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Implications of governance structures on urban climate action: Evidence from Italy and Spain

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Cities are widely recognised as being pivotal to fight climate change. Cities magnify the drivers of climate change, experience the impacts and also concentrate the highest room for action. Given the 70% of the global emissions that cities are responsible for, national governments are unable to meet their international commitments for addressing mitigation and adaptation without the action and cooperation of cities. In turn, the capacity of local governments to address climate change is largely determined by the institutional architecture within which they are integrated. As a result, the relationship between the different arenas of authority and the integration of cities in national and international networks is considered critical in shaping the global capacity to govern climate change. This work aims to understand how multi-level climate governance and alliances of cities (national and international) are influencing the climate change capacity and performance of municipalities. This has been done by focusing on two national contexts of the European Union, Italy and Spain, in which climate policy, multi-level governance frameworks, the effects of the national and international networks of cities, and the climate response of cities are analysed through an extensive review of scientific and grey literature, and institutional documents. The results concur with existing literature on the importance of constructing collaborative multi-level climate frameworks at the national scale, that fully integrate the local level, in order to support cities to develop consistent climate action and raise awareness of the responsibility they have in this policy field.

Keywords: urban climate action; multi-level governance; networks of cities; mitigation; adaptation; Italy; Spain.

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1. Introduction

The impacts of climate change pose a serious threat to cities around the world because of the majority of people already living in cities (UN, 2011), the continuing urbanization (Seto et al., 2011), trends of urbanisation patterns (Garschagen and Romero-Lankao, 2013) and the concentration of services and infrastructures in urban areas (Reckien et al., 2013). At the same time, in the “century of the city” (Nature News, 2013) urban areas are also economic hot-spots causing a relevant percentage of greenhouse gas (GHG) emissions that induce climate change (Dhakal, 2010). Cities substantially contribute to climate change and are seriously affected by it. As a result an adequate response to climate change has to include sustained urban action (Gustavsson et al., 2006) considering that “neither the weight (of cities) in environmental damage production nor their specific capacities to reduce this damage have been factored into the formal regime” (Sassen, 2013, p. 239).

Climate change action in the form of mitigation and adaptation measures has long been characterized by a top-down character, as nations and regions have played a key role in regulation, agreement, and commitment of medium and long term plans. At the same time it is recognised that cities increasingly engage in fighting climate change (Rosenzweig et al., 2010) and many climate protection actions at urban level emerge without guidance or with little support from higher levels of government (Kern and Bulkeley, 2009). However, in order to pursue mitigation and adaptation effectively and efficiently cities need the support from regional, national and supra national levels (EEA, 2012), working in a multi-level governance framework where the involvement of all of them and the rest of relevant stakeholders is “crucial to avoid policy gaps between local action plans and national policy frameworks (vertical integration) and to encourage cross-scale learning between relevant departments or institutions in local and regional governments (horizontal dimension)” (Corfee-Morlot et al., 2009, p. 3). The role developed by the national and transnational networks of cities has been identified as well as a key factor in mobilizing local governments on the climate issue and fostering more effective urban action (Betsill and Rabe, 2009; Shroeder and Bulkeley, 2009; UN-Habitat, 2011). Together with multiple governmental, private-sector, non-profit and other civil society stakeholders, cities are critical “in developing municipal capacity in countries where national governments have failed to take action” (UN-Habitat, 2011, p. 10).

The governance structures are considered to be key determinants of its adaptation and mitigation capacity as national climate change policy operates on a continuum from the local community to the supra-national level (Larsen et al., 2011) and the global scale. This draws attention to multi-level governance¹ systems and the networks in which cities are integrated. The relationship between the different arenas of authority and the integration of cities in national and international networks are considered critical in shaping the global capacity to govern climate change (UN-Habitat, 2011).

These facts, along with the changing political and institutional contexts at European Union, Member States, sub-national and local levels of governance have led to an increase of interdependency between the different tiers of government, as relevant government responsibilities have been devolved to the regional and municipal levels (Hopkins, 2002). The emergence of new models of transnational collaboration at the local level has contributed to focus the academic and political reflection on climate change governance structures.

¹ In the context of climate policy, we refer to ‘multi-level climate governance’, which requires going beyond the delimitation of government responsibilities to address the interplay issue, through the guiding principle of functional complementarity of the various actors in a constant interactive mode (European Commission, 2001a).

In this work we aim, first, to understand how different climate governance approaches adopted by national governments, regions, provinces and cities, and the membership in national and international climate networks influence climate change capacity and performance at the urban level, and second, to identify those governance factors that result in more proactive and committed urban governments regarding climate action. We focus on two European countries (Italy and Spain) with reasonable similar geographic conditions, institutional architecture, planning tradition, and climate change vulnerability, challenges and risks (ESPON et al., 2011) . This allows presupposing that cities of both countries have to undertake similar efforts in order to implement efficient climate policies. It is therefore interesting to analyse the relation between governance structures and urban climate action in both countries. To do this we performed a tri-partite assessment:

1. an analysis of the governance approaches to climate change adopted at multiple government levels,
2. an analysis of the role of national and international urban climate networks in fostering urban climate action, and
3. an analysis of the breadth and ambition of formally adopted local climate change adaptation and mitigation plans of cities (Olazabal et al., 2014).

The complete work has been developed through two complementary working papers published in the BC3 Working Paper Series:

- i. WP 2014-02 (this paper), which focuses on (1) and (2) above, and
- ii. WP 2014-03 (Olazabal et al., 2014), which focuses on (3), taking also insights on (2).

This paper is structured as follows: Section 2 explains the methodology. Section 3 reviews the state of the art regarding climate governance and the main actions developed by the relevant tiers of government in both countries to foster the urban involvement in the national climate policy. In this part the review focuses particularly on the lines of action launched by the upper tiers of government (including the European Union (EU) policy framework) to enhance and support local climate action and the tools defined for the interaction between the upper levels of government and the municipalities. Section 4 presents the relevance that the national and international networks of cities have had in both countries to foster urban climate involvement. Section 5 presents an analysis of the adhesion in the sample cities to networks compared to climate change plans approval and also summarizes the main and most relevant findings, to the objectives of this paper, of the local plans assessment developed by the authors in Olazabal et al. (2014). Eventually Sect. 6 discusses and compares, while Sect. 7 points out relevant findings, policy recommendations and further research.

2. Method

As already mentioned, the aim of this work is to understand how the climate governance structures in the Italian and Spanish contexts are influencing the climate change capacity and performance of municipalities, and to identify what are key factors related with multi-level governance and networks membership that result in more proactive and committed urban governments regarding climate action. The methodology followed is based on the selection of two countries of the EU, Spain and Italy, as they share relevant similarities in terms of climate vulnerabilities, urban configurations and institutional framework. In fact, Spain and Italy are two countries whose territory is almost completely integrated in the Mediterranean region in the map of the European Environmental Agency (EEA) (this map shows the key observed and projected climate change and impacts for the main

biogeographical regions in Europe²). Both countries entered a path of institutional reform in the recent past that resulted in decentralization and devolution of relevant government responsibilities to the regions, the provinces and the municipalities. Besides, both are integrated in the EU, which entails the commitment of the Member States with the EU climate policy framework (and its international commitments) through the transposition of the European legislation and guidelines to their national legislative and policy contexts. Regarding the EU climate policy both countries share as well a common general approach towards the EU climate policy, as they are part of the group of Member States (Southern European States) that have “long perceived the bulk of the EU environmental legislation as reflecting the priorities of Northern European Member states” (Wurzel and Connelly, 2011, p. 11). From a general perspective it can be said that both countries share as well the historical nature of their local governments, counting on a similar original political and legislative capacity to address environmental matters on the local scale. All these conditions allow presupposing that cities of both countries face similar climate challenges and risks and, therefore, have to develop similar efforts (financial, administrative, political, technical, etc.) in order to implement efficient policies.

The reasonably similar general conditions under which climate change policy is being developed in both countries allows comparing how climate governance structures and approaches are influencing the action of cities in this policy field in Italy and Spain. This comparison has led to the achievement of the objectives established by this research, resulting in a set of conclusions.

To address the analysis we have developed three lines of research (Fig. 1). Each of them addresses one of the secondary objectives of the work:

- 1) Review of the institutional architecture and multi-level governance system that characterizes both countries regarding climate policy. The study has covered as well the climate action developed by the different tiers of government until 2012. This step has been undertaken mainly through the review of the institutional documents, scientific and grey literature. As a result, we have analysed the climate action undertaken in Italy and Spain by the central/national governments, the regions and the provinces, according to their government responsibilities, and the collaborative instruments that have been created to allow inter-level interaction. This work has been complemented with the review of secondary sources (mainly scientific and grey literature) to complement the institutional vision³.
- 2) Review of the role played by the national and international networks of cities. We have identified the most relevant networks of cities that are acting in the field of climate change in Italy and Spain. After this, a desktop and Internet search has been undertaken in order to know which Italian and Spanish cities (from the sample, see Fig. 2) have been involved in such networks and to analyse what their effect has been on cities’ climate urban action.. To understand this effect a review of scientific and institutional literature has been undertaken.

² <http://www.eea.europa.eu/data-and-maps/figures/key-past-and-projected-impacts-and-effects-on-sectors-for-the-main-biogeographic-regions-of-europe-3> (Last accessed January 27,2014): The key impacts identified by the EEA for the Mediterranean area are: i) temperature rise larger than European average, ii) decrease in annual precipitation, iii) decrease in annual river flow, iv) increasing risk of biodiversity loss, v) increasing risk of desertification, vi) increasing water demand for agriculture, vii) decrease in crop yields, viii) increasing risk of forest fire, ix) increase in mortality from heat waves, x) expansion of habitats for southern disease vectors, xi) decrease in hydropower potential, xii) decrease in summer tourism and potential increase in other seasons.

³ The three lines of analysis have been developed mainly through desk research empirical work of identification and analysis of official documents, strategies, legislation, etc. As the official documents express only a dimension of the reality to which they refer (the official representation of reality) the research has counteract this fact including in the review grey literature and scientific literature.

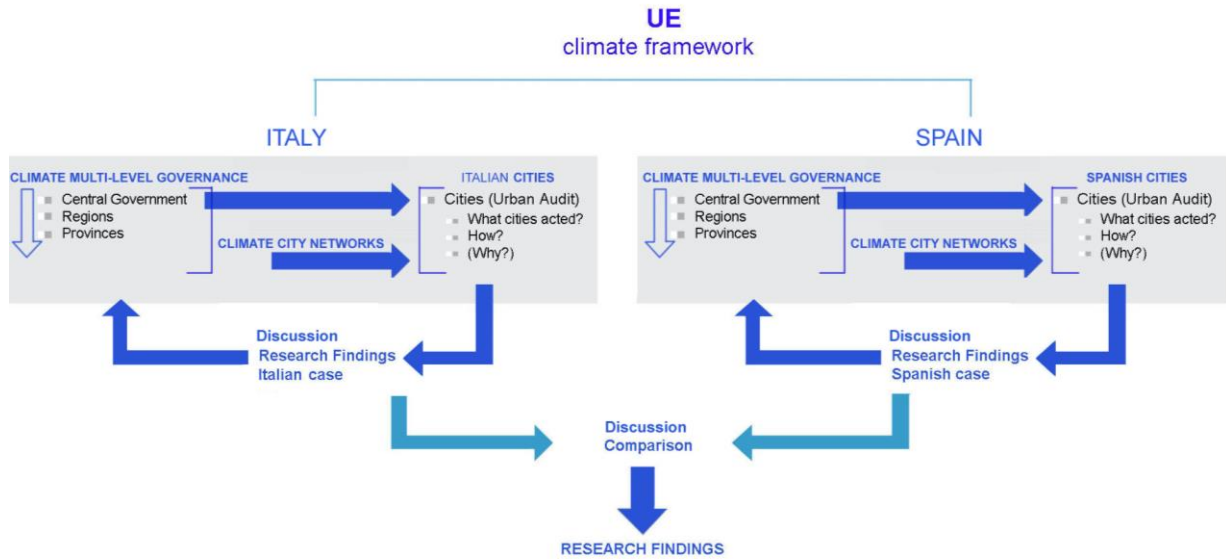


Figure 1: Methodology structure.

- 3) Understanding urban climate action. The analysis has focused on the activity developed by the Italian and Spanish selected cities (Fig. 2). The research resources available in the context of this study led the team to define a sample of cities in both countries reasonably representative (so that the trends detected could be inferred as general dynamics in both countries), and that at the same time would permit to establish the limits of the study. This led to the selection of the 32 Italian cities and 26 Spanish cities included in the Eurostat Urban Audit (UA) database benefitting also by common statistical and analytical criteria. A detailed description of the methodology of selection and analysis is to be found in Olazabal et al. (2014) published under BC3 Working Paper Series.

The triple path followed by the research (Fig. 1) has finally permitted through expert judgment to understand to what extent and how the answer given by cities has been influenced by the governance structures in which they are embedded regarding climate action. The research has led to conclusions about how the approach and the capacity of cities towards climate change have been conditioned, limited or fostered in both countries. The comparison between both countries has led to a number of further results and policy recommendations.

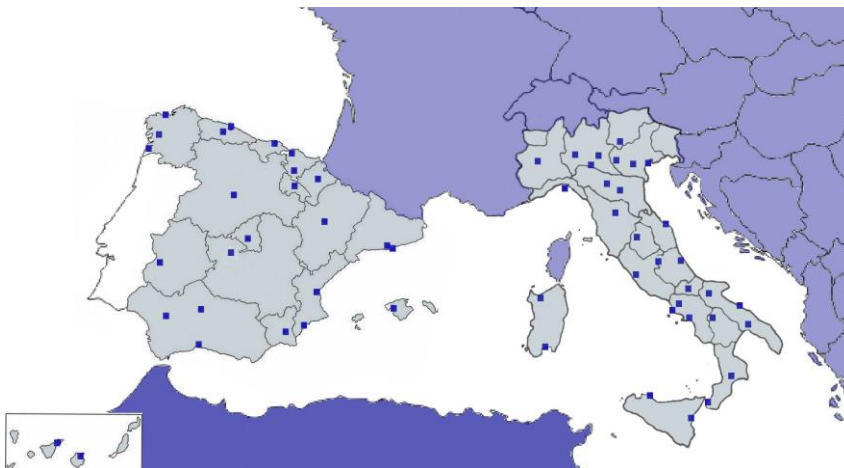


Figure 2: Italian and Spanish cities analysed. Source: self-elaboration.

3. Understanding climate multi-level governance in Italy and Spain

3.1. The EU climate policy framework

The international community started to show an explicit concern about climate change at the beginning of the 90's. This concern was expressed in terms of a reflection in the context of United Nations about the necessity of reaching a worldwide agreement to tackle the problem. The EU commitment to climate change stems from the international concern and the negotiations that eventually resulted in the adoption of the UNFCCC in 1992. In fact, it was in the early 1990s, when the EU and most of its Member States started to develop "serious" climate change action (Oberthür and Dupont, 2011), adopting a position that has been pointed out as that of a major stakeholder and even of a major leader in international climate policy. In order to sustain the international commitment, the EU has kept making efforts to underpin it through the development of a climate change police for its territory.

Domestic climate policy measures were described as weak at EU and Member State level during most of the 1990, while it is recognized that both levels have taken action increasingly since then, particularly since the entry into force of the Kyoto Protocol⁴ (ibid.). From then the EU has implemented an emission trading scheme with mandatory participation of all EU Member States, has developed a comprehensive package of policy measures to reduce greenhouse gas emissions under the European Climate Change Programme (ECCP)⁵, and has made efforts to give place to the EU adaptation policy. The evolution of the action taken has resulted in the reaffirmation of the EU's leadership ambitions, when in March 2007 the European Council announced a unilateral GHG (Greenhouse Gases) emissions reduction programme that set the targets of the EU for the horizon 2020. Through it EU leaders committed Europe to become a highly energy-efficient, low carbon economy. This set of targets was enacted through the climate and energy package in 2009 and consist in the reduction of the overall greenhouse gas emissions from its 27 Member States by 20% compared to 1990 levels. The UE has offered to increase this emissions reduction to 30% if other major economies agree to contribute to global emissions reduction effort (European Commission, 2012a). The 20% reduction commitment is one of the targets for 2020 enshrined in the "climate and energy package" of the EU legislation. Together with a 20% share of EU energy consumption produced from renewable resources and a 20% improvement in the EU's energy efficiency, it forms the so-called "20-20-20" target (European Commission, 2012c). At the same time a new medium-term strategy to make the European economy more climate-friendly and less energy-consuming has been provided by the Europe 2020 strategy for smart, sustainable and inclusive growth. Concretely, the Union has set five ambitious objectives - on employment, innovation, education, social inclusion and climate/energy - to be reached by 2020 (European Commission, 2013a). Nowadays, the EU is driving the transition towards a low carbon economy and strict targets have been set for the EU as a whole and for all the Member States. In particular, in the "Energy roadmap 2050" the EU is committed to reduce greenhouse gas emissions to 80-95% below 1990 levels by 2050⁶.

⁴ It is worth to observe that "neither the Kyoto Protocol (KP) nor the UNFCCC contain specific references to local government or city level actions to meet the Protocol commitments. There are just a few references to local level involvement; for example, Article 10 in the KP recognizes that regional programs may be relevant to improve the quality of local emission factors" (Sassen, 2013, p. 241).

⁵ The first ECCP was launched in June 2000 and was developed until 2004 aiming to implement the Kyoto Protocol in the EU territory (European Commission, 2012b). The Second European Climate Change Programme (ECCP II) has explored further cost-effective options for reducing greenhouse gas emissions as well as adaptation to the effects of climate change in synergy with the EU's Lisbon strategy for increasing economic growth and job creation (European Commission, 2011).

⁶ <http://www.roadmap2050.eu/> (Last accessed March 5, 2013).

It is worth noting in the context of this study that in the mitigation climate change policy developed through the years by the EU, cities have to play a relevant role “cities are key players in the reduction of CO₂ emissions and the fight against climate change” (EC, 2011, p. 5). The European Commission envisages climate action at urban level as a relevant aspect that has to be included and mainstreamed in the concept of integrated urban development and integrated urban regeneration provided by the Toledo Declaration⁷ (ibid.). Through the assumption of this approach the Commission is encouraging Member States to undertake mitigation at the urban scale in a multi-level collaborative scenario and from a holistic perspective. The UE do not have competences on urban matters so, as in any other dimension of the urban policy in the EU, it seeks the voluntary commitment of the Member States, mainly launching Communications by the Commission and guideline documents, promoting benchmarking, and launching policy-driven instruments.

EU efforts have taken place regarding adaptation action as well. With the Green Paper on Climate Change Adaptation (EC, 2007) and later with the White Paper Adapting to Climate Change: Towards a European Framework for Action (EC, 2009) the EU identifies its vulnerability to the impact of climate change and sets out why an adaptation strategy is needed at an EU level. In particular, the White Paper focuses on the impact of climate change on a number of sectors, including human health and well-being, water, agriculture, energy and infrastructures. It is worth noting that only in the Resolution of the European Parliament on the mentioned White Paper (May 2010) urban areas were briefly mentioned (point 79) (Gruppo di Lavoro A21 Italiane, without year). In April 2013 the European Commission adopted an EU Strategy for Adaptation to Climate Change, providing comprehensive guidelines on the process of developing, implementing and reviewing adaptation strategies, identifying barriers to the uptake of suitable strategies at national level (EC, 2013b). The document states that the Commission will continue to promote urban adaptation strategies that will be developed in coordination with other EU policies (e.g.: LIFE funding, the financial instrument of the EU for the environment), following the model of the Covenant of Mayors (hereafter, CoM) (EC, 2013b).

In order to be implemented, the approaches developed and the decisions taken by the EU institutions have to be introduced in the national frameworks of the Member States. This means that they have to develop legislation that transposes EU’s directives and guidelines to fight climate change. Nevertheless, as in many other policy areas, the different Member States vary in their commitment to transpose EU directives and orientations to their climate political agenda, including action at urban level, as they move on the basis of national interest-driven objectives, that not always share the EU position and are influenced by complex factors that shape national agendas. In fact, it is recognized that at the international level, the EU’s leadership have at times been challenged by the multi-actor and multi-level nature of the EU (Oberthür, 2007). This multi-level decision-making arena has been able to exert more influence in the international community than in the Member States (Wurzel and Connelly, 2011). This is because the shared decision-making powers amongst EU and Member States (as well as other actors) in the field of environmental policy in general, and climate change politics, in particular, do not preclude the adoption of progressive common policy measures. The different position of the Member States regarding climate change can be observed in the approach and options they try to introduce in the climate agenda of the EU during the sixth-month period in which they held the Presidency of the UE. From the observation of this fact Wurzel and Connelly mention that there is widespread agreement that Denmark, Germany, Netherlands, Austria, Finland and Sweden have behave as “green” countries, while the Southern and Eastern European Member

⁷ http://www.eukn.org/News/2010/June/Ministers_of_Housing_and_Urban_Development_approve_the_Toledo_Declaration (Last accessed February 27, 2013).

States, where are integrated the Member States object of this analysis, lay in a laggard status that should be qualified (Wurzel and Connelly, 2011).

An overview of the different levels of commitment of the Member States with the EU Climate Change Policy can be achieved when observing the national mitigation and adaptation strategies and plans they have developed so far. The action of the EU Members regarding these policy areas are summarized in Fig. 3. CLIMATE-ADAPT⁸ (the European Climate Adaptation Platform) provide information about the approval of adaptation national policies. According with the data available in the web of this Platform, 15 out of 32 (as of May 2013) member countries of the European Environment Agency have prepared their national climate change adaptation strategies (see Fig. 3). Fourteen of them are integrated in the EU.

As observed in Fig. 3 Italy and Spain have showed a different level of commitment with the EU directives and guidelines regarding adaptation to climate change. As will be explained below, Spain adopted in 2006 its *Plan Nacional de Adaptación al Cambio Climático –PNACC-* (Spanish National Climate Change Adaptation Plan), while Italy is now finishing the preparation of its national adaptation strategy (explained further below).

Regarding mitigation a similar situation exists. While in 2007 it was approved the *Estrategia Española de Cambio Climático y Energía Limpia –EECCEL-* (Spanish Strategy on Climate Change and Clean Energy), an instrument that proposed to institutional and non-institutional stakeholders a number of measures to mitigate climate change in the country, only recently Italy has drafted a new National Plan to reduce Greenhouse Gases (CIPE, 2013) which aims to prepare a pathway towards the decarbonisation economy in compliance with the Europe 2020 policy and the Energy roadmap 2050. The next chapter focuses in the action undertaken by these two countries.

Before addressing the situation in Spain and Italy, it is worth to highlight again that the development of the climate policy of the EU has been constructed on a vision that aims to enhance the

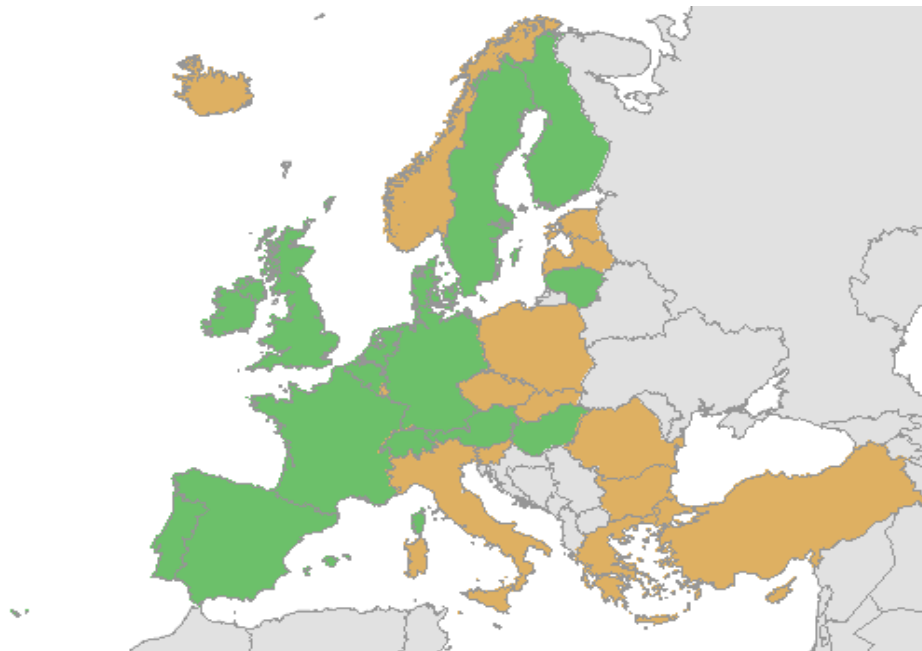


Figure 3: Member countries of the European Environment Agency. Those in green have developed their national adaptation strategies, while those in orange have not. Source: CLIMATE-ADAPT (May 2013).

⁸ <http://climate-adapt.eea.europa.eu/web/guest/countries> (Last accessed February 5, 2013).

collaboration of all the institutional stakeholders to tackle and adapt to climate change (this has been reminded by the European Commissioner for Climate Action, Connie Hedegaard, in April 2013 in the Conference held in the context of the launch of the EU Strategy on Adaptation to climate change. She said: “we have to act, and we have to act together” highlighting that climate change requires actions at all levels of government (EC, 2013c, p. 6). The EU recognition of this necessity is embedded in the relevance that a growing contribution from the scientific side is giving to government cooperation and collaboration in the field of climate change, but it is as well founded on the strategic overarching objective of the Union of promoting the collaboration of all the levels of government in all the policy areas (EC, 2001a). This objective is recurrent in the EC discourse regarding the EU urban dimension and agenda, in which context national governments, regions and cities are asked to collaborate in the preparation and implementation of urban policies from an understanding of the urban areas as spaces of concurrent government responsibilities (Informal Meeting of Ministers of Urban Development, 2010).

Even if the main responsibility to involve the local level in the EU policy remains within national administrations (EC, 2001b), in application of proportional and subsidiary principles the EU has launched initiatives to involve directly cities in the development of climate measures both for mitigation and adaptation. These actions have taken different forms (regional development funding, promotion of networking, enhancing benchmarking among local governments and stakeholders) and seem to be playing a relevant role to enhance climate action at urban scale and to involve cities in this task, particularly in those countries that have been less active developing a comprehensive climate action. Besides, the EU (particularly DG Energy) has supported the creation and widespread of the CoM⁹, a network of cities which role is addressed in Sect. 4 of this manuscript.

3.2. The Italian multi-level climate framework

3.2.1 The role and action of the National Government

Italy has a territorial extension of 301,323 km² and a population of 59,464,644 inhabitants¹⁰. The country is organised in 4 governmental tiers: National Government, regions, provinces and municipalities. The institutional system of the country assigns to the 20 Regions a status that enables them to enact laws that regulate the governmental action of the provinces and municipalities. In this sense the literature considers that Italy has assumed a governmental form similar to a federal systems, where each region develops legislation in those matters not reserved to the federal state (Cassetti, 2004; Lefèvre, 2012). It is defined as well as a unitary regionalized State (Parkinson et al., 2012). The process of devolution has evolved from the beginning of the 70s. Among the competences transferred to the regions we find energy and environmental issues, which results in the regional level playing a pivotal role in the climate national policy, fostered by the fact of their strength in terms of financial resources (Lefèvre, 2012). During the period 1997-2001 took place a reform pursued to the integration of competences between the different tiers of government. The matters on which they were assigned concurrent competences have not been correctly defined, resulting in tensions between the State and the regions on issues like the environmental policy, where the first has the task of defining the legislative framework (OECD, 2013). Tensions on competences exist as well between the regions and the municipalities. According to the subsidiarity principle, the regions must transfer some competences to other local government tiers (provinces and municipalities). It was done reluctantly and partially by most of them (Lefèvre, 2012). To avoid this situation, new legislation has been enacted, but the division of responsibilities is not clearly defined yet (OECD, 2012), resulting in a

⁹ www.eumayors.eu/ (Last accessed October 15, 2013).

¹⁰ <http://www.istat.it/en> (Last accessed September 29, 2013).

factor of complexity and instability (Lefèvre, 2012). Regarding the environmental issue, the devolution to the lower levels of government has had a beneficial effect, as it has fostered the implementation of regional and local initiatives that have contributed notably to the improvement of the environmental performance in many areas of the country (OECD, 2013).

The climate change policy of Italy has been developed in the framework of the mentioned transfer of government responsibility and legislative power to the regional, provincial and municipal governments. It is resulting in the introduction and consolidation of a policy area that, as in many other EU countries, is currently taking form assuming inertias and being influenced from traditional policy styles and outlooks of key policy makers (Marchetti, 1996).

It is recognized that the National Government has developed a delayed action regarding climate change (Marchetti, 1996) if compared with other industrialized countries that has had negative effects in the action developed by the lower levels of government (OECD, 2013). This fact, along with the effect of the devolution process, has resulted in the enlargement of gaps and the lack of consistency in the transposition of some of the EU directives to the country (ibid.).

The first explicit step Italy undertook in order to develop a climate policy at national level came with the approval of the 1994 National Plan for the Containment of CO₂ Emissions by the Interministerial Committee for Economic Planning (CIPE)¹¹. It was approved immediately after the Italian ratification of the United Nations Framework Convention on Climate Change, aiming at the stabilization of CO₂ emissions at the 1990 levels by the year 2000. Three years later, in 1997, the country signed the Kyoto Protocol, committing to reduce its greenhouse gas emissions by 6.5% below the base-year levels (1990) over the first commitment period, 2008-2012. The overall responsibility for the implementation of the Kyoto Protocol and the delivery of the agreed emissions reduction is under the National Government. In such respect the Italian commitment under the Kyoto Protocol was not shared with the regions and as a consequence there are not specific legislative arrangements and enforcement/administrative procedures in place at regional level to meet this national commitment. However, considering that in some other sectors, as the energy production, transport, and distribution, the State and the regions have concurrent legislative powers, a number of policies relevant to greenhouse gas emission reduction have been enacted under the responsibilities of regions (and also of provinces and municipalities). Furthermore, the decentralization of functions and administrative tasks in the energy sector has resulted in the regions playing indirectly an important role to reduce greenhouse gas emissions. As it will be highlighted, they have assumed the objectives of national containment of CO₂ emissions in their own *Piani Energetici Regionali* (Regional Energy Plan –PER). The integration of such objectives is not completed yet.

One year after the adoption of the Kyoto Protocol, the CIPE approved the 1998 National Plan for the reduction of GHG Emissions. The Plan abandoned the sectoral approach of the 1994 Plan, giving place to a concerted effort in which were involved all the Ministries and other administrative authorities relevant for the achievement of GHG reduction.

In 2002 the CIPE approved the Italian National Climate Change Strategy¹² (CIPE deliberation 123/2002), which defined a set of policies and measures mainly aimed at increasing the energy efficiency of the national economic system and fostering the use of renewable energy sources,

¹¹ CIPE (*Comitato Interministeriale per la Programmazione Economica*) is the main body responsible for co-ordination and horizontal integration of economic policies in Italy.

¹² It has to be contextualized in the Framework of the adoption in 2002 of the Environmental Strategy for Sustainable Development (ESSD), a key strategic document that defined the priority areas of the country for the 2000s. These included climate change and ozone layer protection, sustainable management of nature and biodiversity, improvement of the quality of the environment and life in cities and rural areas, and sustainable management of natural resources (OECD, 2013).

increasing carbon dioxide removals, implementing the Clean Development and the Joint Implementation mechanisms established under the Kyoto Protocol, and fostering research and development activities (MATTM, 2009). The same deliberation of 2002 established an inter-Ministerial Technical Committee (CTE), an entity that includes representatives of the Ministries of Economy and Finance, Economic Development, Agriculture, Food and Forestry Policies, Infrastructures, Transport, University and Research, Foreign Affairs and of regions. The main responsibility of the CTE is to monitor the emissions trend and the level of implementation of the policies identified in the national strategy, and to identify potential further measures to meet the Kyoto Protocol target (Hogan et al., 2012). The leader of the CTE is the Ministry for the Environment, Land and Sea. The role of the CTE was enhanced in 2009, when the CIPE decided to redefine it as a director general and to integrate it within the representatives of the Prime Minister office (MATTM, 2009). The transversal nature of the CTE points it out as a relevant instrument to improve interdepartmental collaboration at the National Government level and to mainstream climate change into the relevant national policy fields.

The National Government through the Ministry for the Environment developed the National Plan for the Reduction of greenhouse gas emissions (2003-2012) with the aim of achieving the commitment of the country with the Kyoto Protocol (reducing 6,5% of the GHG emissions). Italy included in this document a wide variety of mitigation actions within the scope of its international climate policy, dealing with renewable energy, energy efficiency (trading schemes, technology measures, building regulations), and measures to reduce emissions in agriculture and industry. Also, it included budget laws and funds to support such measures. In this context, the National Action Plan for Renewable Energy sources (MSE, 2010) was launched under the EU Directive 2009/28/EC. This Plan is a planning document that aims to achieve a 17% share of gross domestic consumption from renewable sources by 2020. Moreover, the Italian Action Plan for Energy Efficiency (MSE, 2011), in compliance with Directive 2006/32/CE, aims at achieving, through energy services and other energy efficiency measures, an overall 9% (126.540 GWh/year) of energy savings by 2016.

As concerns energy end-use efficiency, Italy has anticipated and experienced innovative incentives at European level, anticipating EU requirements (OECD, 2013). This is the case of the white certificates system and tax deduction for energy-saving measures. The former constitutes the most relevant cross-sectoral initiative aimed at promoting energy efficiency and delivering emission reductions in all the energy end-use sectors (Ministry of the Environment, Land and Sea, 2009). On the other hand, it has not decided yet on the quantification and new time horizons of energy-saving targets (ENEA, 2011).

Italy has recently drafted a new National Plan to reduce greenhouse gases (CIPE proposal of 8 March 2013) which aims to prepare a pathway towards a decarbonisation economy in compliance with the Europe 2020 policy and the Energy Roadmap 2050. In this plan, Italy commits to achieve the EU's decarbonisation objectives: a 25% GHG reduction by 2020 respect to 1990 level, 40% by 2030, 60% by 2040, and 80% by 2050. This will be achieved through a set of measures, the introduction of a carbon tax (to boost resources for the Kyoto's Fund), the improvement of energy efficiency, distributed generation, and the development of smart grids for 'smart cities'. Moreover, the plan promotes eco-buildings and the extension till 2020 of the 55% tax credit for sustaining investments for a low-carbon CO₂ economy and, finally, the management of forests, representing both as a sink for CO₂ and a source of biomass and biofuels.

In 2007 took place the Italian National Conference on Climate Change (CNCC), organised by the Ministry for the Environment, Land and Sea (IMELS). It was the first event that brought together experts, politicians and stakeholders for a comparison of scientific-technical, economic and

institutional frameworks on the issue of climate change and its impacts. The results of the conference were included in the two final documents, the "New Deal for the sustainable adaptation and environmental safety" and "The first 13 actions for sustainable adaptation" containing guidelines for the establishment of a national strategy to mitigate and adapt to global warming.

As mentioned above, the EU regulatory framework, and particularly the White Paper *Adapting to climate change: Towards a European framework for action* (EU, 2009), has fostered the development of National Plans for Adaptation in the Member States that had not acted before. Italy belongs to the group of countries that hasn't developed its Adaptation Strategy yet. Despite the lack of a national adaptation plan, some adaptation measures have been already implemented in the context of environment protection, natural hazards prevention, sustainable management of natural resources and health protection. The implementation of these measures is more developed in the fields of human health, coastal protection, agriculture, desertification and water resources protection (Ministry for the Environment, Land and Sea, 2009). The process of development of the National Strategy for Climate Change Adaptation (NAS) was started on February 2012 by the Ministry of Environment (Ministero dell'Ambiente e della Tutela del Territorio e del Mare –MATTM-). The process initiated with a public consultation to stakeholders that consisted in the compilation of a questionnaire designed to better understand the priorities and obstacles and to gather proposals of action. This consultation process finished in October 2012. After this consultation the Italian Ministry for the Environment, Land and Sea, in compliance with the EU White Paper "Adapting to climate change: Towards a European framework for action" (2009), developed a draft of the National Adaptation Strategy to climate change (NAS) where the results of the consultation process were taken into account. Currently an on-line public consultation is available until the end of January 2014, when the survey will be closed. The NAS implementation is expected to be concluded within 2014.

Analysing this overall climate framework, the OECD has recently pointed out that the EU climate policy have had the effect of inspiring the Italian strategies, the policies and the measures to fight climate change in the country (OECD, 2013). The scenario identified through the review of the climate action of the National Government shows that there has not been a specific line of action launched and oriented to enhance climate action by local governments. Within the national policy developed so far cities have not been pointed out, involved and understood as key actors. Mechanisms, tools and bodies to give place to collaboration and dialogue between the different tiers of government have not been created by the National Government, even if the regional and local involvement is crucial to reach the national objectives in the Italian institutional context.

3.2.2 The role and action of the regions

In Italy, regions are the first-level administrative divisions of the state. The form of government and the fundamental principles of the organization are regulated by a statute that serves as a regional constitution, as prescribed by the Constitution of Italy (Article 123).

As has been mentioned, in Italy the decentralization of functions and administrative tasks in the energy sector delegated to regions an important role in driving the reduction of greenhouse gas emissions. As pointed out by ENEA (2011), the decentralization process in the energy policy started with the Italian Law no. 10 of 1991 "Regulations for the implementation of the National Energy Plan in the field of rational energy use, energy saving and developing of renewable energy sources", which assigned to the regions the task of preparing the *Piani d'indirizzo Energetico Regionali* (Regional Energy Plans- PER). After that, Law no. 59 of 1997 transferred to Italian regions and local bodies all the functions and administrative tasks in the energy sector, except for the tasks of "national importance" which remained at state level. Moreover with the Legislative Decree n. 112 of 1998, the

regions engaged in the process of decentralization with strong assumptions of responsibility in the energy sector (ENEA, 2011).

Many regional laws have been promulgated in Italy to govern territorial energy planning and are characterized by detailed measures on renewable energy sources, energy saving of buildings and rational use of energy whereas less emphasis is generally given on the opportunities offered by the transport sector in reducing polluting emission (Gargiulo et al., 2012). The first example was provided by Emilia-Romagna where the Regional Law 3/1999 aimed to regulate the energy issue through defining objectives and guidelines of the regional energy policy within the Regional Energy Plan.

In recent years, more and more emphasis has been given to the sustainability of energy systems, the environmental (and climate) value of energy policies, the close relationship between the way energy resources are used, and the consequent level of greenhouse gas emitted by energy supply and demand. In this respect, regions have translated national and European objectives of CO₂ emissions reduction in the Regional Energy Plan, which have become Regional Energy-Environmental Plans (*Piani Energetico Ambientale Regionali* - PEARs). PEARs are based on a detailed description of the existing energy framework and indicate actions aimed to reduce non-renewable energy sources and CO₂ emissions, diversify energy supply portfolio and rationalize energy consumption (ENEA, 2011).

The key role of importance of PEARs was pointed out also by the “Memorandum of Understanding for the coordination of policies aimed at reducing emissions of greenhouse gases in the atmosphere”, signed on June 5, 2001 in Turin by Regions and Autonomous Provinces (D’Angelo, 2005). With this memorandum of understanding, the so-called “protocol of Turin”, Italian regions and autonomous provinces commit themselves in particular to:

- identifying within the Air Quality Plans the optimal strategies for reducing greenhouse gas emissions;
- developing a Regional Energy Environmental Plan, emphasizing the use of renewable energy sources and technological innovation, and the rationalization of electricity production and energy consumption;
- enhancing the role of policies in support of technological innovation.

In March 2012 the Ministry of Economic Development (*Ministero dello Sviluppo Economico -MSE*) enacted a decree in which the regional objectives in the field of renewable energy sources were defined, together with the methods to manage cases of failure in achieving the targets set by regions and autonomous provinces. This decree, known as "Burden sharing", addresses the national target of 17% of total energy from renewable sources in terms of gross final energy consumption established by the National Action Plan for Renewable Energy 2010 (PAN), which, in turn, adopt the indications of the European Commission 20-20-20 objective. This national target on renewable energies is further divided between Italian regions based on the commencement levels of individual regions and the estimated development potential based on geographic restraints of environmental sustainability and availability of resources. These regional targets to 2020 range between the 8.9% of Emilia-Romagna and 10.3% Veneto, up to 35.5% and 36.5% of the autonomous provinces of Trento and Bolzano, reaching 52,1% in the case of Valle d’Aosta.

To date, all Regions have approved their PEAR, as reported in Table 1, with the goal of determining the most favourable conditions to meet the demand and energy supply, having as objectives the energy efficiency and the use of renewable energy sources available and more affordable (ENEA, 2011).

Table 1: Reference energy and climate planning documents in Italian regions. Source: Self elaboration.

Region	PEAR's approval by the Regional/Provincial Council (year)	Climate Plan (Mitigation and Adaptation)	Year of release
Abruzzo	2009		
Basilicata	2010		
Calabria	2005		
Campania	2009		
Emilia-Romagna	2007	Environmental action plan for a sustainable future of Emilia-Romagna region 2011-2013/ <i>Piano di azione ambientale per un futuro sostenibile dell'Emilia-Romagna region 2011/2013</i>	2010
Friuli-Venezia Giulia	2007		
Lazio	2008		
Liguria	2003		
Lombardia	2008	Guidelines for a regional plan for climate change adaptation / <i>Linee guida per un piano regionale di adattamento al cambiamento climatico</i>	2012
Marche	2005	Climate Plan / <i>Piano per il Clima</i>	2009
Molise	2006		
Piemonte	2004	Energy Programmatic Report / <i>Relazione Programmatica sull'energia</i>	2009
Puglia	2007		
Sardegna	2006		
Sicilia	2009		
Toscana	2008	First evaluations on the challenge of climate change / <i>Prime valutazioni sulla sfida dei cambiamenti climatici</i>	2009
Trentino-Alto Adige	2010 (Trento); 1997 (Bolzano)		
Umbria	2004		
Valle d'Aosta	2003		
Veneto	2005		

Italian regions have concentrated their activity in the field of energy planning, that are having relevant effects in terms of mitigation measures, but they have not developed specific climate plans for their territory. Up to today, as shown in Table 1, the overall situation at national level is quite incomplete regarding this: only Marche developed a regional climate plan (2009), making effective the 6.5% reduction of GHGs proposed by the Regional Energy Plan (2005). Emilia-Romagna developed an environmental action plan for sustainability (2010) and Lombardia has started the process of elaboration of guidelines for a regional plan for climate change adaptation (2012). In the Energy Programmatic Report of Piemonte (2009) a -20% target of CO₂ is intended to be achieved within 2020 (compared to 1990 levels).

A very important role in providing regional plans of interventions aimed at reducing greenhouse gas emissions have been played by the Regional Operational Programmes (ROPs) under the Structural Funds 2007 - 2013. In this framework several interventions and significant financial resources have been promoted on energy, transport and waste with the aim to obtain significant reductions in CO₂ emissions (ENEA, 2011). This tendency is confirmed also for the next programming period by the draft legislative package adopted by the European Commission to frame the cohesion policy for 2014-2020.

Recently, the Italian Local Agenda 21 Association together with the National Association of Italian Municipalities (ANCI) and the Union of Italian Provinces (UPI) developed the “Charter of cities and territories’ commitments to climate protection” that was proposed to become a reference document for the spatial policies the next few years (Coordinamento Agende 21 Locale Italiane, 2009) and that represents the common position of the municipalities, the provinces and the regions on climate local policies. In this document all these government levels declare their intention to adopt integrated policies and actions for adaptation and mitigation of climate change acting in several fields (urban planning, energy planning, urban and metropolitan mobility, sustainable management of public facilities, etc.). The objective is to reduce more than 20% of the greenhouse gas emissions and increase the balance within social, environmental and economic development of the territory by taking commitments on different sectors, such as spatial planning, renewable sources, sustainable mobility, green procurement in public administration, etc. It aims as well to promote the CoM in Italy.

The signatories of the Charter commit themselves to carry out (within one year by the signature) a Climate Plan that provides mitigation and adaptation actions, indicating time implementation and expected effects in terms of reduced CO₂ emissions. The Charter constitutes a framework within which the reflection of regions, provinces and municipalities have taken place in a collaborative form, working together in order to understand what should be the common path to develop effective climate action for the territory. They have developed a joint position in order to ask the national government to act regarding some particular matters. For example the signatories of the Chart ask the National Government to act in order to foster the collaboration of the financial system, the local and territorial institutions in the framework of financial instruments oriented to implement energy requalification measures. Moreover, the regions and the rest of signatories have asked the Government to work at international level in order to include in the new global climate protocol a chapter dedicated to the role of cities and the territory regarding climate change.

The intention to undertake a common path formalized in the Charter constitutes the most explicit way in which regions have recognized the importance of working with the local governments to address climate change in their respective territories. This voluntary non-legislative initiative is helping to formalize a common position of regions and the institutional local actors, creating a demanding arena that is working to counteract the lack of an explicit and integrated national climate action oriented to the regional and local levels.

3.2.3 The role and action of the provinces

The Italian Provinces have few powers¹³. All their government responsibilities depend on the powers that the regions have transferred to the province government level (Lefèvre, 2012). Even, if they are considered “weak institutions” in general (ibid.), it is important to mention that they play a relevant role in the field of climate action, as in the Italian context they are in charge of developing the “Provincial Territorial Coordination Plans (PTCP)” with the aim of coordinating land government, dealing with environment, water and energy resources, waste management, planning and management of transport system and mobility. As mentioned above, UPI is the association representing all the provinces (except the autonomous provinces of Trento, Bolzano and Aosta) and the metropolitan cities. It aims to the valorisation, promotion, technical and political support of provinces developing a collaborative function (in dialogue with the Government and the Parliament) that draws the attention of the upper government tiers on the local scale. As mentioned above, UPI together with the Local Agenda 21 Coordination and ANCI was one of the signatories of the Charter of cities and territories’

¹³ Mainly on the management and planning of provincial roads, building of high schools, and some cultural and health sectors.

commitments to climate protection, which is the reference document for climate policy for the coming years for these stakeholders. The Climate Plan has been set as the fundamental planning document for the coordination of such policies. This Plan is structured in two parts: the first assumes the guidelines and recommendations provided by the CoM, including an emissions' inventory and mitigation actions; the second is responsible for coordinating, planning and implementing adaptation actions that are necessary to govern the negative effects arising at the local level as a result of climate change. Following the recommendation of the EU's Thematic Strategy on the urban environment, UPI, ANCI and Local Agenda 21 proposed a plan for coordination of actions in municipal plans (including topics such as energy, waste, hydrogeological risks, land consumption, traffic, etc.).

In the environmental policies at provincial level there is greater integration than at regional level between climate change, energy and mobility (Gargiulo et al., 2012). For instance, in some provinces of the Emilia-Romagna Region, like Modena and Parma, the above-mentioned Provincial Territorial Coordination Plans (PTCP) integrate new meanings and values in respect to environmental protection and water and soil conservation. Also other provinces of Emilia-Romagna, like Bologna, Ferrara, Forlì Cesena, Ravenna and Rimini have developed Action Plans for Sustainable Energy or Energy-Environmental Plans. Some of them have even developed Climate Plans. In particular, Bologna Province has been promoting, since 2002, two parallel projects called "Micro Kyoto local administrations" and "Micro Kyoto businesses". These projects are contextualized in the Local Agenda 21 of the Province and aim to reach the Kyoto Protocol targets of reducing fuel consumption and GHG emissions through the involvement of local authorities and businesses. The PTCP of Venezia¹⁴ (Provincia di Venezia, 2008) aims at adapting its territory to climate change. Another relevant example is the Province of Bergamo that from 2011 has decided to act as a coordinator for all municipalities that join the CoM. The Torino Province has developed its own Sustainable Energy Action Plan (Provincia di Torino - Area Ambiente, Parchi, Risorse idriche, Tutela della fauna, 2003) and is also leader of the SEAP-Alps project (2012-2015). The Province of Siena was the first one in Italy to achieve the ISO 14001 environmental certification as well as the EMAS registration and is on the path towards sustainability as it has committed to achieve in 2015 the zero emissions target for its entire territory (REGES project). The Province of Genoa, within the project "Province Energy", promoted as part of the Sustainable Energy Europe (SEE) campaign in 2009, subscribed an agreement with the European Commission to be recognized as support structure of the CoM. The Province of Genoa is also partner of "Green and Blue Space Adaptation for Urban Areas and Eco Towns (GRaBS)" Interreg project¹⁵ and is developing a Climate Change Adaptation Action Plan. A final example is provided by the approved draft PTCP of Napoli (Province of Napoli 2007)¹⁶, which dedicated a specific annex of the Technical Implementation Rules to face climate change, identifying mitigation and adaptation specific strategies.

In Italy the provinces are playing a relevant role to support municipalities in energy/climate planning and transferring knowledge about strategies to face the climate changes. This is highlighted by the fact that most of them have voluntarily become supporting structures within the CoM. Some provinces have also their own specific strategy (or guidelines) regarding climate change mitigation and/or adaptation, and play a coordinating role for energy and climate policies at local scale. In any case, the guidelines set out by the provinces in the planning tools at provincial level have to be

¹⁴ http://www.pianificazione.provincia.venezia.it/index.php?option=com_content&view=article&id=96:elaborati-approvati-ptcp&catid=62:ptcp-piano-territoriale-coordinamento-provinciale (Last accessed September 21, 2013).

¹⁵ <http://www.grabs-eu.org/> (Last accessed September 21, 2013).

¹⁶ http://www.provincia.napoli.it/Micro_Siti/Assetto_territorio/Navigazione_Sinistra/Pianificazione_territoriale/PTCP/ (Last accessed September 21, 2013).

implemented in the Municipal Energy Plans, as established by the law 10/1991, thus, the essential and final decision depends on the municipalities' political will.

3.3. The Spanish multi-level climate framework

3.3.1 The role and action of the Central Government

Spain has a territorial extension of 504,645 km² and a population of near 47,200,000 inhabitants (census of 2011¹⁷). The country is governed under a parliamentary monarchy with a high level of decentralization and devolution to the regional governments of the 17 regions (Autonomous Communities) and the municipalities that took place during the end of the 70s and the beginning of the 80s. In less than a quarter of a century the country has evolved from being one of the most centralized states in Europe to being characterized by many of the features of a federal state. There are four levels of government: the Central Government, the autonomous communities, the provinces and the municipalities. The Constitution guarantees the autonomy of the last three levels, but their autonomy is not of the same nature: On the one hand provinces and municipalities are local tiers of government with administrative autonomy, which basically means that they are responsible of the development of secondary legislation and the management of urban public services. On the other hand autonomous communities have real political autonomy, with legislative power on a relevant number of issues guaranteed by the Constitution (Parkinson et al., 2012).

The distribution of responsibilities between the different tiers of government during the decentralization process has resulted in a process still unfinished and characterized by institutional and territorial tension (Farinós, 2008) that makes it difficult to achieve institutional coordination between different levels of government. From a general perspective the institutional governance model of the country has as one of its weakest elements the inter-institutional interface. This fact has been pointed out by the scientific community as one of the main obstacles to evolve towards a more collaborative institutional system (Benabent Fernández de Córdoba, 2006; Romero, 2009; Subirats, 2010; Hildenbrand, 2006). Such collaborative approach should be inherent to the model of State defined by the Constitution of 1978. Indeed the way in which the relationship between tiers of government takes place, characterized by the lack of arenas of consensus and collaborative tools, and therefore by the lack of a collaborative political and institutional culture, is considered a pending issue that the country should address in the short and medium term (Sevilla, 2010), and that result in an unfinished institutional model and the paradox of an State with federal texture, but lacking a federal culture (Romero, 2009).

In this general multi-level fragmented framework climate change policy seems, at first sight, to be an exception. In fact the climate national policy has been based in the period 2004-2011 on a collaborative institutional vision, in which context the collaboration of the different tiers of government has been set as a key goal by the Central Government. The main reason that explains this particular situation is the necessity of the Central Government to count on the implication of regional governments and municipalities in order to achieve its international commitments. As a matter of fact, in a country where powers relating to climate change are shared by Central, regional and local authorities, the involvement of all of them in the achievement of the Central Government's goals and international commitments is a necessary condition. This fact is even more evident as regions have legislative powers on matters such as housing, energy, transport, mobility, urban planning and spatial planning.

¹⁷ <http://www.ine.es/censos2011/censos2011.htm> (Last accessed March 26, 2013).

Spain ratified the Kyoto Protocol in 2002. It meant to commit to limit emissions growth by 15% if compared to 1990 for the period 2008-2012. Since then the Central Government started to develop the country's climate change policy implementing, particularly from 2004 a collaborative vision through the creation of four arenas of dialogue and collaboration in order to assure the involvement of all relevant tiers of government in the fulfilment of the Spanish Climate Change objectives. The different arenas created assumed different tasks regarding the climate change policy of the State. The National Climate Council (CNC) was defined as a forum that integrates the Central Government, the regions, representatives from the provinces and representatives from the municipalities (the last two are represented by the Spanish Federation of Municipalities and Provinces). The CNC integrates as well other relevant stakeholders such as research centres, social and economic actors, unions, consumers and NGOs. The Commission for Climate Change Policy Coordination (CCPCC) is a body of coordination and collaboration between the Central Government and the Autonomous Communities for the application of the system of emission trading and to comply with the international and communitarian obligations of information. The Executive Committee of Government Climate Change (CDGCC) and the Interministerial Group for Climate Change are defined as arenas of coordination and collaboration of the different Ministries and public bodies of the Central Government that have a stake in the climate policy. The presidency and secretary of these four collegiate bodies is the Spanish Office for Climate Change (OECC). The main role of OECC is to coordinate and create synergies between the activities and tasks of these arenas for vertical and horizontal collaboration and for climate action mainstreaming. All the entities mentioned develop a relevant role in supporting the Central Government in climate decision-making.

Along with the establishment of collaborative arenas the Central Government has developed a number of documents and strategies that have contributed to set the basis on which the climate institutional governance approach has been taking form in the country. In 2007 it passed the Spanish Strategy on Climate Change and Clean Energy (EECCEL) as part of the Spanish Sustainable Development Strategy (EEDS). It was based on the reference framework of the Spanish Strategy for the fulfilment of the objectives under the Kyoto Protocol (Gobierno de España, 2007, p. 3). One of its objectives was to provide the reference document for the coordination of the climate change policies of the State, the autonomous communities and the municipalities. In the definition of this instrument were taken into account the measures and programmes that had been adopted by the regional level during the previous years. At that moment, even if some of the Autonomous Communities had been especially active and the State General Administration had undertaken numerous initiatives, the emissions forecasts showed the need to include additional measures to create a scenario for economic, social and environmental sustainable development.

The EECCEL includes a broad range of measures that contribute to sustainable development within the scope of climate change and clean energy. It identifies eleven action lines. The first of them concerns institutional cooperation between the Central Government and the Autonomous Communities (Gobierno de España, 2007, p. 15). The objectives of institutional cooperation of the EECCEL aim explicitly to foster the collaboration of the Central Government with the regional and local levels. The goals that refer explicitly to boost multilevel cooperation are the next:

- To develop and improve (where existing) regional strategies against climate change that include mitigation, adaptation, prospecting, research, development and technological innovation measures. Within this objective the EECCEL established as an aim that before the beginning of 2008 all the regions should have developed their own climate strategies.
- To boost actions related to mitigation and adaptation in local strategies through the Spanish Network of Cities for Climate Protection and the equivalent regional networks. The objective

was to make sure that before the beginning of 2010 80% of the Spanish population would be living in municipalities that had assumed the commitments in matters of climate change and emission reduction recommended by the Spanish Network of Cities for Climate Protection.

The review of the EECCEL reveals that in 2007, when the Ministry Council approved it, the Central Government was trying to reinforce and consolidate the collaborative approach of the climate policy at national scale. Most of the collaborative measures were aimed explicitly to reach regional collaboration, while less effort was made to reach cities engagement. The approach assumed by the EECCEL is common in the framework of the Spanish institutional architecture, where the State only in exceptional cases works directly with cities (as it devolved most of the competences on urban matters to the regions and the municipalities at the end of the 70s and the beginning of the 80s). As in many other policy fields the implementation of national Government guidelines at local level depends on the political will of the regional decision-makers. Nevertheless, it is worth to note that the Central Government has demonstrated during the period 2004-2011 a particular interest to induce local level responses towards sustainability regarding urban policies in general, becoming a relevant stakeholder on urban policies despite its lack of competences in many policy fields (such as urban regeneration, urban mobility, urban planning, etc.) (De Gregorio Hurtado, 2012a, 2012b).

The EECCEL set the framework to give stability and coherence to national, regional and local policies on climate change in the medium-long term (2007-2012-2020) and particularly to the implementation of these planning instruments:

- National Plan for Adaptation to Climate Change (2006).
- National Allocation Plans 2005-2007 and 2008-2012 (2005 and 2008).
- Strategic Lines to Fight Climate Change (2008).
- Climate Plans and Strategies of the Autonomous Communities.
- Plans and sectoral strategies, such as the Strategy for Energy Saving and Efficiency in Spain and its Plans of Action and Activation, Renewable Energy Plans, the Spanish Strategy for Sustainable Mobility, the Electric Vehicle Comprehensive Strategy, the National Comprehensive Waste Plan, the Purines Bio digestion Plan.
- Action Plan 2005-2007 of the Energy Saving and Efficiency Strategy in Spain 2004-2012 (E4), approved in 2005.
- Action Plan 2008-2012 of the Energy Saving and Efficiency Strategy in Spain 2004-2012 (E4+), approved in 2007.

The National Plan for Adaptation to Climate Change (MARM, 2006) requires specific attention, as it was the instrument that set the approach and guidelines on which adaptive action has been developed in the country so far. This instrument responded to the great vulnerability of the Spanish territory to the adverse effects of climate change by providing a reference framework for the coordination of Public Administrations in the activities of impact assessment vulnerability studies and adaptation to climate change. The Plan was submitted to public consultation receiving contributions from several Autonomous Communities and public entities, non-governmental organizations and social interlocutors. It is structured in four axis of action (sectoral impacts evaluation, integration in regulations, stakeholders' mobilization, establishment of indicators system) and two main pillars (administrative coordination and fostering of research, development and innovation activities). In order to give place to administrative coordination regarding adaptation to climate change, in 2007 it was created the Working Group on Impacts and Adaptation within the Commission for Climate Change Policy Coordination. The main aim of this arena is to coordinate and integrate the adaptation action of the Central Administration, the autonomous communities and the local level. Its activity is oriented to guarantee the complementarity between the adaptation plans and programmes and to

promote the transfer of knowledge and methodologies between the Central Administration and the regions. The coordination of the different bodies of the Central Administration regarding the implementation of this plan is a responsibility of the Interministry Group for Climate Change.

Through the development of the mentioned collaborative bodies, plans and initiatives, the Central Government has been able to develop a number of measures that, respecting the competences of the regions, have influenced local action to a relevant extent. These initiatives have mainly consisted in: (i) calls based on national funds in return for performance criteria, through which a number of objectives have to be previously achieved - the engagement of the Autonomous Communities in these policy instruments is not compulsory but their voluntary engagement and commitment is a condition to benefit of the funding; (ii) the promotion of information and knowledge exchange and best practices dissemination, through benchmarking activities and the development of guideline documents addressed to local governments and other relevant local stakeholders (these documents pursue from a holistic vision sustainable urban development, including fight against climate change), and (iii) the creation of the Spanish Network of Cities for Climate Protection. The last can be pointed out as the most explicit line of action launched by the Central government to promote the engagement of Spanish cities in the “active” development of a climate policy.

The creation of the Spanish Network of Cities for Climate Protection was promoted by the Ministry of Environment at the end of 2004 through an agreement of collaboration with the Spanish Federation of Municipalities and Provinces. The Network was constituted in 2005 with the objective of fostering the development of local policies to fight climate change through the adoption of 5 main axis of action: mobility, building, urban planning, energy and waste. As today 261¹⁸ cities are integrated in the network. Most of them signed their membership between 2005 and 2008. The relevance of this network to boost climate action during the last years is discussed below.

Regarding the action of the Central Government that consisted in the provision of guidelines to orientate urban development towards sustainability, the most relevant document from the focus of this analysis is the Spanish Strategy of Urban and Local Sustainability (MARM, 2011). It is highly and coherently connected with other previous documents: the Spanish Strategy of Urban Environment (MARM, 2006); the Green Paper on Urban Environment (MARM, 2007); and the Spanish Strategy on Sustainable Mobility (MARM, 2009). All of them share a consistent vision towards urban sustainability, connected with the mentioned Spanish Strategy on Sustainable Development and the communitarian documents on urban matters (particularly the Spanish Strategy of Urban Environment is a transposition to the Spanish context of the Thematic Strategy on the Urban Environment of the European Commission (European Commission, 2005)).

The Spanish Strategy of Urban and Local Sustainability is the document that addresses more explicitly climate change in the urban environment. Climate change is a topic specifically included among the six thematic areas of action proposed to achieve local development. This document complements the Spanish Strategy of Climate Change and Clean Energy, providing guidelines to be assumed by local governments to fight climate change (MARM, 2011, p. 156). The set of guidelines and measures provided has as an aim the reduction of GHG emissions in the Spanish cities through the action on energy management, urban waste management; and the adaptation of the Spanish cities to climate change (ibid.). The measures related to energy management involve urban and spatial planning, aiming to develop urban and regional models that maximize energy efficiency and integrate energy in the urban planning process (buildings and public spaces). It points out measures to act establishing new models of urban and interurban mobility that save energy, giving place to a

¹⁸ <http://www.redciudadesclima.es/> (Last accessed April 2, 2013).

transformation of users' behaviour oriented to energy saving. Regarding adaptation, this Strategy integrates measures complementary to those set in the National Plan for Adaptation to Climate Change, in order to give place to the transposition of its approach to the local level (MARM, 2011, p. 166).

The development of these guideline documents is not enough to initiate the path towards urban sustainability from a holistic vision in which climate change is integrated, but it is a necessary condition to start undertaking such a change. In fact, before the approval of this set of documents by the Central Government, cities that were not located in pro-active regions regarding this matter, had to find guidelines for climate action in the international contexts, particularly in the EU and the most proactive Member states.

Concerning the line of action that has permitted the Central Government to play an active role promoting the development of mitigation measures by cities through the provision of funding to implement previously defined policies, the most relevant instrument has been the Energy Saving and Efficiency Strategy Spanish Action Plan (E4). It was approved in 2005 and aimed to reduce energy consumption by improving processes efficiency. In 2005 the Action Plan 2005-2007 of the E4 began to be implemented through a joint management model shared with the autonomous communities (agreements were signed between the Central Government, and the 17 autonomous communities and with the 2 autonomous cities of Ceuta and Melilla) and the cities. The Government considered that those agreements served to standardize and coordinate all actions carried out at regional level (Interview to Ángel Cediél, see Acknowledgments). From the analysis and experience obtained through that collaboration and according to Directive 2006/32/EC on end-use energy efficiency and energy services, the Council of Ministers of Spain approved a new 2008-2012 Action Plan in 2007. The role developed by the Autonomous Communities in the framework of this instrument is described below.

3.3.2 *The role and action of the Autonomous Communities*

In Spain the Autonomous Communities are implementing a relevant number of mitigation measures, which were formerly adopted by the Central Government for different sectors¹⁹. The measures are adapted to the particular circumstances of the Autonomous Communities and, in most cases, complemented with others. Almost all the Autonomous Communities have formalized their climate action through the developed of a strategy on climate change and the creation of specific entities within their institutional architecture to deal with energy matters²⁰. Almost all of them have developed Energy Plans as well. As in many other policy areas, relevant differences can be identified in the way the 17 regions have developed their action in this field. The present situation shows that 16 out of the 17 Autonomous Regions have developed their climate change strategy or plan and one of them is in the process of elaboration of this tool (Asturias). It is worth noting that most of them have approved their climate plans during the period 2007-2008 (Fig. 4), the same period in which the Central Government was particularly active in the field of climate policy, and the same period in which a greater number of cities joined the Spanish Network of Cities for Climate Protection. The climate strategies of the Autonomous Communities are usually mitigation plans that include in some cases adaptation measures. The most proactive regions started to act in this policy field during the first mid

¹⁹Transport, commercial sector, housing, institutional sector, agriculture and stockbreeding, and waste.

²⁰ Agencia Andaluza de la Energía –AAE-, Fundación Asturiana de la Energía –AFEN-, Ente Regional de la Energía de Castilla y León –EREN, Institut Català d'Energia –ICAEN-, Fundación de la Energía de la Comunidad de Madrid –FENERCOM-, Agencia Valenciana de la Energía –AVEN-, Agencia Extremeña de la Energía –AGENEX-, Instituto Enerxético de Galicia –INEGA-, Agencia Regional de Gestión de Energía de la Región de Murcia –ARGEM-, Ente Vasco de la Energía –EVE.

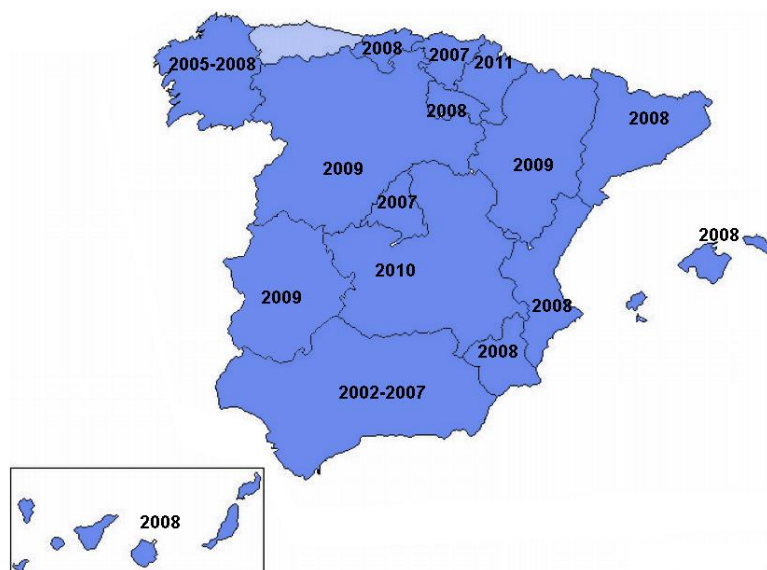


Figure 4: Development of Climate Change Strategies and Plan developed by the Autonomous Communities in Spain. Source: self-elaboration.

of the 2000s (Andalusia in 2002 and Galicia in 2005). They have developed afterwards other plans that have allowed them to update their climate policy and adapt it to the EU directives and international commitments (Andalusia). It is relevant to point out that in the case of Andalusia the policy action started in 2002, the same year in which Spain signed the Kyoto Protocol. The situation described reveals the different level of implication of the regional level with climate action in general, and particularly with the national climate policy. In Spain, similarly to the scenario described regarding the transposition of the EU's climate policy to the Member States, the existence of the Central Government's climate policy do not imply its direct transposition to the regional level. As in many other policy areas the Spanish regions play a role of "gatekeepers" (using the terminology of Tofarides regarding urban policy in the EU and its transposition to the Member States) (Tofarides, 2003), limiting or promoting the implementation of the national, and even communitarian policies, in a real and effective way in their territory.

In general the Autonomous Communities have understood their role within this field of policy as a government task that they have to share necessarily with the Central Government in order to fulfil the national goals. A proof of this is that almost all of them have approved climate change strategies. The influence of the Central Government to the regional level is clear if we consider that the Spanish Strategy on Climate Change and Clean Energy was approved in 2007 and most of the regional strategies have been passed in 2007 and 2008. In their strategies and plans the regions have set objectives of reduction in order to achieve the objectives of the mentioned National Allocation Plans 2005-2007 and 2008-2012 of the Central Government and have used as a general framework the National Strategy. Even the only Autonomous Community that has not approved its climate change strategy has developed a relevant action within this field. In fact it approved in 2008 its Strategy on Sustainable Development (*Estrategia de Desarrollo Sostenible del Principado de Asturias*), that includes a part devoted to establish general lines of climate action, and created in 2007 the Office of Sustainability, Climate Change and Participation to implement actions in the field of climate change and environmental sustainability (Principado de Asturias, 2008).

The creation of arenas for coordination between the Central Government and the regions has been a relevant factor to boost and increasing awareness and implication of most of the regions regarding this matter, even if there are voices from the academic and the environmentalist communities that identifies the national-regional coordination regarding climate change as an aspect

where more integration and political will is still needed (Yábar, 2006; Ecologistas en Acción, 2009). The collaboration between the Central Government and the regions takes place regarding three main areas: the registration for trading of emission allowances (this coordination takes place at national level with the cooperation from the Autonomous Communities), the definition and implementation of regional actions in the different sectors (transport, commercial sector, housing, institutional sector, agriculture and stockbreeding, and waste), and regarding the development of adaptation to climate change.

Concerning the definition and implementation of regional actions in the mentioned sectors and the development of adaptation strategies, the integration of the Central Administration with the autonomous communities takes place to a relevant extent in the framework set by the Spanish Strategy on Climate Change and Clean Energy (2007) and the National Plan for Adaptation to Climate Change (2006) mentioned above. In fact the strategies developed by most of the regions include measures for action in the field of mitigation and adaptation that follow the orientations of these documents. To give place to inter-departmental collaboration many Autonomous Communities have created before 2008 inter-departmental commissions of climate change, where all the relevant areas of the regional government are present along with other relevant stakeholders at regional scale. This has resulted in the mainstreaming of climate change in some relevant regional policies, particularly in energy planning and, in some cases, mobility. Regarding participation of non-institutional stakeholders, the climate plans developed by the Autonomous Communities have counted on a process of participation, which in most cases has consisted in the provision of information and the integration of demands in the final text of the plan.

The approach of the Climate Change Strategies of the different Autonomous Communities is heterogeneous, for example, not all of them include the urban environment as a specific area where climate action has to be holistic and intersectoral, assuming a sectoral policy approach. It is worth noting that only the Autonomous Community of Andalucía approved a general strategy on climate change which provided the framework for the development of specific plans of mitigation and adaptation that were passed in 2007 and 2010 respectively. Regarding adaptation it is relevant to point out that the Andalusian Programme for Adaptation to Climate Change is the first instrument produced by a Spanish region that establishes a future scenario for the region in which the proposed measures of adaptation are based (Gobierno de Andalucía, 2010).

The Autonomous Communities have played a relevant role as well in the implementation of the mentioned Action Plans of the Energy Saving and Efficiency Strategy (E4), launched by the Central Government and implemented by IDAE (Institute for Energy Saving and Diversification), in fact this instrument was conceived as a top-down instrument for collaboration between the General Administration (through the IDAE), the Autonomous Communities and the cities. The provinces have participated as well in the implementation of the Plans. As it has been pointed out, through the implementation of these instruments the Central Government, despite its lack of competences has been able to influence to a great extent the regional and local institutional behaviours regarding energy saving and efficiency in the aforementioned sectors. The Autonomous Communities, as government level between the Central Government and the provinces and the municipalities, had to develop in the context of this instrument an activity of transposition of the Central Administration guidelines to the local level in policy fields in which the last did not have enough previous experience (energy saving and efficiency in the field of urban mobility, buildings, industry, public services, etc.). It was a condition to benefit of the Central Administration's funding. Their role has been particularly relevant because they have working collaboratively with the Central Administration and the local levels (provinces and cities). The result of the implementation of this policy is difficult to evaluate due

Table 2: Summary of the state-of-art of mitigation and adaptation plans and strategies developed by Spanish Autonomous Communities. Source: self-elaboration.

Autonomous Communities	Names of Strategies or Plans	Year of release
Andalucía	Estrategia Andaluza de Cambio Climático	2002
	Plan Andaluz de Acción por el Clima 2007-2012 (PAAC)- Programa de Mitigación	2007
	Programa Andaluz de Adaptación al Cambio Climático	2010
Aragón	Estrategia Aragonesa de Cambio Climático y Energías Limpias	2009
Asturias	Estrategia de Cambio Climático del Principado de Asturias	In progress
Baleares	Plan de Acción para la lucha contra el Cambio Climático en las Islas Baleares	2008
Canarias	Estrategia Canaria de lucha contra el Cambio Climático. Plan de Actuación 2008-2015	2008
Cantabria	Estrategia de Acción frente al Cambio Climático en Cantabria	2008
Castilla-La Mancha	Estrategia Regional de Mitigación y Adaptación frente al Cambio Climático. ERMACO 2010-2012-2020	2010
Castilla y León	Estrategia Regional de Cambio Climático 2009-2012-2020	2009
Cataluña	Plan Marco de Mitigación del Cambio Climático en Cataluña 2008-2012	2008
Extremadura	Estrategia de Cambio Climático para Extremadura 2009-2012	2009
Galicia	Estrategia Gallega frente al Cambio Climático	2005
	Plan Gallego de Acción contra el Cambio Climático	2008
La Rioja	Estrategia Autonómica de Cambio Climático	2008
Comunidad de Madrid	Estrategia de Calidad del Aire y Cambio Climático de la Comunidad de Madrid 2006-2012	2007
Murcia	Estrategia de la Región de Murcia frente al Cambio Climático	2008
Navarra	Estrategia frente al Cambio Climático 2010-2020	2011
País Vasco	Plan Vasco de lucha contra el Cambio Climático	2007
Comunidad Valenciana	Estrategia Valenciana ante el Cambio Climático 2008-2012	2008

to the lack of monitoring and results data available. IDAE highlights as one of the main outputs of these instruments the knowledge and experience developed by the regional level and the support that it has been able to provide to the municipalities that have benefited from the funding (Interview to Ángel Cediél, see acknowledgments). The influence of the Action Plans has been particularly relevant regarding urban mobility, as it has provided funding and technical support to the cities for the development of the Sustainable Urban Mobility Plans (as a result almost all the Spanish cities with a population of more than 50,000 inhabitants have developed this instrument at the moment).

The autonomous communities presented a joint document to the EU in 2012 asking for the creation of a specific programme on Climate Change within the LIFE Initiative. To reinforce this position they acknowledged the good results that the mentioned Initiative had delivered in the territory of the different Spanish regions that have implemented it previously and the interest of continuing this line of work. The increase of the funds that LIFE allocate for climate change issues was considered by the CCAA as a factor that could counteract the effect of the financial crisis and the cuts in the national instruments for the period post 2012.

3.3.3 *The role and action of the provinces*

The *Diputaciones Provinciales* in Spain are territorial institutions that have the aim of managing the administrative and economic interest of the territory of the province. The main role assigned to them by the Constitution is to guarantee the comprehensive and coordinated provision of municipal services in their territory. Among their responsibilities, it is relevant to this analysis the one that concerns the juridical, economic and technical support to the municipalities of their territory, particularly to those with little management and financial capacity.

A study developed by the Network of Cities for Climate Protection shows that the main areas where the provinces are supporting the action of the municipalities regarding climate action in Spain are the next: (i) specific climate change policy; (ii) energy management; (iii) spatial planning; (iv) waste management; (v) urban and metropolitan mobility management; and (vi) training and education. Regarding the first of this fields (climate change specific policy) the study mentions that the provinces are developing actions with the goal of reducing the contribution of cities to climate change (e.g.: Calculation of municipalities' emission in their territorial context; development of tools for the calculation of emissions; development of strategies or plans against climate change; development of Acts regarding climate change; evaluation of climate change vulnerability) (RECC, without year, p. 41). The study points out as another field in which provinces are significantly active the development of networks of cities in their respective territories, with the aim of sharing knowledge and giving place to coordinated policies. In the context of these networks the province government assumes the role of coordinator and gives support to the participating municipalities under the form of juridical and technical assistance.

Even if it is not the rule, some provinces have developed their specific strategy on climate change (e.g.: Province of Seville (Province Strategy to Fight Climate Change), Province of Granada (Province Plan for Climate Protection), while others have opted for the provision of guideline documents to fight climate change. For example, the Province of Barcelona has developed a guidebook (*Guía para la Lucha contra el Cambio Climático*) and promotes the involvement of its municipalities in networks such as the CoM and the subsequent development of the Sustainable Energy Action Plan (the Province of Barcelona has as a goal in the field of climate action to integrate all its municipalities in the CoM).

In Spain the provinces have played a relevant role to spread the implementation of the Agenda21Local among the municipalities of their territory. In the development of this strand of

activity they have promoted the constitution of networks of cities for the development of the Agenda 21L that are at the moment promoting the adoption of climate change policies (e.g. Network of cities and villages for sustainability -*Xarsa de ciutats I pobles cap a la sostenibilitat*- (Province of Barcelona); Network of cities and villages for sustainability -*Red de ciudades y pueblos para la sostenibilitat*- (Province of Zaragoza); Network of the municipalities of the Province of Granada for sustainability -*Red Granadina de Municipios hacia la Sostenibilitat*- (Province of Granada); Natura Network of the Province of Alicante; Agenda 21 -*Alicante Natura Red Provincial. Agenda 21*- (Province of Alicante)).

Another relevant task that is being undertaken by the provinces that results in an indirect action to fight climate change is the creation of entities that operate in the field of energy saving and efficiency²¹. They provide training, dissemination programs and technical support to the government of the province and their municipalities. They develop as well a relevant role helping the municipalities to access the European Community and national programs on energy saving and energy efficiency, encouraging the municipalities to commit with climate networks (particularly with the CoM), and promoting the entrepreneurial activity in the field of renewal energies and the introduction of technology related with energy saving in their territory.

4. The role of the networks of cities

4.1. The networks of cities in Italy

In Italy an important number of cities have signed the CoM. This network since its start, in 2008, has led to the implementation of a large number of plans to mitigate climate change at local level, many of them under the characteristic format of CoM, the Sustainable Energy Action Plan (SEAP).

The signatories of the CoM commit to a number of objectives, among which it is worth mentioning: (i) going beyond the objectives set by the EU for 2020, reducing the CO₂ emissions in the respective territories by at least 20%, through the implementation of a Sustainable Energy Action Plan for those areas of activity relevant to the signatories mandate; (ii) submit the Sustainable Energy Action Plan within the year following the signing up to the CoM (based on a baseline inventory); (iii) adapt city structures to climate change; (iv) mobilise civil society for the preparation of the Plan; and (v) share out experience.

In Italy the SEAPs are playing a relevant role in facing the climate issue and in recent years they have had a remarkable diffusion in the municipalities. This fact shows an important interest of Italian local administrations towards this initiative as they represent the 50,3% of the total signatories. Regarding the supra-local level, in Italy, Provinces and Unions of Municipalities are acting as CoM supporters or coordinators (in July 2013 there were 96 supra-local supporters or coordinators).

Italy is the country with the largest share of cities integrated in the CoM network. This network has been instrumental in Italy and has led to the implementation of a large number of plans to mitigate climate change at local level. Out of 8,092 Italian municipalities, 2,219 (27.4%) are signatories of the CoM (as of May 2013 and according to the CoM website) and around 62% of them

²¹ Agencia provincial de la Energía de Huelva –APEH-, Agencia Provincial de la Energía de Sevilla –PRODETUR-, Agencia Provincial de la Energía de Córdoba, Agencia de Gestión Energética de la Provincia de Jaén –AGENER-, Agencia de la Energía de Cádiz –APEC-, Agencia Provincial de la Energía de Granada –AEG-, Agencia Provincial de la Energía de Ávila –APEA-, Agencia Provincial de la Energía de Burgos –AGENBUR-, Agencia Provincial de la Energía de Toledo –APET-, Agència d’Energia de Barcelona, Agencia de l’Energia de Lleida, Agència d’Energia de Tarragona, Agencia Provincial de la Energía de Alicante –ENERINTUR-, Fundación Axencia Enerxética Provincial da Coruña –FAEPAC-, Agencia Energética de Vitoria-Gasteiz –AEVI-.

have already submitted a Sustainable Energy Action Plan. As illustrated in Figure 5, the Italian CoM signatories have set highly ambitious CO₂ reduction targets (Olazabal et al., 2014).

In Italy there are other networks of cities active in the field of climate change. Among them it is worth mentioning the Coordination of Italian Local Agenda 21 and the Climate Alliance. Both of them are developing an important and widespread work to foster climate action at local level.

The Coordination of Italian Local Agenda 21 is integrated by Italian regions and local authorities and has as main aim to improve environment management and sustainable development. The association, created in 2000, is a non-profit organization and carries out activities in the field of protection and enhancement of nature and environment. Specifically in Italy the association works for the purpose of promoting the process of Local Agenda 21 in urban areas, to achieve sustainable development through the integration of economic, social and environmental factors, according to the guidelines of the Aalborg Charter (European Conference on Sustainable Cities and Towns in Aalborg, 1994), the Resolution of Göteborg (Conferenza sull' Ambiente dei Ministri delle Regioni e dei Leader Politici dell'Unione Europea, 1997) and the Ferrara Charter (Coordinamento A21L Italiane, 1999). The Coordination has published, along with UPI and ANCI, the document 'The Commitments of the Cities and Territories of Italy for the Climate: Good practices of Local Authorities and Regions for Mitigation and Adaptation to Climate Change' (Coordinamento A21L Italiane, 2009). This document is intended as a guideline statute for the association regarding climate policies and is becoming a reference document for the spatial policies in Italy that is intended to put climate planning into practice in the next few years. As mentioned above the plan for climate has been established as the key planning tool for the coordination of such policies.

The other main network that is active in Italy is the Climate Alliance. It is an association of European municipalities and territorial authorities engaged in a partnership with the indigenous people of the rainforests for the common goal of protecting global climate. The Climate Alliance is integrated by 1,600 municipalities and local authorities who are committed to specific objectives. These voluntary commitments can be found on the Manifesto for the Alliance of European Cities with Indigenous Peoples of the Rainforests (Alleanza per il Clima Italia, 1990) and the Declaration for Climate (Alleanza per il Clima Italia, 2000). The members of the network develop comprehensive strategies for climate protection and activate a wide range of measures for their implementation, in particular in the sectors of energy and transport. They contribute to the preservation of rainforests

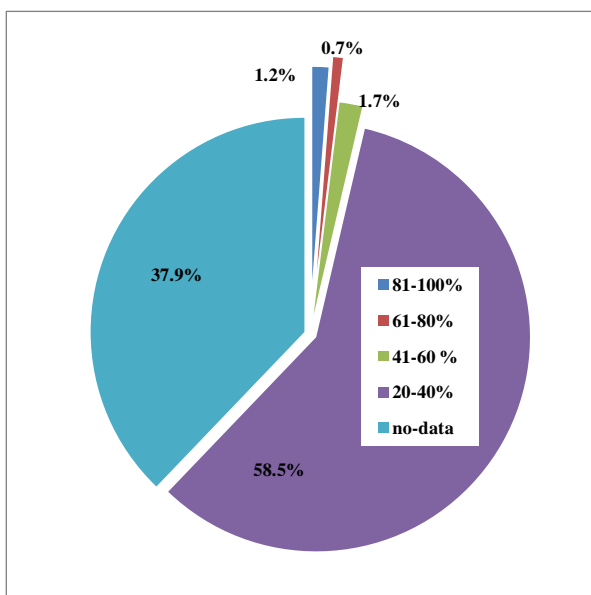


Figure 5: CO₂ reduction targets in the total of 2,219 Italian Municipalities signatories of the Covenant of Mayors (as of May 2013). Data source: www.eumayors.eu

through public awareness campaigns and boycotting tropical timber. This initiative is considered as part of the effort towards sustainable development and equity between the global North and the global South. The main fields of action are: energy, traffic, tropical woods, cooperation with indigenous groups, environmental education, cooperation, biodiversity and development of Agenda 21.

In 2013, 120 Italian municipalities are ordinary members of the Alliance, 19 supra-local authorities are associate members (including provinces, mountain and valley communities and regions) and 27 municipalities are associated. The methodology provided to their partners by the Climate Alliance includes strategic actions in all the fields related to the climate protection. The Alliance supports its members from the first decision-making process until the implementation of the measures; the tools that are at the base of this methodology are: the Ten Steps to implement climate protection, the Catalogue of Measures, and the Set of Indicators to assess the measures' effectiveness. Climate Alliance-Italy is recognized by the EC as a supporter of the CoM.

4.2. The networks of cities in Spain

In Spain, the networks of cities have been pointed out as a relevant factor in the development of urban climate change plans (RECC, without year). There is a national network, RECC (Spanish Network of Cities for Climate Protection) that has the specific objective of promoting climate action in the municipalities. It was promoted at the end of 2004 and constituted in 2005 by the Central Government (Ministry of Environment) on the model of the existing regional network in Andalusia (Network of Andalusian cities to fight Climate Change). The Andalusian network was launched by this Autonomous Community in 2003 in the framework of a relevant and early regional policy action against climate change, and was aimed to promote the involvement of the municipalities in climate action, mainly through the integration in their existing local policies of measures for energy efficiency and the introduction of renewable energies. A major objective was the implication and awareness rising of citizens and the economic sectors responsible of high energy consumption. The national government pursued the same general climate objectives when launched the RECC, fostering the creation of a national stable framework to promote sustainable development policies at municipal level (particularly through action on transport, energy, buildings and urban planning). The formalization of this instrument entailed the creation of an arena in which cities reflect together on climate issues and agree and build a common vision on climate problems and policies. The construction of this vision gives cities the possibility to have their say in the national collaborative forums in which the RECC is present. The presence of the RECC in the national arenas makes the climate local scale more visible for the upper levels of government when strategies and financial issues are decided.

One of the main functions of the network is to provide the necessary tools to the municipalities for the development of actions to fight against climate change through technical support, methodologies, seminars and conferences, an extensive library with reference guideline documents, and intercommunication tools between members aimed to promote benchmarking. The RECC has developed a large number of publications. It is particularly relevant the document on the Local Climate Change Strategy (RECC, 2011), which establishes the measures that a municipality should implement to tackle climate change and advice on how to do it. Another relevant function of the network is the integration of climate issues in the municipal government activity. This takes place since the membership in the network entails the creation of a technical commission on climate change at city level with representation of all the council departments involved in urban planning, transport, environment, citizens participation, etc. The membership entails as well the creation of a forum for discussion on climate change that should involve citizens and local relevant stakeholders. As a result, through the involvement in the network, medium and small municipalities have faced for the first time

the construction of their own climate policy, implemented under an inter-departmental and collaborative vision. Regarding the last, the creation of a participative forum is considered essential to help in terms “of reaching the necessary consensus, thus ensuring the success of the actions whilst at the same time providing a way of making the approved measures known by the general public” (RECC, without year, p. 11). The relevance of the introduction of this approach at local level has to be considered in an institutional framework where council departments still present a relevant inertia to collaborate and to open the decision-making process to non-institutional stakeholders.

The cities that join the network can choose different levels of commitment that entail the development of a number of actions established as minimum criteria for membership. These actions have to be incorporated in an Action Plan, approved by the local council. This document sets a framework for the progressive reduction of greenhouse emissions and starts a process that involves all the institutional and non-institutional relevant agents. The approval by the local council is considered important to give visibility and stability to the Plan. The cities’ commitments for membership are divided into two phases. A first phase that implies lower economic implications, but which has as main aim the production of the Action Plan, and a second phase that involves more financial effort as it is oriented to implement the planned measures. The RECC advises cities to implement some other actions that are not compulsory, such as the establishment of a system of indicators for monitoring and to develop annual reports to assess the level of progress of the measures implemented.

The main tool used by the network to determine the status of the implementation of these commitments in the member cities is the Report on Local Policies to Fight against Climate Change. The last report (three of them have been already developed) was published in 2011 and describes the current situation, building on a methodology based on a survey to the municipalities where they explain what they have done and what is the level of development of the different measures (it is worth noting that only 46.05% of the municipalities answered to it). The report shows that the degree of implementation of the measures has had a positive evolution through 2011 (RECC, 2011). Nevertheless it remains low, since in the field of mobility the municipalities have fulfilled only the 54% of the network requirements, in the field of urban building and urban planning the 23%, and in the field of energy the 29% (ibid.) The Report notes that progress has been made, particularly in the implementation of energy saving and efficiency, urban mobility and awareness rising measures. It also identifies that there has been an average reduction of 5.81% in the GHG emissions from 2005 to 2010 in the municipalities belonging to the network (ibid.).

The effect of RECC has been fostered by the existence of a number of regional agencies (and in some cases also provincial agencies) that, in turn, have given place to regional networks. Many of them have their origin in the promotion of local sustainability through the engagement of the municipalities with the Agenda 21 Local²², an instrument that has been extensively implemented in Spain (OSE, 2009). On the example of the Andalusian climate network mentioned above, these regional networks have coordinated medium and small municipalities through all the process of adhesion to RECC, also offering technical and financial support in the redaction of the climate change plans. In the country the influence of regional and provincial networks in drafting climate change plans is mainly reflected in the smallest municipalities, which often lack financial and technical capacity to develop such plans without external support. Thus, they have operated as an umbrella under which a large number of municipalities have become active in the field of climate change.

In Spain an important number of cities have signed the CoM. Spain is the country with the second largest share of cities integrated in the CoM after Italy: 27,25% of the 3,292 signatory cities in

²² To reach RECC membership, cities have to assume the undertakings adopted at the Aalborg+10 Conference of 2004 (RECC, without year b: 10).

2011 were Spanish (RECC, 2011). In the framework of the municipalities' commitment with the CoM, regional networks have performed functions of Covenant Supporters or Covenant Coordinators, being, in some cases, driving forces of climate change action. This is the case of the Delegation of Environment of the Government of Andalusia and environmental departments in the provinces of Barcelona, Girona and Alicante, among others. In the case of Barcelona exists a network that develops the role of CoM coordinator: *Xarxa de Ciutats I Pobles cap a Sostenibilitat* (Network of Cities and Towns Towards Sustainability)²³.

Until May 2013 there were 857 Sustainable Energy Action Plans developed by Spanish municipalities from a total of 998 Spanish signatories of CoM. They represent 10.5% of the total municipalities in Spain. Only 3.2% of them (Fig. 6) have themselves committed to decrease emissions by more than 40% by 2020. The great majority has committed to decrease CO₂ emissions between 20 and 40%. The latter can be seen as a quite conformable for policy making as there are already many on-going initiatives, e.g. on mobility and energy efficiency, that make it easy to comply with the prerequisite of joining the Covenant of Mayors, i.e. reducing GHG emissions by 20% (Olazabal et al., 2014).

It is worth noting that many of the Spanish municipalities adhered to the CoM are located in Andalucía (540), Alicante (119), Barcelona (194) and Girona (157). The relevant CoM membership in these territories can be explained observing the role developed by the Autonomous Community of Andalusia, and the Provinces of Alicante, Barcelona and Girona. As a result, from a total of 1,316 Spanish municipalities that are members of the CoM, 1,010 belong to the four most active regions and provinces. This evidences the importance of the commitment of these entities to climate change, which can provide advice and technical and financial assistance to smaller municipalities. This evidences as well that the early action developed by the Autonomous Community of Andalusia has resulted in a high number of municipalities from that region joining the CoM and getting involved in the development of their climate plans. The engagement of the cities with the CoM is visible in their

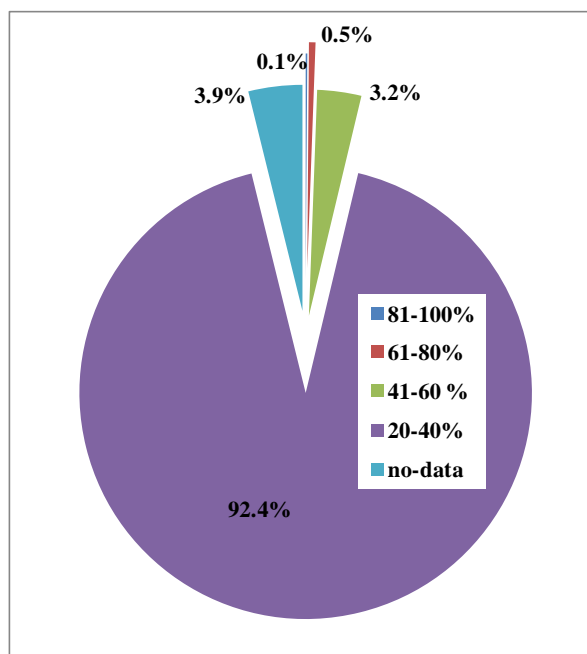


Figure 6: CO₂ reduction targets in Spanish cities signatories of the Covenant of Mayors (as of May 2013). Data source: www.eumayors.eu.

²³ <http://www.diba.cat/xarxasost> (Last accessed April 20,2013).

climate plans, where cities mention their CoM membership as a key factor for the development of the plan (many of the documents include the CoM logo on the cover).

It is worth noting the different benefits that cities have addressed and obtained by the membership to the different networks: while membership to CoM have provided them more visibility and easier access to EU funding, the membership to RECC or other regional-provincial networks has given place to political engagement and have provided them guidance, networking, benchmarking, and advocacy at national level. RECC has been relevant to make cities more visible in the climate national framework. From the observation of this, it can be said that membership to both networks provides cities complementary benefits.

5. Local climate action in Spain and Italy

The review of the climate action of the national, regional and province government levels, and that of the networks of cities undertaken above, reveals that both governance structures have influenced in different ways and degrees local climate action. The research has addressed local climate action by studying the climate plans developed by the most important cities of the two countries, as it has been assumed that it is in these most capable municipalities (financial, technical, etc.) where the implications of the governance structures would be more visible (see method in Sect. 2).

We undertook a thorough review of local climate action²⁴ in a representative sample of Italian and Spanish cities. The sample comprises the most important, large and medium-sized cities of the two countries that are included in the Urban Audit (UA) database²⁵, building on the work by Reckien et al. (2013). The database comprises local climate actions of a representative sample of 200 cities in 11 EU countries. Climate Change Mitigation and Adaptation plans²⁶ (CCM and CCA respectively) of 32 Italian and 26 Spanish cities included in the UA database (see Fig. 2) have been analysed. This section reviews the adhesion of the selected cities to networks of cities and summarizes the conclusion on the assessment of the local initiatives in Spain and Italy regarding mitigation and adaptation developed by the 32 Italian and 26 Spanish Urban Audit cities.

5.1. Adhesion to the networks of cities and development of mitigation plans in the sample cities

The observation of the effects that have had the different networks on the sample of cities is showed in Table 3 and 4, where the relationship between the date of adhesion to the different networks and the approval of the mitigation Plan has been made explicit. The sample of Italian cities and the adhesion and approval of plans is showed in Table 3. We observe that CoM has been crucial in the development of mitigation plans. In the case of Spain, the results show that the adhesion to RECC has not been a relevant factor for the development of the Plan, while the signature of the CoM has been again crucial.

²⁴ As of January 2013.

²⁵ The UA database is built by the European Commission, Eurostat and the national statistical offices. UA cities comply with the following criteria: 1) approximately 20% of the national population ought to be covered; 2) national capitals and, where possible, regional capitals are to be included; 3) large (more than 250,000 people) and medium-sized urban areas (minimum 50,000 and maximum 250,000 inhabitants) are to be included; and 4) urban areas should be geographically dispersed within countries. UA cities are assumed to be a balanced and regionally representative sample of cities across Europe. The entire UA database comprises 357 cities across 30 pan-European countries: 329 variables (on matters such as demography, society, the economy, the environment, transport, the information society and leisure) are collected. The database is updated every three years. URL: <http://www.urbanaudit.org/> (Last accessed: November 20, 2013).

²⁶ Adaptation plans incorporate actions that lead to the abatement or reduction of vulnerability to climate change; mitigation plans encompass actions that entail a reduction of greenhouse gas emissions (Reckien et al., 2013).

Table 3: Relationship between the date of adhesion to the CoM, the date of adhesion to Climate Alliance (CA) and the approval of the mitigation plan in Italian municipalities. Source: self-elaboration.

	(...)	...	2005	2006	2007	2008	2009	2010	2011	2012	2013
Ancona						CoM			PLAN		
Bari									CoM	PLAN	
Bologna	PLAN (2002)					CoM					
Brescia					PLAN						
Cagliari										CoM	
Campobasso								CoM			
Caserta											CoM
Catania											
Catanzaro											
Cremona								CoM			
Firenze			CA		PLAN			CoM			
Foggia									PLAN		
Genova							CoM	PLAN			
L'Aquila									CoM	PLAN	
Milano						CoM	PLAN				
Modena	CA (2002)							CoM	PLAN		
Napoli							CoM			PLAN	
Padova								CoM	PLAN		
Palermo	PLAN (2000)										
Perugia			PLAN				CA				
Pescara									CoM	PLAN	
Potenza	PLAN (1997)								CoM		
Reggio di Calabria											
Roma							CoM		PLAN		
Salerno								CoM		PLAN	
Sassari									CoM	PLAN	
Taranto											
Torino							CoM		PLAN		
Trento	CA (1995)				PLAN						
Trieste										CoM	PLAN
Venezia	CA (2003)								CoM	PLAN	
Verona						CoM					

Table 4: Relationship between the date of adhesion to the Red Española de Ciudades por el Clima (RECC), the date of adhesion to the CoM and the approval of the mitigation plan in Spanish municipalities. Source: self-elaboration.

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Alicante/Alacant					RECC				
Badajoz									CoM
Barcelona	RECC			CoM			PLAN		
Bilbao						CoM		PLAN	
Córdoba			RECC		CoM	PLAN			
Coruña, A	RECC							CoM	
Gijón	RECC						CoM		
Las Palmas	RECC								
L'Hospitalet de Llobregat		RECC		CoM		PLAN			
Logroño				RECC				CoM	
Madrid	RECC			CoM					
				PLAN					
Málaga	RECC			CoM		PLAN			
Murcia	RECC			CoM					
				PLAN					
Oviedo	RECC								
Palma de Mallorca	RECC								
Pamplona/Iruña				RECC	CoM		PLAN		
Santa Cruz de Tenerife			RECC						
Santander	RECC			CoM		PLAN			
Santiago de Compostela									CoM
Sevilla	RECC				CoM	PLAN			
Toledo					RECC				
Valencia				RECC	CoM	PLAN			
Valladolid	RECC						CoM	PLAN	
Vigo			RECC						
Vitoria/Gasteiz	RECC			CoM		PLAN			
Zaragoza	RECC					PLAN	CoM		

These facts highlight the importance of the CoM to encourage municipalities to develop action plans on climate change. The reasons of this importance can be due to several factors. A relevant factor is the support that CoM provides cities to access to European funding and to find partners to apply to the collaborative programmes funded by the EU in the field of energy and climate change (that require the involvement of cities from different countries). Another relevant factor is the international visibility that CoM's membership provides to cities. It is worth noting that CoM has become a relevant actor at European level, a fact that influences cities decision for membership.

5.2. Local climate action assessment and comparison

Our analysis of urban climate action in the sample cities (see Olazabal et al., 2014) revealed substantial differences in the two countries with Italian cities being more active on average.

In Italy, there are slightly more CoM cities with high CO₂e emissions reduction targets and substantially more approved and published local mitigation and mitigation-relevant plans (proportionately and in total). In general, local mitigation efforts in Italy started much earlier than in Spain (1997 in Italy versus 2005 in Spain), and more cities in Italy (22%) than in Spain (15%) have local CO₂e emissions reduction targets above 20%. There are very few climate change adaptation plans, although large parts of both countries are highly vulnerable (ESPON et al., 2011).

All in all, 75% of the Italian cities and almost 77% of the Spanish cities analysed have approved the climate change mitigation (CCM) or climate change mitigation-related (CCMR) plans or at least there is an official commitment to develop it. Only 11 Italian cities and 7 Spanish cities have climate change adaptation (CCA) or climate change adaptation-related (CCAR) plans (see Olazabal et al., 2014 for further details on the local assessment). We found that Italian and Spanish cities largely address the local energy system and transportation in mitigation plans, and although health and water management is addressed in adaptation plans, they are not as generally covered as the first two.

We found a limited sample of adaptation plans in both countries and we argue (Olazabal et al., 2014) that this may have to do with the limited level of understanding, know-how and technical knowledge on adaptation to climate change which cities may have available for their specific social, economic, and physical contexts (e.g. the particular conditions and behaviour of their local climate), and the difficulty of translating best adaptation practices from one city to another without important investments. A relevant reason in the base of this has to do as well with climate action developed by national and regional governments in both countries that has focused their efforts on mitigation, paying less attention to adaptation. Cities in Italy and Spain are evidently not willing to invest in adaptation (yet) and the scarcity of EU, national and regional initiatives for local adaptation and its absence in the policy agenda is, we believe, a determining factor.

6. Discussion and Comparison

In Italy the climate action of the National Government has been limited by the institutional framework, the competence distribution, and specific inertias of the Italian reality (particularly pressure from different stakeholders to avoid or slow down climate action). The late action undertaken by the National Government has had a direct impact in the way in which the regions have developed their climate policy so far. In fact they have not provided clear frameworks for climate action for their territories, and for the stakeholders that operate within it, regarding this policy area. The limited role developed by the two upper tiers of government in the country has resulted in the most proactive cities struggling to develop policies in line with the orientations provided by the EU and the best practices at urban scale provided by some EU countries during the last decade. Even if the upper tiers or government have failed to implement a multi-level collaborative climate policy framework, with clear involvement of the municipalities, many Italian cities have understood the relevance of the matter. As a result, they have developed a proactive action. The awareness of the environmental dimension of local policies, gained by Italian cities through the devolution process, has been crucial to help cities understand the importance of the climate issue. As it has been pointed out, some of them have introduced climate action in their political agenda importantly. Besides, the role played by the networks of cities in this case has proved to be decisive, as the cities-alliances have encouraged local decision-makers to become active by providing the technical support to cities. It is worth to mention as well the positive effect of the implication of Italian cities in EU funded projects. In some cases the membership to climate city networks has entailed the arrival of funds (directly or through the integration of cities in European projects and initiatives). As a result during the last decade, in general, cities have become aware of the importance of this policy area, giving place to local initiatives that

have contributed to improve the environmental performance of the country. The attention paid to climate issues has fostered the environmental dimension of the urban policies and have made it more visible in the institutional agenda. Some cities are becoming international references regarding this matter, what proves the dynamism of the local level and their capacity to act independently even if they are not explicitly supported by the upper levels of government.

From the point of view of the effect of the governance structures on Italian cities, this study shows that the collaboration of the different levels of government has not being effective in creating a framework (political, technical, and financial) to enhance urban climate action. As the review shows, Italy has not benefited from the creation of collaborative arenas or instruments in the field of climate change. The lack of an institutionalized framework for interaction of cities with the upper levels of government, and the lack of explicit climate policy orientations for urban action launched by the National Government and the regions, lay on the basis of the recent momentum that have led cities to react and, together with the provinces (and the regions), to give place to the Charter of cities and territories' commitments to climate protection. In fact, as it has been pointed out, the joint effort undertaken by the Italian Agenda 21 Association, the ANCI and the UPI has transformed the policy window in Italy by creating an association that is now able (due to the great number of members and their relevance) to influence climate policy at national level, as through it they have proposed new policy action and have made the local level more visible. The Charter of cities and territories' commitments to climate protection is a sort of position statement in which cities, provinces and regions have made clear that they are willing to mainstream climate action in spatial policies. The link between this initiative and the CoM (as it has been said the Charter promotes the CoM in Italy) is a factor that will enlarge the impact of this bottom-up action in the medium term in the country. It is important to highlight the commitment of the Charter with multi-level governance, as it promotes the enhancement of networks of cities and regions to facilitate the relations between the territories and the global government levels. This priority constitutes a factor of transformation of the fragmented multi-level governance model that exists at the moment, towards a more collaborative one in which the lower levels could have the possibility of contributing to the construction of the national climate policy, opening spaces for interaction with the National Government. This is relevant both for mitigation and adaptation policies.

In Italy, the role of the provinces has been relevant to promote climate action in municipalities of medium and small size, while it has not been determinant, or even cannot be considered a factor, in the case of big cities with financial and technical resources. This is consistent with the institutional role assigned to the provinces in the Italian framework.

In Spain, the period 2004-2011 has resulted in the Central Government developing relevant action that has provided a general framework of reference regarding mitigation and adaption to the institutional stakeholders and to all those stakeholders that have a relevant impact and a role in the climate change policy field. During the mentioned period a number of institutional arenas for decision-making were created and the involvement of the regions was set as an explicit objective (to be achieved in order to be able to fulfil the national mitigation and adaption goals) and the Spanish Office for Climate Change, a body devoted to centralize climate action at national level, was created. The involvement of cities in climate action was as well an explicit objective of the National Government. The non-compulsory nature of the mitigation and adaptation frameworks created by the Central Government resulted in most of the Autonomous Communities following the path that have been advised by the State, and today 16 out of 17 have approved their climate change strategies (it is relevant to point out that the only Autonomous Community that have not passed them has been very active, approving and working in this policy area in the framework of other strategies and initiatives).

As has been mentioned the Central Government established as an objective that before the beginning of 2008 all the regions should have developed their own climate change strategy. Even if it was not completely fulfilled, the Autonomous Communities have demonstrated a high level of commitment with the climate policy launched by the Central Government that is not so common in the fragmented Spanish framework in other more consolidated policy fields²⁷. The action developed by the Central Government from 2004 has contributed to introduce climate policy in the institutional agenda of the Autonomous Communities. Besides, it has contributed in the transposition of the climate national policy and EU guidelines to their regional policy frameworks. This transposition has taken place particularly in the case of mitigation action, while adaptation has been a policy field that has only partially attracted the attention of the regions. The lack of regional action regarding adaptation has resulted in the provinces and cities not perceiving it as a relevant policy field despite the vulnerability of the Spanish territory in this regard.

The arenas of collaboration created during the 2000s by the Central Government have proved to play a relevant role to involve regions in the climate policy at country scale. The provision of guideline documents by the Central Government has played a relevant role as well. Besides, the objective-driven policy that the Central Government launched through the Action Plans of Energy Saving and Efficiency Strategy in Spain 2004-2012 (E4) has been successful in creating a collaborative framework that have involved all the government tiers (from the Central Government to the local governments) in the consecution of pre-defined objectives regarding energy saving and efficiency in a number of sectors. Through the provision of guidelines and the development of this collaborative policy the regions have entered a pathway that has resulted in the creation of technical and political capacity regarding energy and climate change. This policy has delivered similar results at province and local community level, as it has entailed to reflect and face for the first time energy as a policy issue in many provinces and municipal contexts. Besides, it has been developed as a collaborative policy, in which all the tiers of government have been involved, displaying a role according to their competences, but in the framework of a sustained dialogue with the immediate upper level of government (cities with provinces and regions, provinces with regions, regions with the Central Government).

Regarding the influence of the regional governments on the municipalities analysed, the study shows that in the case of Autonomous Communities that have not approved yet their respective mitigation strategies (Asturias) the cities have not developed their mitigation plans. This is the case of Gijón and Oviedo (in Asturias). On the other hand, in the case of the most proactive Autonomous Community in the field of climate change (Andalusia), the 3 Andalusian cities analysed in this study have developed their mitigation plans (Córdoba, Málaga and Sevilla). A correspondence between regional action and city action in the field of mitigation can be observed in the case of the cities located in the territory of 10 Autonomous Communities (Andalusia, Aragon, Cantabria, Castilla y León, Catalonia, La Rioja, Comunidad de Madrid, Murcia, Navarra and Basque Country). In the case of 2 Autonomous Communities that have developed their mitigation strategies, some of the cities analysed have reacted while others have not developed their mitigation plans (Galicia and Valencia), and in the case of 4 Autonomous Communities that have provided mitigation plans at regional level (Balears, Canarias, Castilla-La Mancha and Extremadura) none of the cities located within their

²⁷ To understand the relevance of the number of regions that have acted providing a climate regional policy framework (worth to underline that they do not have obligation, as the Central Government have provided guidelines, not legislation, regarding the development of regional climate strategies), it is illustrative to compare climate change with territorial policy. Regarding the second only 11 Autonomous Communities have developed their territorial plans, even if it is a tool that is foreseen in their regional statutes (some regions approved this instruments in the first 90s, and some of them have even approved a review of the original document afterwards) and the Central Government and the EU consider the territorial plan as a necessary tool to achieve the goal of sustainable development of regions.

territory have reacted. This analysis reveals the relevance of the regional mitigation plans to induce local action, but shows at the same time that the regional plan is not a determinant stimulus to enhance the development of mitigation plans at local level.

Concerning adaptation, the action developed by the most proactive Autonomous Community (Andalusia) has not entailed the development of local plans by cities (Cordoba, Malaga and Seville do not have adaptation plans). In the case of Catalonia, Barcelona has developed an adaptation plan that is contextualized in the regional strategy. The rest of the cities that have passed their adaptation plans are located in regional frameworks where a specific adaptation plan has not been approved but adaptation has been addressed by the regional government as a part of its climate plan or strategy (Madrid, Murcia, Valencia, Vitoria and Zaragoza).

The role of the provinces has been relevant in the case of medium and small municipalities, while in the case of big cities, which have their own technical and financial resources, it does not have an impact. This is consistent with the institutional role assigned to the provinces in the Spanish framework.

The influence of the networks of cities active in the field of climate change has been relevant. Most of the cities analysed have joined RECC and afterwards CoM. The RECC seems to have been important in bringing climate change into focus in Spanish cities, while CoM has been joined by many analysed cities to give more visibility to their climate action and in order to bid for European funds in partnership with foreign members. Many cities are members of both networks, as they provide them complementary benefits.

The overall scenario shows that in Spain, the efforts made by the Central Government regarding mitigation have delivered relevant results in the case of the Autonomous Communities, and the provinces (in this case particularly in the field of energy saving and efficiency), being less effective the results delivered in the municipal level. This fact seems to have one of its reasons in the lack of explicit action by the Autonomous Communities to engage cities in climate action through the development of specific plans. In fact, the review of the regional plans shows that in general the Autonomous Communities have transposed the Central Government's guidelines to the local level following the State approach, but they have not introduced in that approach the territorial vision that is inherent to regional institutions. In general, there has not been a reflection on how cities should address climate change, which has led the regional level to fail in the identification of the key and specific role that has to be played by cities. Only in the case of exceptions it has encouraged cities to develop their climate plans in order to tackle climate change from a holistic perspective. On the contrary, a general trend to promote sectoral action (particularly in the field of energy saving and efficiency) at urban level has been identified. The sectoral vision has delivered an output that, even if relevant, risks of aligning climate change action only with energy efficiency measures. These risks seem to have been counteracted partially by the influence of the networks of cities active in the field of climate change in the country. In fact, the study reveals the relationships between the commitment with the networks and the subsequent development of a mitigation plan by the cities analysed. The role played by the networks of cities has been crucial to enhance climate action, and more determinant than many of the other instruments launched by the Central Government. In the case of the role played by CoM it is worth to point out that this transnational initiative has had a greater impact on big cities than the national policy (it has resulted in the submission of plans in which detailed objectives are set).

The observation of the mitigation plans developed by the different cities studied reveals that these documents are heterogeneous, even if in many cases they have been born in the context of the CoM and RECC membership. In these plans the topics related with energy efficiency, energy saving

and the introduction of renewal energies are those that prevail (confirming the risk of aligning climate change action only with energy efficiency and emissions reduction measures), while urban planning (a key matter, that would help cities to make the transition to a different urban development model overcoming that characterized by the consumption of the territory and the mobility based in the use of the car) is not a field included in most of the climate plans developed by the sample cities (see details in Olazabal et al., 2014).

The observation of this scenario shows that the multilevel governance framework in the field of climate change in Spain has not achieved the integration of the municipal level, and particularly big cities, in the national climate policy. This insufficient “room” and representation for cities in the collaborative entities created by the Central Government seems to have resulted in the lack of attention from the upper levels of government on the problems and specific matters cities present, while, in turn, cities have not perceived their responsibility in the consecution of the common national goals set by the Central Government (and expressed in the Spanish Strategy of Urban and Local Sustainability). Coordination between local authorities, regions and the Central Government has being insufficient, and the review undertaken suggests that they could be operating on different assumptions about the climate issue. This fact shows once again that the power of influence from a higher level government is not straightforward. Higher level government frameworks have only a relevant impact when explicitly involving lower level government interaction and integration.

7. Conclusions

Italy and Spain show relevant differences in the way in which climate multi-level governance has taken form in both countries. While in Spain, the Central Government established from 2004 a climate policy framework for collaboration between the different tiers of governments, and the local action was explicitly considered as an objective, in Italy, the main collaborative initiatives have been framed by the regions, the provinces and the cities, and local action has not been established as a policy objective by the National Government, at least explicitly. While in the first case the multi-level collaborative framework has been created from a top-down approach, in the second the lack of National Government policy for the urban environment and the regions has given place to a reactive bottom-up approach that has not integrated the General Administration so far, but that aims to influence national policy decision-making. Despite these relevant differences, it is interesting to observe that in both cases the result has been that the local level has not been sufficiently supported by the mentioned national and regional frameworks in order to give place to a coherent climate local policy for different reasons. As a result the cities that have developed a climate policy so far can be considered pro-active and animated by their background and awareness on environmental policies in the urban domain.

In both cases the networks of cities have played a pivotal role to enhance cities to become active regarding climate matters. In both cases the national and transnational networks of cities have counteract the lack or the limitations present in the national governance structures and in the policies they have entailed. It is possible to affirm that one of the main factors that has contributed to the development of the incipient climate local action in both countries has come from a transnational structure (i.e. CoM) that operates at local level, that has provided cities the support they needed to be able to become climate actors, and particularly to be aware of the key role they have to play in this regard.

It is interesting to point out that, even if in Spain, there has been an explicit interest of the Central Government to give place to urban action, the way in which the Autonomous Communities have transposed it to cities through their regional climate frameworks has minimized the Central

Administration efforts. In Italy, despite the lack of explicit interest and action by the National Government, Italian cities have been able to give place to a climate policy action that is in general similar to that undertaken by Spanish cities. This fact reveals that the voluntary engagement of cities with national and transnational climate networks and their background in the field of environmental policies supplied partially the lack of national and regional guidance in the Italian framework, while in the Spanish one the interest and the action undertaken by the Central Government seems to have had little impact, due to a collaborative multi-level governance framework that has not been able to shape the urban response according with the national objectives.

In both countries the previous experience that cities had developed in the implementation of a relevant environmental dimension in urban planning has been a relevant factor that has led them to act. This proactivity has been crucial to engage them in climate city networks. Climate action developed by cities in Italy and Spain shows that, as Sassen reckons, cities have been sites for environmental policy making and policy innovation. These two features have acted as urban capabilities for addressing the environmental challenge (Sassen, 2013).

The study shows the necessity of effective multi-level climate frameworks (from the EU level to the municipal one) in order to achieve the EU and other international commitments. In the case of national climate policy, in countries where the national governments and lower levels of governments have concurrent competences regarding environmental issues, the integration of national, regional, province level, and local action in collaborative visions is a key factor to the implementation of consistent and efficient climate policies. The work identifies cities as actors that are willing to act and points out the potential of fully integrating cities in the climate national policy. Every higher level government is important in engaging its respective lower levels of government, and every lower level is relevant in helping the upper ones understanding what are its limitations and specific necessities and in contributing to the achievement of common objectives. From this perspective the construction and improvement of multi-level climate frameworks appears as a condition to give place to national scenarios (and to an EU scenario) where cities can fully display their climate potential.

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Authors' contributions

The study, manuscript preparation and coordination of the work were led by S. De G.H. M.O. contributed relevantly to the manuscript preparation and edition tasks. All co-authors contributed towards data acquisition and analysis of their respective countries, interpretation of results and manuscript preparation. The role of S. Di L. was limited to the statistical analysis of local action. Figures and Tables were produced by S. De G. H., M.O, M.S. and E.O. The work was developed in the framework of the Sub-task 3 “Examine potential adoption mechanisms and institutional barriers to implementation of sustainability measures –with due consideration of different governance systems across Europe” of Working Group 2 of COST Action TU0902, led by S. De G.H.

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