasting learning capacities to mitigate and adapt to climate change in a way that can transform the dominant ethos and practices of the regime institutions that determine the main patterns of growth in this region.

Methodologically, the use of the climate ladder to analyse the Catalonia case has brought an additional element of reflection on its potential relevance and application. This tool has proved useful not only to identify the type of elements and decisions that need to be considered for climate adaptation and mitigation, but also to identify the agents who need to address such questions. One lesson learned from this analysis is that the results may have been more robust if the fieldwork had included a greater number of policy makers, who, although they were contacted, did not respond the questionnaire.

Discussion and conclusion

Top-down strategies and global arrangements alone appear to be largely insufficient to deal with climate change and need to be complemented with bottom-up appraisal approaches and institutional innovation procedures. Special attention will have to be paid to examining feasible options for transformations in agents' practices and organisations at the regional and local levels, including the micro-scale of households, farms, and companies.[3] However, the bulk of current international climate policy is organised around nation-states' negotiations on mitigation and is not sufficiently coordinated on adaptation. Further processes of regional decentralisation of climate policy goals and measures could enhance the redistribution of responsibilities and the adoption of new commitments by regional governments and local actors. The need for learning feedbacks and knowledge systems capable of dealing with misfits between different scales of social-ecological systems (Berkes 2002; Cash et al. 2006; Cumming et al. 2006; Folke et al. 2007; Gupta 2007a, b, 2008; Young 2002) and between different agents and institutions working on the assessment of risks, design of policy instruments, and communication and public engagement on climate issues is of paramount importance.[4] While it may be true that some degree of adaptation will occur regardless of the success of global climate policies due to autonomous responses to the increasing climate pressures, it is unlikely that the greatest advances in the integration of adaptation with mitigation, at least at the regional level, will be the result of the intensification of biophysical pressures or as a consequence of top-down institutional arrangements.

This research looked at the extent to which the making of regional climate strategies results from different purposes, uses different appraisal procedures those of their national-state governments, and how these strategies can be embedded in a broader framework of action provided by the concept of Integrated Climate Governance (ICG). The examination of the case of Catalonia indicates that although some particular appraisal procedures and institutional arrangements are specific to this region, the incentives that triggered the regional climate action were not distinctive to Catalonia. The same may be true for other regions, given that the factors that seem to trigger action in the climate domain are mostly external or designed outside its political or administrative boundaries—that is, in a top-down fashion where local/regional governments do not have many real possibilities for active engagement.

Climate change adds an additional source of *problematisation* in the functioning of traditional nation-states

[3] This insight is not new and had already been recognised long ago by Tim O'Riordan and Jill Jager when they commented 'It is likely that the bulk of climate change politics will have to devolve to the local level if it is to become effective in the informal institutional dynamics of individuals and households' (O'Riordan and Jäger, 1996:358).

[4] However, much of the literature that looks at these cross-scale institutional linkages, as in the case of the commons, has not specifically addressed the issues of climate mitigation and adaptation (but on the management of particular natural resources) or the interaction between the regional level and those that go beyond the national boundaries.

structures, not only at the international level but also with regard their relations with sub-national agencies. It is likely that the next wave of the required institutional innovation to deal with climate change will have to do with the development of mechanisms capable to link in a more integrated and efficient way the local and regional agents with what happens at the international level. Decentralised and polycentric designs for climate appraisal and policy action have a unique potential for experimenting and learning, and in turn, for providing some of the most adequate responses for mitigating and adapting to climate change. This is in line with the current thinking by a growing network of regional governments that intend to play a greater role in multi-level architecture and international decision-making regarding climate change.

However, it may also prove wrong to believe that bottom-up initiatives at the local and regional level will be sufficient to cope with the type of global challenges ahead like climate change. Many regions and local authorities may well not have adequate incentives, resources, or institutional frameworks to stimulate adequate action and learning in this domain (in contrast to other natural resource policy areas where interests, responsibilities, and boundaries can be more clearly defined). Moreover, some regions may be competing against each other for more economic growth based on business-as-usual premises. In some cases, actions aimed at coping with climate change at the individual or local level can have negative impacts on global mitigation. Responses to climate problems may create new problems elsewhere or may confront many resistances and trade-offs from goals set by other policy domains. A new integrated framework for coordination will have to be implemented to ensure a rapid transition to a low-carbon society in accord with the requirements of sustainable development. The concept of ICG underlines the need for developing procedures which can bring in a structured way the best available science and multiple sources of knowledge to support transitions. In particular, ICG points out that coherence and synergies need to be promoted between different levels of governance, between adaptation and mitigation, as well as between different time frames of action. New ICG institutions could help to link local and regional processes of individual transformation with global processes of coordination, and thus contribute to the empowerment of regional agents and the reconfiguration of their own practices in a way which is both socially and ecologically robust.

The application of the climate ladder to analyse the case of Catalonia indicates that although new climate appraisal processes have been tried, some new measures have been implemented, and new institutions were created, little substantive or differentiated progress on ICG has been achieved -in the sense that ICG is not only about 'assessment' or 'more knowledge production' but above all, about transformation. In particular, some novel deliberative procedures were used, albeit one can say (and following the transition language, Grin et al. 2010) that these have mostly been oriented to reinforce the current regime rather than to modify the core values, policy frameworks, and inappropriate functioning of existing institutions. A greater attention should be paid to what is the focus of agents' participation in such complex issues like climate change and in particular, to whether such engagement focuses on providing end of pipe solutions to existing problems or to developing transformative capacities for agents to understand and whenever necessary to modify the *processes* in which such participation and deliberation takes place.

The pressures exerted from the EU and the participatory process carried out at the Catalan level led to the approval of the first mitigation plan and triggered some degree of policy integration. However, climate change is still largely understood as a sectoral problem, not as an institutional one. Thus, it is not yet seen as an opportunity for a long-term sustained transition, or large-scale investment towards sustainable development and innovation. This can partly be explained by the limitations of the current international structure of the climate architecture, which leaves little room for developing ownership by regional agents in the climate domain, as well as by the fact that in Catalonia critics argue that climate discourses are mainly being used domestically by the present regime to strengthen its political legitimacy and, internationally, as an additional opportunity to claim national identity and autonomy. While the implementation of some climate measures has already begun, this is carried out very much through existing administrative structures without much noticeable impact in reorienting the core policy goals, institutional arrangements and decision-making processes which set the priorities and strategies for economic growth in Catalonia.

In sum, a major challenge remains as to how new procedures can be developed to support a broad institutional reform at the regional level in line with the ideas of ICG. New tools and methods will have to become embedded in the actual development of policy instruments and public engagement strategies. At present, most appraisal procedures are either too complex or are now too focused solely on the representation of impacts—or in a scale which makes little sense to regional and local policy makers. Innovative tools and methods for climate appraisal need to be oriented towards the long-term reform of governance structures in a way which can trigger continuous agent engagement, learning, and transformation in concrete places and organisations. This demands a comprehensive understanding not only of how the climate system works but above all, the consideration of a whole array of 'other'

social and institutional factors, such as those which are underlined by the 'climate learning ladder'.

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