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Climate problem and territorial governance: an overview of adaptation initiatives at the French regional level

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Introduction

In France, climate change issue was officially put in the agenda of the central government through a national program since 1993 (Quirion, 2004).[1] However, concern for the effects of climate change and adaptation strategies designed to deal with it, came later and again, first at the central level. Two dates can then be used to point out this coming up: the creation in 2001 of The National Observatory of the Effects of Global Warming and the publication of the National Plan for Adaptation to Climate Change in 2011.

But, since 2007, a special planning mechanism for dealing with the "climate problem"[2] and energy questions was set up following the "Grenelle de l'Environnement"[3], giving a major role to French local authorities on these issues. The laws known as "Grenelle 1"[4] and "Grenelle 2"[5] call on the "large-sized" authorities (among which the regions) to elaborate climate policies, by means of the Territorial Climate-Energy Plans (PCET)[6] and the Regional Climate-Air-Energy Plans (SRCAE)[7]. The SRCAEs had to be elaborated jointly under the responsibility of the president of the regional council (elected regional government) and the prefect of the region (State regional representative) before December 31, 2012. They would constitute a first regional climate strategy aiming on one hand to reduce greenhouse gas emissions (mitigation) and on the other, to take potential consequences into account (adaptation). Then these regional plans constitute a good observatory point to analyze the

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[1] French Program for the Prevention of Climate Change in 1993-1995, National Plan to Fight Climate Change in 2000, and Climate Plan in 2004

[2]The term "climate problem" is used in this text to designate climate changes as a recognized public problem necessitating collective action.

[3]A series of political meetings organized in France in the autumn of 2007, aimed at debating and decision-making on issues concerning the environment and sustainable development in a process of collective construction. These consultations brought together representatives of five groups of actors in the field of sustainable development: the State, local authorities, NGOs, employers and employees.

[4] Law n° 2009-967 of 3 August 2009

[5] Law n° 2010-788 of 12 July 2010

[6]Authorities of more than 50,000 inhabitants (Region, Department, Agglomeration Community, Community of Communes, Communes) were under obligation to adopt a *Plan Climat-Energie Territorial* (PCET) before December 31, 2012 (art. 75 of loi Grenelle 2).

[7] The SRCAE was instituted by article 68 of Grenelle law 2, modifying the Environment Code. This plan groups together the eolian plan, the collective services and energy plan, the regional renewable energies plan, and integrates the content of the Regional Plan on the Quality of the Air (PRQA).

building up of a Climate Change Adaptation (CCA) policy and to address the CCA governance issue in France. Based on an analysis of this first experience of regional planning on these topics, this text intends to answer the following question: what inputs produces this regulatory injunction to consider CCA at the regional level, on the regional governance systems and in terms of content, discourses produced in these documents?

This chapter focuses on the CCA part of these regional plans. It aims to understand how adaptation issues are dealt with at the French regional level and what forms of governance are produced. It is based on an analysis of the decision making processes behind the climate-change adaptation chapter of these SRCAE, led through documents investigation and semi-structured interviews with the main actors involved in these processes (Richard, 2013); the second part of the chapter deals with the analysis of the action of French regions facing the effects of climate change seized through documents and plans investigation. This chapter will thus call particular attention to potential changes in governance (Bertrand et al., 2012; Richard, 2013). It will point out the still importance of the national frame for the building up of CCA even at a regional scale.

To introduce this analysis of public practices at the French regional level, we will first present the theoretical and conceptual framework behind the question of local governance climate-change adaptation. This will be followed by an analysis of the institutionalization and debate processes of CCA in the French regions by means of the SRCAEs. Finally, through an analysis of CCA content in the SRCAEs we will point out that regional strategies range from copying a national model to making an attempt at regionalization.

Local and regional governance and adaptation to climate change: framing the context

According to the existing literature, taking the issue of climate-change adaptation into account can potentially modify local action and regional governance (Adger, 2006; Adger et al., 2007; Füssel 2007; Hulme et al., 2009). The multilevel institutional coordination between different political and

administrative levels are important for CCA governance (Urwin and Jordan, 2008; Corfee-Morlot and al., 2009). In the French institutional context, the regional level appears strategic to that respect.

Is local action a suitable response to a difficult issue?

The anthropogenic exacerbation of the greenhouse effect represents an unknown challenge to humanity. How can we, collectively and operationally, assume the responsibility to preserve the climate, recognized as a common good and condition for survival? And locally, the material manifestations of climate change are hardly visible, as in most cases they seem to blend in with other phenomena.

Thus one major difficulty in dealing with climate change lies in the impossibility of actually experiencing it – we don't see the results of our acts with our own eyes. This makes the construction of a "climate problem", in particular on the local level, very different from the construction of other environmental problems such as the air pollution problem, at least in France. Due to its effects largely invisible and immaterial, climate changes remain a scientific narrative disconnected from everyday life. The geographic and social consequences of our acts are not directly visible, though they can be represented in an approximate fashion by labeling systems (indication of a product's origin, Fair Trade labels, etc.) and intellectual abstraction methods (analysis of life cycles, carbon footprint, etc.) that rely on high-tech equipment and scientific mediation (Bourg & Whiteside, 2010: 13).

These considerations help understand the difficulty of approaching the issue of climate change on a local level. Indeed the incommensurability between the space/ time scale of the problem (Berdoulay & Soubeyran, 2000; Meadowcroft, 2009) and the means of change *a priori* available can create a kind of intellectual paralysis, both on the individual and collective levels. "The relationship to the environment is in fact only one aspect of a relationship to a 'global community' (Miller & Edwards, 2001), in which there is a quasi infinite ramification of relations we are unaware of. Those who suffer the consequences of climate changes are not necessarily those who contribute to them the most. The imputability of hazard becomes impossible, and societies find themselves inter-related in a mode of injustice." (Petit, 2011: 116).

Thus we see that in order to be able to discuss locally the "climate problem", what its implications are and what possible, acceptable and/or desirable answers there might be, the problem must exist in the social sense. And for the present, despite legislation (mainly soft laws involving hardly any formal constraints)[8], no solid, pre-established positions on the subject have been constituted. This situation differs from others involving environmental management; concerning nuclear power for example, positions on all sides appear to be well established.

Finally, from the political perspective, climate changes, like a nuclear catastrophe, remain emblematic of the society of planetary risk (Beck, 2001): invisibility, irreversibility, and the unpredictability of the tipping point. The potential effects associated with the "climate problem" are close to the characteristics of a catastrophe, but a catastrophe in slow motion: the outcome is unknown, that is a catastrophe unlimited in terms of time, space and social existence, as analyzed by the sociologist Ulrich Beck, speaking of a nuclear catastrophe like Chernobyl or Fukushima[9]. What we have here is a potential for a catastrophe that escapes our capacity to imagine it as much as it does our political reactivity. And yet, what could be more dissimilar than collaborative activities leading to the implantation and development of nuclear activities and the same activities aimed at elaborating a climate policy? The first would engender intense conflict –foreseeable local opposition reinforced by an organized anti-nuclear protest; whereas the second would meet with consensus, if not apathy.

Varied and uncertain impacts

The territorial impacts of climate changes are varied and involve a multitude of sectors undergoing direct and indirect effects. And the consequences of climate changes can be represented both as sudden and catastrophic – extreme climatic events – or on the contrary, as progressive, modifying average climatic conditions – occurrence risks vs. trend risks.

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[8] In France, the only formal obligation concerns territorial authorities with more than 50,000 inhabitants, which were to assess their greenhouse gas emissions (linked to their property and services) before December 31, 2012. But according to an independent inquiry, only one third of the French authorities concerned had carried out this evaluation by the closing date. (Source:http://www.associationbilancarbone.fr/communique/bilans-ges-reglementaires)

[9]That is a catastrophe for which it remains delicate, even with the aid of statistics, to establish the number of dead and wounded. "If we take the argument to the extreme, twenty-five years after Chernobyl, all the victims of that accidents have not yet even been born."Interview with Ulrich Beck in "Le monde après Fukushima", Arte, March 5, 2013.

For that reason, local CCA actions are faced with a threefold uncertainty – as to impacts, associated vulnerabilities, and adaptation capacities. Any estimation of the regional impacts of climate changes is marked by a "cascade of uncertainties", to borrow an expression from Julien Boé (2007: 44): uncertainty linked to the emission scenario, to the climate model, to the regionalization of models and lastly, to impact models. The estimation of territorial impacts of climate changes also varies considerably according to what space and time scales are used, and finally there is concern about 'tipping points' at which radical discontinuities in current climate patterns could occur (Lenton et al., 2008). Some climatic evolutions in fact seem favorable in the short and medium terms, but if they intensify over the long term, would have negative effects[10]. Thus it is extremely delicate to assess the effects of climate changes in terms of territorial gains and losses if we do not specify the time and space limits of these assessments.

In addition, it remains extremely difficult to assess the vulnerabilities and adaptation capacities of territories and societies in face of the effects of climate change. In fact, the quality of adaptation responses remains uncertain, since only on a long-term scale can the efficiency of strategies be evaluated (Adger & Vincent, 2005). In the end however, though dealing locally with the climate problem is difficult, the necessity of doing so is nonetheless becoming more and more inevitable.

The need for a territorial approach to adaptation

The territorial approach to adaptation is supported mainly by two arguments. On the one hand, ways of responding to the effects of climate change are directly linked to its local manifestations; and on the other, territorial responsibility for adaptation seems necessary in a public action rationale of subsidiarity.

Indeed, a territory's characteristics influence how it will adapt to climate change, which makes the territorial approach relevant. Among the necessities/problems of climate-change adaptation that we

[10]This is the case with temperature increase, which at first can favor agricultural production for some produce, but make it impossible beyond a certain level (namely for territories producing AOC [controlled designation of origin] products). In the same way, the announcement of slightly warmer summers in the coming 50 years can be perceived, in certain northern territories of France, as a positive effect of warming, improving weather conditions in summer and boosting tourism in coastal areas. But on the longer term, depending on the morphology of some of these coastal spaces, some beaches risk disappearing due to the predicted rise in sea level.

encounter locally we can mention the following: maintaining underground networks faced with the rise in sea level; planting areas of vegetation in urban centers to freshen cities; adapting road infrastructures to intense heat; permeabilizing surfaces covered with artificial materials; relocating threatened coastal activities; the cooling of nuclear power stations faced with low water levels; modifications in sectors or branches affected by climate change, such as certain vineyards, forests, crops, etc.

Besides the diversity of local problems associated with the effects of climate change, the territories as a starting point for climate-change adaptation is based on the hypothesis that territorial action is *a priori* closer to the problem. Such a hypothesis is motivated less by the specificities of territorial adaptation than it is by the characteristics of local action. The competences of local governments, particularly in France, embrace areas potentially concerned by the effects of climate change (water management, urban planning, preservation of the environment, habitat and infrastructures, etc), giving the local authorities a wide margin of maneuver to adapt to the impacts of climate change.

France has multiple territorial levels. Coordination as well as competition between them can favor taking responsibility for a new subject of public action such as climate-change adaptation. Local actors will be able to claim it as a new argument for legitimation, a mark of territorial innovation or excellence, a sign of territorial differentiation, or later on, simply as being in conformity with the norm.

Furthermore, a territory's socio-economic, cultural and political context (population, culture, local values, local economy, political resources, institutional structure, etc.) has a great deal of influence on how the adaptation issue is approached locally. It determines the vulnerabilities and local adaptation capacities specific to the territory (Magnan, 2009), which in fact are dependent on the social characteristics (population, resources, values, etc.) of the local culture of risk (more or less used to extreme events), on the structure of the local economy (more or less diversified, more or less climate-dependent), and on the local competences of the institutions (competences, tools, different resources according to territorial levels).

In theory, an adaptation strategy should reflect the result of a collective choice, one which, after debate on the main interests at stake in the territory, represents the decision as to what should be maintained

and what could be adapted and thus reveals the values of local actors (Godard, 2010). This choice would be the result of collaboration and negotiation between the actors concerned, fostering the equal expression of each one's preferences and ending with the elaboration of an adaptation strategy.

It is important to point out that in order to be workable, an adaptation strategy should not followed a one-way top-down approach (Urwin & Jordan, 2008; Termeer et al., 2012 ; Kinnear et al., 2013). It should take into account the diversity of local character and practices in order to reach more efficiency and effectiveness. Climate policies should therefore rest *a priori* on specific local and regional forms of governance justifying participatory approaches.

This is essentially a matter of integrating existing local knowledge and practices often handed down from one generation to the next and sometimes idealized, but that always evidence "good sense" and harmonious management of the environment and that constitute a fertile source of inspiration for locally anchored public action. To ensure a true local appropriation of adaptation policies, it is therefore important to pay close attention – even beyond the content of such policies – to the forms and modalities of reception these initiatives will have on the ground. One of the challenges in the construction of robust and shared local adaptation strategies lies in a successful articulation between expert knowledge and the empirical, practical knowledge of experience. It is where the two meet up that strategies recognized as legitimate by the majority may emerge.

To conclude this first part, it is clear there is a twofold interest in the territorial approach, both because of the characteristics of CCA linked to the contexts and specificities of the territory concerned and on the proximity of territorial public action with its problems. Although a "territory" can stretch from the very local to the national level, negotiations and the construction of strategies nonetheless seem to be more easily elaborated on a scale which is neither too large nor too small, such as the regional level.

In fact, in France, regional governments are in a position to both gather and produce expertise and to remain in contact with local authorities by assuming functions of leadership and coordination. Responsible for strategic planning and concrete actions involving land use and development, they represent a strategic intermediate territorial level particularly relevant for the conception and implementation of adaptation strategies – it is furthermore at this level that the first significant precursory efforts were made.

Thus we can expect specific forms of governance to emerge on the regional level in the context of the construction of climate policies. This hypothesis will be verified below on the basis of the analysis of processes and contents associated with the SRCAE.

Adaptation issues in the Regional Climate-Air-Energy Plans: between national top down approach and regional dynamics

If the territorial approach appears *a priori* necessary in order to adapt to climate changes, the modalities of constructing adaptation strategies are in fact extremely nuanced. This part will first discuss the emergence of debate on adaptation to climate change in the French regions, as well as its explanatory factors: regional thinking on the subject is indeed fairly new (Bertrand & Larrue, 2007; Bertrand, 2103) and has largely been developed in response to regulatory requirements. Following this, we will discuss actors' dynamics in building up adaptation strategies, both from the institutional point of view and that of the different parties involved. This section is based on the observation of the Regional Climate-Air-Energy Plan (referred to here as SRCAE), which imposes a mandatory strategic planning document.

Recent regional concerns on the subject of adaptation

As of the early 2000s, some French regional governments (such as those of Poitou-Charentes, Aquitaine, Basse-Normandie, Bourgogne, Languedoc-Roussillon) implemented policies targeting climate change. And beginning in 2007, several regional initiatives involved local impacts that could be expected due to climate change (on water scarcity, economic and social vulnerabilities or power and democracy at regional level), along with possible modes of adaptation. However, the generalization of climate policies for all regions really began after the so-called "Grenelle" laws (August 2009 and July 2010), which made these policies obligatory. It was thanks to the co-elaboration of SRCAEs by State and regional government services that climate-change adaptation made its way onto the agenda of regional governments and regional State services. Although the first regional climate actions appeared earlier, the adaptation aspect usually was not mentioned and the concerns were concentrated mainly on the idea of attenuating the causes of climate change. At most,

we see the beginnings of consideration on the possible impacts linked to future climate changes (Bertrand & Richard, 2013).

Thus, the elaboration of SRCAEs marked a second stage in the building of regional climate policies and the development of formalized considerations on adaptation issues.

In this second stage of regional policies, there was a transition from a period of voluntary experimentation to one of regulatory normalization prompting a rapid increase in the number of institutional procedures and the generalization of planning documents on climate and energy in all regions (Table10.1).

Table 10.1 : Quantitative increase in the number of Regional Climate-Energy Plans (PCET)

Date	***Number of regions preparing a climate plan***
Autumn 2005	*1*
2007	*6*
July 2011	*13*
October 2012	*15*
"Grenelle" Objective	*26 (all the regions)*

Source: PCET-ADEME Observatory

Imposed by law, the SRCAEs thus led to the generalization of a document on regional planning in regard to climate, air and energy. In summer 2013, the vast majority of French regions have agreed their climate plans: only four regions have not agreed their climate plans, one has not started public consultation, all wind ressource regional plan were agreed.

All these figures allow to assert the top-down rationale which explain the involvement of the regional level within a national CCA policy. This statement appeared to be conform with the traditional way of implementing public policies in a centralized State like France.

However, in some regions, there were also numerous bottom-up dynamics that considerably boosted efforts. Beyond heterogeneous types of collaboration between State and Regional government services, this period marked an overall awareness of the climate problem as an issue for public intervention needing action on the regional level, both to lessen its causes and anticipate its local impact.

However, so far as the adaptation aspect is concerned – and contrary to actions regarding air quality, energy management, renewable energy development, and control of greenhouse gas emissions – the time spent elaborating these Regional Climate-Air-Energy Plans provided an opportunity for first considerations on the impacts of specific climate changes on the localities in question. For the great majority of regions, that was the very first step on the way to adapting to the effects of climate changes.

Generally speaking, climate-change adaptation seems to be the poor relative of the SRCAE, which brings together other already well-established sectors of public action (air quality and fight against atmospheric pollution, energy control and renewable energy development, and to a lesser extent, reduction of greenhouse gas emissions).

The regulatory pressure linked to the SRCAEs has led to an overall increase in awareness of the "climate problem", not only as a far-off global problem to be avoided in the future, but also as a local problem whose effects are beginning to be visible and that we should anticipate on the medium term.

The analysis of processes of emergence of the climate problem in Bourgogne and Guadeloupe, studied in detail by Elsa Richard in the context of her thesis, shows how, faced with the climate problem, the SRCAEs constitute a factor of harmonization in regional action agendas (Richard, 2013). In any case they open the door to the issue of CCA in regional policies. As described further on, and contrary to what was presented in the previous part of this chapter, this first integration occurred more or less independently of the level of local knowledge on that issue, of socio-economic or geomorphological contexts. The territories are being called on to adapt to climate change, but without specifying how this adaptation should take place, and so far, without the territories themselves having appropriated this new object of public action.

First regional adaptation strategies under experimental local governance

Regional government plays an important role in the elaboration of SRCAEs: it must develop a fairly wide-ranging expertise in a short period of time, during which a number of plans are simultaneously produced and reviewed.

The elaboration of an SRCAE is based on co-construction and is led by several regional actors. "Despite its limitations, the type of mechanism instituted by the SRCAE attributes an important role to the association of a variety of actors, favoring the convergence of multiple interests and consensus. This necessary cooperation extends to the other actors working on pre-existing plans (Territorial Climate-Energy Plan, Territorial Coherence Plan, etc.), and the fact of bringing together a variety of actors creates the strong dynamic needed to overcome today's normative muddle." (Claustre, 2011).

This open co-construction rests on the sharing of both data and tasks. Like other regional environmental policies, it means partnerships and several actors working as a team – a more and more common way of elaborating public policy. This opening up of decision-making processes refers to what the "Grenelle Environnement" instituted in the term "Governance by 5", which calls on representatives of the State and local authorities, representatives of environmental associations, and the economic sectors concerned (both employer organizations and trade unions[11]).

In reality, surveys led in the regions of Bourgogne, Rhône-Alpes and Guadeloupe show that the integration of climate issues in regional action gives rise to different configurations of actors. Although the regional version of the SRCAE works according to regulatory rationales, we also see certain forms of voluntarism and dynamics locally that attest to an appropriation of these issues by local actors.

In some cases, regional State services insist on producing a minimum of adaptation content in the SRCAE while regional government was not inclined to doing so, as was the case in Guadeloupe (Richard, 2013). On the contrary, in other regions, regional government had solid knowledge on the subject and expressed its own opinions in matters of CCA, as observed in Rhône-Alpes and Bourgogne (Bertrand et al., 2012).

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[11] See note 6 for details.

Thus we note two movements: an affirmation of the region as a legitimate actor for the launching and coordination of local initiatives in face of climate changes, but also an attempt from the State to reaffirm its role in territorial planning inside the region, energy planning in particular, by means of the elaboration of these new climate policies. Guadeloupe remains an exception, since that region is now in a position to elaborate its own regional energy planning policies[12].

Nonetheless and more generally, we can say that in its role as leader of regional policies, the State more or less tends to stand back; however, it retains its strategic functions and power to arbitrate (in energy planning, for example). We note that the observed dynamics of actors reflect wider recomposition of French territorial action based on the strengthening of the powers of Regional Councils and the merger and concentration of State services at the regional level. We finally observe an arrangement more related to the French local action than to specific climate issue. In terms of citizen's participation, the climate problem hasn't yet enough of a social existence in the lives of the population for public action to be a source of potential conflict on the local level, so far as both attenuation and adaptation are concerned. There are hardly any interests or fixed points of view directly associated with it, which is not the case for energy. For example, in regional negotiations observed in the Rhône-Alpes region and in Bourgogne, only the wind energy section raised issues and caused considerable tension[13]. Thus we see that what is relevant in a local debate on climate policy is what affects people in their daily lives: energy saving, renewable energies (as sources of pollution, of income, of territorial autonomy, etc.). But although the argument for greenhouse gas emissions management is gaining consistency in the mind of the public (capable of influencing choices of consumption, equipment, transport, food, etc.), the argument for anticipating the effects of climate change seems hardly audible by populations for whom they remain largely invisible, unknown and uncertain.

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[12] The regional government of Guadeloupe is the only one with "habilitation" (as provided for in Article 73 of the French Constitution), allowing it to pass laws and regulate in the fields of environment and energy – instead of the national Parliament –in the aim of better responding to the specificities of the territory.

[13] Wind resource regional plan was the only part of the SRCAE to have a prescriptive dimension. It thus directly concerned economic and territorial issues.

The low level of materiality of climate change is also to be found in the content of the SRCAE. An analysis of the various issues associated with the effects of climate change will also allow us to bring to light, in the next part, the territorial level of adaptation in these Plans.

Content associated with climate-change adaptation: imitation rationales and regional variation

We will now complete the description of regional climate-change adaptation with a more substantive analysis of the SRCAE. Aside from a few specificities, the comparison of themes associated with CCA and the methods used to formulate the adaptation part of the SRCAE mainly shows a tendency of the regions to imitate – or more or less repeat each other's rationales, thus adding a nuance to our initial hypothesis claiming the need for specific variations of adaptation at the local level.

Themes, sectors and effects related to CCA in the first regional climate policies

SRCAEs deal with very broad themes: energy management, renewable energy development, reduction of GGEs, adaptation and atmospheric pollution. These subjects haven't the same maturity level: overall, for regional action, adaptation is the most recent. Case studies made in Bourgogne, Rhône-Alpes and Guadeloupe (Bertrand et al., 2012; Richard, 2013) show that this subject is more or less new, depending on the region. Thus for example, the regions of Bourgogne and Rhône-Alpes had already been working on the issue of adaptation earlier, via the research studies undertaken by their regional environmental agencies. Nonetheless, for most regions, such as Guadeloupe, the subject hadn't been broached before the beginning of the SRCAE program.

Generally speaking, since the content of the SRCAE was not precisely defined on the national level, particularly insofar as climate change was concerned, local situations could thus be very varied.

Analysis of the content of the 14 SRCAEs adopted in March 2013 shows a great diversity of subjects associated with the question of climate-change adaptation. For the first generation of plans, the choice

seemed to have been made to take on broad themes[14], even if it meant being very general, rather than going more deeply into a small number of previously chosen themes or sectors.

That can be explained both by a desire to be exhaustive, but also by the complex and interlinked effects of climate change. Thus its effects on the water resource, in qualitative and quantitative terms come up when talking about the consequences for agriculture (irrigation, water stress, problems with fodder systems, etc), forestry (water stress, etc.) biodiversity (modification of damp zones, fauna and flora, etc.) or energy (problem of hydroelectric production, cooling of nuclear power stations). Bringing up one theme leads to other related themes, and they too are discussed.

Some plans however attempt to classify the more vulnerable sectors in order of priority. Thus in the Auvergne region, three large sectors were identified as priority sectors in matters of CCA: agriculture-forest-biodiversity, water resource and risk, and tourism. This was also the case of the Centre region, which identified four major issues for its territory related to adaptation: agriculture and forestry, biodiversity, and health. For this first regional project concerning the expected effects of climate change, regional actors most often gave priority to an exhaustive inventory in the form of lists of potential impacts, in which we find many recurrent themes (see Table 10.2).

[14] Usually the following transversal themes: health, water resources, biodiversity, natural risks, agriculture; and the following sectorial themes: agriculture, forestry, fishing, urbanism and built environment, energy and industry, infrastructures and transport, tourism.

Table 10.2: *Comparison of themes and sectors called up in the adaptation section of agreed Climate-Air-Energy Regional Plans*

	Alsace	Aquitaine	Auvergne	Bourgogne	Centre	Champagne-Ardenne	Franche-Comté	Guadeloupe	Guyane	Ile de France	Lorraine	Midi-Pyrénées	Nord Pas de Calais	Picardie
Health	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Water ressources	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Biodiversity	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Natural risks	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Agriculture	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Forest	●	●	●	●	●	●	●		●	●	●	●	●	●
Fishing and aquaculture		●						●	●					
Energy and Industry			●		●	●	●		●	●	●	●	●	●
Infrastructures and Transport			●		●		●			●			●	
Urban Planning	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Tourism	●	●	●		●		●	●		●	●	●	●	●

Source: Richard, 2013: 365

Indeed, six themes and sectors are recurring in the adaptation section of agreed Climate-Air-Energy Regional Plans: health, water resources, biodiversity, natural risks, agriculture, and urban planning.

We were most interested in the specificities of how these six recurrent themes of adaptation sections in all the SRCAEs were treated in each region. We observe both recurrences and regional imitation in the adaptation sections of the investigated regional climate-air-energy plans (see Table 10.3). For instance, in terms of climate change impacts on health, the risks of heat waves and the vulnerability of populations to intense heat are mentioned almost systematically, as much in southern as northern French regions. In particular, the 2003 heat wave in Europe impressed itself on people's minds, but

neither the increased mortality rate observed during the summer of 2003[15] nor the region's latitude[16] really influenced how the issue was treated.

Table 10.3: Main contents associated to the six recurrent adaptation themes of regional climate air energy plans (SRCAE).

Recurrent themes	Main climate change effects referred
Health	*Heat waves* *Allergies* *Air quality and atmospheric pollution in cities* *Probable increase of infectious diseases*
Water resources	*Degradation in quality and lesser availability* *Increase of already existing stress on the resource* *No specific mention of local water resources issues*
Biodiversity	*No one predominant issue evoked systematically* *Most often : potential displacements in species ranges, risks of species disappearance, degradation of environments (wetlands)* *No mention of precise data of the evolution of regional biodiversity*
Natural Risks	*Shrinking and swelling of clays* *Drought* *Ground movement and gravitational risks (collapse of underground caves, avalanches).* *Flood risks* *Forest fires* *Coastal risks of submersion (mentioned by certain coastal regions : Aquitaine, Guadeloupe, Nord-Pas-de-Calais, Picardie)*
Agriculture	*Negative effects on yields (due to a decline in the water resource and a rise in temperature) mentioned systematically* *Short-term gains of production sometimes envisaged* *Risks for wine-producing sectors and livestock breeding* *Risks of the proliferation of parasites and diseases* *Food safety issue mentioned only once*
Urban Planning	*Thermal comfort (due to the exacerbation of urban heat islands)* *Need for vegetation in cities and freshening urban areas* *Risk of increasing energy consumption in summer (due to the increase of air conditioning)* *Risk of an increase in heavy rains (Alsace region), risks of underground movements (Centre and Île de France)and shrinking and swelling of clays (Nord-Pas-de-Calais region).*

Source: based on the analysis of the fourteen SRCAE agreed in March 2013 (Richard, 2013).

[15] The Centre region and Île de France were the most affected by the increased mortality of summer 2003 (twice the normal rate) (Hemon and Jougla, 2003: 32), but do not focus more on adaptation to episodes of intense heat than regions that were less affected.

[16]The SRCAE of Guyana, a French overseas region, is the only one that doesn't mention the heat wave. And even the region of Guadeloupe, another French overseas region, while evoking the issue, specifies that the effects of a heat wave would be more serious in France.

On other theme, the adaptations associated to the urban planning sector seem also homogeneous in the various SRCAE. The problem of thermal comfort due to the exacerbation of urban heat islands is almost systematically mentioned in the adaptation section of the plans. Linked to that, the issues most often raised are the increase of vegetation in cities, freshening urban areas and the risk of increasing energy consumption in summer[17]. On the other side, the effects of climate change on biodiversity are discussed in rather general terms in all the plans studied. Unlike the subject of health, there is not one predominant issue evoked systematically.

Thus the comparison of a subject common to the 14 SRCAEs shows us there are a few nuances, but a great deal of similarity in the problems raised in connection with adapting to climate change apart from regional specificities. In the end, whereas the theoretical development exposed in the first part of this text fostered the hypothesis of differentiated local translations of climate-change adaptation, depending on regional context, the analysis of the first 14 SRCAEs adopted shows great similarities of content. This can be explained by the almost non-existence in regional cultures of information on the potential impacts of climate change, and is a result of the low level of regionalized knowledge available on the subject. This can also be related to the size of the region areas (which include various territorial concerns). Anyway, to fill out the adaptation part of the SRCAE, actors were in a no man's land faced with this very first regional exercise, since neither data nor expertise were available at the time, unlike issues such as energy and air quality, more familiar at the regional level.

That can explain why regional actors relied on existing resources on the national level, in particular the National Climate Change Adaptation Plan published in July 2011 by the Environmental Ministry (MEDTL, 2011). This plan played the role of a catalogue of possible orientations and potential adaptation measures, which the regions dug into to elaborate their adaptation strategy in relation to some of their main territorial characteristics (coastal façade, mountainous areas, tourist activities, etc.). But beyond this rapid overview and strictly documentary vision of the SRCAE, whose regulatory nature and top-down aspect at least partially explain the homogeneity of the adaptation sections, we

[17] Only the plan of Guyana, a French overseas region, doesn't mention them.

can see signs of the beginnings of an appropriation of the adaptation issue on the regional level, through more precise regional analyses in terms of actors' dynamics.

The beginnings of building up strategic adaptation

Although the adaptation sections of the SRCAEs are relatively homogeneous and show imitative rationales, nevertheless, through actors' dynamics in relation to CCA, we can see signs of the construction of adaptation strategies.

On the regional scale, climate-change adaptation takes shape mainly around knowledge-producing activities, which we can interpret as the beginnings of regional appropriation –a deliberate strategy of learning about the subject in depth, for example. Regional action has not yet reached the stage of *how to adapt*, but is at the stage of *what* to adapt to. For the time being, regional adaptation procedures are situated more in knowledge-producing rationales and inventories of impacts than in rationales of action.

Nevertheless, those are the beginnings of local appropriation of the CCA issue. The analysis presented here offers only a quick snapshot of the first formal regional work accomplished in view of adaptation to climate change and since then, new dynamics have begun to take shape. Although still only learning-based, in some regions they translate into the implementation of concrete actions. We can mention, for example the Regional observatory of Climate Change Effects created in Rhône-Alpes region at the end of 2013, or the constitution of a "regional IPCC" on the initiative of the Aquitaine region[18]. The regions are thus using their capacities to produce knowledge on climate change and to make themselves into a resource center for sub-regional territories.

Conclusions

This analysis of institutional arrangements and regional governance on climate-change adaptation in France gives an idea of the degree of maturity and appropriation existing at the present time.

[18] This initiative resulted in the production in 2013 of a report entitled "Foresee in order to act, the Aquitaine region anticipates climate change". It reviewed scientific knowledge on the region's past and present climate and attempted to foresee future evolutions.

To begin with, conditions for the implementation of CCAs are framed nationally and give rise to little regional variation in adaptations. Of course the Regional Climate-Air-Energy Plans are documents that for the first time formally introduce the imperative of climate-change adaptation, and the degree of territorialization of adaptation as shown in these plans remains relatively small. Details of adaptation on the regional scale remain rather vague and CCA integration in various regional policies is not yet effective. But the elaboration of the SRCAE was particularly useful to push regional actors to undertake further consideration in relation to the problems involved in adaptation. The SRCAE gave the opportunity to highlight the climate-change adaptation issue, and in an appropriated way for the regional level. Present regional knowledge-producing dynamics seem to herald the beginning of building CCA strategies. And more autonomous regional policies and initiatives are now about to appear.

Problems involved in the effects of climate change do not easily come to the fore in the presence of energy issues, for example, which have material repercussions on everyday lives, as well as representing powerful economic, strategic, and ecological interests – contrary to adaptation to and the broader issue of climate change itself.

The forms of collaboration accompanying the emergence of the climate problem on regional agendas show non-conflict situations, climate change being perceived as a future problem and having no social existence locally yet. The various processes of collaboration and consultation associated with these emerging policies aim mainly at concretizing the issue and giving it a material existence for regional actors, before taking measures to anticipate it.

While climate is still not perceived as a common good able to influence actors' points of view, these new spaces (created by the regional climate dynamics) may yet prove useful in the social construction of the climate problem, for which much remains to be done.

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