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► To cite this version:

E. Vigier, Corinne Curt, Thomas Curt, A. Arnaud, J. Dubois. Joint analysis of environmental and risk policies: Methodology and application to the French case. *Environmental Science & Policy*, 2019, 101, pp.63-71. 10.1016/j.envsci.2019.07.017 . hal-03048925

HAL Id: hal-03048925

<https://hal.inrae.fr/hal-03048925>

Submitted on 9 Dec 2020

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Joint analysis of environmental and risk policies: methodology and application to the French case

E. Vigier^a, C. Curt^{a*}, T. Curt^a, A. Arnaud^b, J. Dubois^b

^a Irstea, Aix Marseille Univ, RECOVER (FR ECCOREV) – 3275 Route de Cézanne – 13182 Aix-en-Provence Cedex 5 – France

* corresponding author: corinne.curt@irstea.fr

^b LIEU/IUAR / FR Eccorev – 2, avenue Henri Poncet – 13090 Aix-en-Provence – France

Declarations of interest: none

Highlights

We provide an original method for analyzing the French law on natural hazards and environmental protection in the context of land planning.

A diagnosis of the coherence and difficulties related to the implementation of public policies at the local level is presented.

We present an inventory of regulatory texts.

An analytical model for identifying and linking risk management tools is presented.

We present its application to 3 French territories.

Abstract

French public authorities have to manage the protection of the environment and risks. This study proposes a method for analyzing the French law on environmental hazards and the

protection of the environment in the context of land planning. The main question asked is: Do the difficulties of implementing environmental policies stem from the complexity of the law or from the organization of local land management? The final aim is to offer reading keys to aid local planning decisions in France. The approach proposed is based on collecting and organizing the regulations, analyzing their application in practice, and comparing the legal standpoints to the logic of local decision-makers. This study demonstrates the extent to which French environmental regulations are complex and how they can be adapted locally in order to improve their application and efficiency.

Keywords

Environmental law; Policies analysis; Risk; Protection of the environment; Land planning; French policy

1. Introduction: setting the scene of environmental policies in France

1.1. The increasing importance of environmental and hazard issues in the territories

All the various territorial levels in France, whether municipal, departmental, regional or national, are multi-thematic and comprise multiple stakes. Each territory has to manage at the same time urban development, environmental preservation, culture, teaching, health and social cohesion, etc. Therefore, public decision-makers must define a territorial project that encompasses these issues. Their main work is to find a balance between these issues and then to give priorities according to the interest of the project, the territorial resources available, and the local context. Ongoing global changes leading to processes such as soil sealing, the artificialization of natural areas, and the amplitude, frequency and spatial distribution of hazards render territories more vulnerable and increase the exposure of human and natural

assets. As in other countries, in France, many municipalities are confronted by multiple hazards (flood, forest fire, technological accidents, etc.) which are likely to affect various assets, either anthropogenic or natural. Multi-risk issues have therefore become important for public decision-makers. Such processes illustrate the importance of ensuring coherence in public policies relating to disaster risk reduction, the protection of natural areas, and urban planning regulation. This article focuses on these 3 themes. They lead to the accumulation of a significant quantity of territorial 'concerns' that are superimposed on possibly overlapping geographical perimeters within which territorial authorities must implement solutions.

1.2. The history of regulations on environmental issues: the international framework

When examining French policy over time, it can be established that attempts to implement environmental protective measures and risk prevention processes have been sporadic but have evolved constantly since the 19th century. This has occurred together with increasing international interest in these issues throughout the 20th century and early 2000s, including the 1992 Rio Declaration (United Nations Conference on Environment and Development 1992), the 1997 Amsterdam Treaty (European Communities 1997), the Hyogo and Sendai agreements (United Nations/International Strategy for Disaster Reduction (UNISDR) 2005, United Nations/International Strategy for Disaster Reduction (UNISDR) 2015), the Kyoto Protocol (United Nations (UN), 1997), the 2015 Paris Agreements (United Nations/Conference of the Parties 2015). Texts have also been promulgated at the European level. For instance, the Water Framework Directive (WFD) (European Parliament and Council, 2000) was produced in response to the urgent need to reverse the deteriorating quality of surface waters and protect their functionality (Woods Ballard et al., 2016). The Flood Directive (European Parliament and Council, 2007) was formulated somewhat later.

Currently, each risk is managed individually: ‘the expressed need for multi-risk approaches at the international level is not matched by policies, legislation, institutional frameworks, or implementation at national, regional and local levels’ (Scolobig et al. 2017) due to the novelty of the scientific multi-risk approach and the time needed to integrate innovation in policies. In this article we deal with several risks but not with multirisk, that is to say we do not take into account the interactions between different hazards. Multirisk is not addressed in the current policies.

1.3. The French framework of environmental regulations

The European and international agreements mentioned above have been transposed into French laws at national and local levels, in the form of national public environmental policies. For example, the French government has focused on the recovery of biodiversity, nature and landscapes (Journal Officiel de la République Française 2016), leading to the ratification of the Protocol of Nagoya (Secretariat of the Convention on Biological Diversity 2011). French territories (for instance, municipalities and regions) must also implement policies relating to the protection of the environment (Green and Blue Infrastructures, National Parks, SDAGE-Blueprint for Water Development and Management, etc.).

International and European agreements represent benchmarks for national policies but they also lead to complexity in the law due to the abundance of texts, regulations, and environmental and risk management tools, such as urban plans, environmental preservation schemes, and natural hazard plans, among others. Consequently, the complexity of the law concerning environmental and risk management, and changes in governance have become factors of legal uncertainty which thwart the process of understanding and implementation for all the actors at the local level (Conseil d'Etat 2006). Given the abundance and variety of documents, this leads to a lack of clarity of policies and guidance, and therefore causes

ambiguities and difficulties for local planning authorities when implementing them. However, few studies have considered ‘the way in which state and non-state actors experience policy conflicts at the landscape level, and the strategies they employ to overcome these policy conflicts’ (van Oosten et al. 2018). This layering demonstrates the need for coherence between overlapping regulations. To overcome these difficulties, various laws aimed at simplifying French law have been implemented. They focus in particular on strengthening and simplifying inter-municipal cooperation (Journal Officiel de la République Française 1999), and simplifying laws (Journal Officiel de la République Française 2004, Journal Officiel de la République Française 2011). However, attempts to rationalize French law have failed to overcome the “French millefeuille”.

In addition to this problem of stacking laws and regulations, French territorial governance has undergone constant changes since the decentralization laws in the 1980s (Journal Officiel de la République Française 1982, Journal Officiel de la République Française 2003). The decentralization process aims at transferring responsibilities from the government, which is responsible for making rules and approving management processes, to the local authorities (region, department, Public Inter-municipal Cooperation Establishment-EPCI, metropolis and municipality). In addition to this, the purpose of deconcentrating government services is to improve the efficiency of the government’s actions by delegating certain functions of the central administrative levels to local officials, namely, to prefects. This situation is not unique and typical of France: regarding disaster risk reduction, responsibilities have often been transferred to the local level without sufficient resources to implement programs (Scolobig et al. 2017). These processes are still ongoing with the MAPTAM (Modernization of Territorial Public Action and Affirmation of Metropolises) Act of 27 January 2014 and the NOTRe (New Territorial Organization of the Republic) Act of 7 August 2015. All these changes fall within territorial integration which deals with reconciling

inconsistencies between spatial jurisdictions and that is a common problem to many countries (Ran and Nedovic-Budic 2016).

1.4. Purpose of this study

The aim of this paper is to highlight the difficulties of implementing the law and regulations in various land management projects carried out by local authorities and that concern environmental protection and risk prevention in France.

Various works have proposed analyses of policies and regulations, but these diagnoses usually focus on one risk, such as flood-risk (Zapperi 2018, Ran and Nedovic-Budic 2016), landslides (Van Well et al. 2018), avalanches (Holub and Fuchs 2009) or wildfires (Montiel-Molina 2013, Tedim et al. 2018, Curt and Frejaviille 2018) . Some of them also focus on other issues such as spatial planning (Ran and Nedovic-Budic 2016) and agricultural and rural development, the environment, spatial planning and energy (Galiana et al. 2013). However, ‘policy analysis has shown that to be successful, sectoral policies need to take into account the objectives of, and the activities in, other policy sectors to avoid inconsistencies or to attain synergies’ (Tosun and Peters 2018). In the field, policy-makers face several challenges including:

- selecting suitable instruments and implementation approaches, in particular for reducing risk and protecting and improving environmental quality (Taylor et al. 2019);
- integrating policies, *i.e.* to devise policies that are in accord with each other through an aggregated process of comprehensive input (Ran and Nedovic-Budic 2016, Briassoulis 2004);
- designing a policy portfolio so that conflicts are minimized and, if possible, synergies and complementarities are promoted (Howlett et al. 2017).

These constraints must be met at different levels from the international to the regional scale.

However, policy integration considering environmental issues has only recently begun to be addressed in the literature (Howlett et al. 2017) through concepts such as landscape approaches integrating environmental issues (van Oosten et al. 2018, Reed et al. 2014, Sayer et al. 2013), environmental policy integration (Jordan and Lenschow 2010, Lafferty and Hovden 2003, Weber and Driessen 2010) or policy coherence (Cejudo and Michel 2017).

In this context, our main focus here is to answer the question: Do the difficulties of implementing environmental policies stem from the complexity of environmental law or from the organization of local land management? This question invokes a diagnosis of the coherence of implementing public policies at the local level and of the political risk in the territorial decision-making process. The final aim is to offer reading keys to aid local planning decision-making in France. Another aim of this paper is to enrich the literature which has often been based on case studies and specific risk policies (Jacob and Schiffino 2015). Therefore, the approach proposed can be used for other concerns and in other countries.

2. Materials and Method

A original framework for diagnosing and analyzing the coherence and the drawbacks of environmental regulations in France has been set up. It is based on three main stages (Figure 1). They aim at providing a description of the regulatory framework for environmental issues dealing with the protection of the environment and risk management.

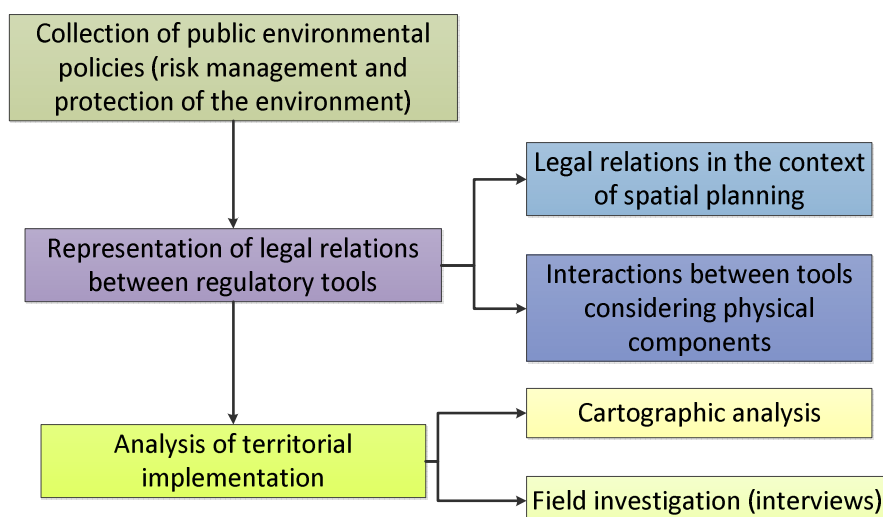


Figure 1. Framework for the collection of regulations and policies

Firstly, we identified the environmental policies related to the protection of the environment. This includes those which concern the protection and the management of natural resources such as water, the coastline, the sea, mountains, forests, and biodiversity. Policies relating to risk prevention concern the management of natural hazards prevention methods such as controlled urbanization, prevention plans, and their associated regulatory provisions.

The environmental management tools were collected directly from the websites of the ministries responsible for environmental policies. The Ministry of Ecological and Community Transition was the main source. This ministry is the main authority for public policies relating to resource management and risk prevention. The Ministry of Agriculture and Food was the second reference website because it is the guarantor of public policies related to forest management and forest fires. Using the Légifrance website (<https://www.legifrance.gouv.fr/>), it was also possible to identify the texts at the origin of environmental policies in France, to collect current policies and to define their legislative history. The environmental and forestry codes were used to check regulatory obligations in terms of environmental management.

Finally, the urban planning code made it possible to check the legal links between land-use planning and environmental obligations.

This phase of collection resulted in a table containing the various regulatory texts (laws, decrees, codes). It comprises four main fields: the title of the text of the law, the official date of the text, and the management tools generated by the text. Each text was finally assigned to a thematic category related to the scope of the texts. The categories are associated either with the prevention of risks by specifying the hazard concerned (flood prevention, forest fires, gravitational phenomena, *etc.*), or with the protection of the environment by specifying the element protected or the resource managed (biodiversity, water, coastline, mountain, forest, sea, river, *etc.*).

Second, an analysis was conducted through two types of representation of the legal relations between various regulatory tools. In this case, a study of the relationships between the tools in the context of spatial planning was proposed. These relationships are based on the principle of opposability described by 3 levels: conformity imposes that transcription is identical to the rule, its respect to the letter; compatibility means respecting the spirit of the rule; consideration means no deviation from the rule.

A representation was also formulated for the physical components of two spatial scales: the territory itself and at a finer level, the components “Water” and “Land Environment”. A functional logigram was constructed for each of these 3 components, taking into account the principle of hierarchy of standards. This entails knowing which tool is being used on which geographic scale. For example, the PPRN is drawn up by the State (prefect) at the departmental level (by the Departmental Territorial Management), whereas its regulatory scope concerns the administrative boundaries of a municipality subject to the risks mentioned in the PPRN. The scale chosen for the representation in the functional logigram is therefore the municipal scale. In addition, these logigrams are organized according to a “nominal”

mode and a ‘faulty’ mode. The first corresponds globally to the use of a resource (e.g, Water) while the second refers to a risk associated with this resource (e.g., Flood). Figure 2 is an extract from the Water flow diagram.

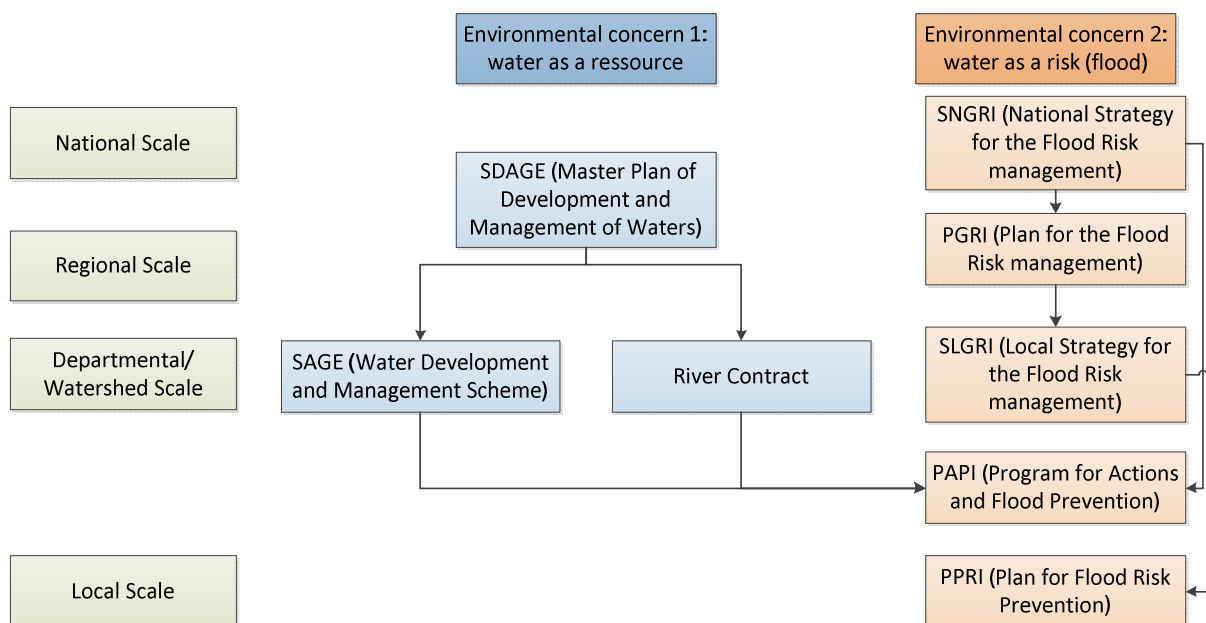


Figure 2. Extract from the “Water” logigram – the arrows denote a relation between two tools

The last step is to understand how the tools are implemented at the local level. In practice, this corresponds to the identification of the perimeters of action of the tools, the superposition of these perimeters, and the study of possible managerial inconsistencies or dysfunctions based on case studies. This analysis is carried out using a cartographic representation (attribution of a GIS layer per tool, then the superimposition of the layers on a plan) and a field investigation through semi-directed interviews (see Supplementary Data for more information on issues, questionnaire and interviewees). Three territories emblematic of the main environmental and risk issues in France were studied: two mountainous rural territories, including one managed around its river (Bassin du Buëch), and the other

characterized by multiple hazards (Regional Park of Queyras), and a coastal and urban territory (the municipality of La Ciotat).

Twelve interviews were conducted with local actors belonging to institutions relevant for the territories studied. A variety of actors was needed for the in-field analysis of the implementation of public environmental policies. The actors were selected on the basis of their level of intervention to meet not only local managers and decision-makers, but also actors from decentralized and deconcentrated public services (2 deconcentrated services, 1 regional and 1 departmental; 3 municipalities; 2 EPCIs and 2 intermunicipal-syndicates) and concerns (environmental protection, risks). These interviews were aimed at identifying the environmental and risk policy conflicts experienced by actors having different roles, positions and operating at different levels, and which strategies they employed to overcome them. More precisely, they provided the field experience of managers and decision-makers in applying public policies and using regulatory management tools. The objective was to capture the understanding of managers and their appropriation of public policies, their opinion on the organization of public policies, the requirements and difficulties of implementing them, and the possible improvements that could be made. The collection of this information was intended to refute or verify the analysis results of the theoretical methodology. The main ideas stated during the interview were first transcribed using the words and vocabulary of each interviewee. Then, an analysis of the transcripts was carried out to propose a synthesis.

3. Results

The results are organized according to the 3 main phases of the method (see Figure 1).

3.1. Inventory of regulatory texts

The inventory of French legal texts lists more than 200 references over the period 1291-2017

with regard to the protection of the environment, the management of risks and resources and land planning. A recent study carried out on the integration of ecosystem services and natural capital in Scottish policy identified 143 policy documents related to forests, the environment (air, soil and water components), agriculture, rural development and land-use (Claret et al. 2018). We inventoried a similar number of texts given that risks were not considered in the research performed by Claret et al.

The distribution of the texts we inventoried is as follows:

- 5 codes;
- 147 laws or ordinances;
- 42 (national or local) decrees;
- 13 national strategies.

Tools apply a top-down approach to the requirements of legally higher echelon documents according to the principle of hierarchy regarding the norms that organize and govern French law: Laws, Decrees, Orders, Decisions of Justice and so forth. This system is pyramidal and implies that the higher-level standard systematically imposes itself on the lower level. These standards are implemented at different territorial scales according to the relevance of the scale of governance. Here again, the goal is to integrate the tools and regulations of the various policies as well as possible.

Most of the texts were produced after 1900 (8 texts existed before that date). It should be noted that this census gives a partial inventory but is presumably representative of the main texts: it was not possible to perform a complete inventory given the abundance of existing texts. Moreover, selecting the texts is a sensitive issue. Indeed, some texts are short and deal with a specific topic: thus it is easy and quick to know if they are part of the field of study. Other texts are more general and deal with a large topic or several topics. It was not possible

to read them all. In that case, the selection was done *a priori* depending on whether the text dealt with one of the themes that were part of the field of study.

Risk management is governed by a set of policies that address all risks in a comprehensive manner (PPRN- Plan for the Prevention of foreseeable Natural Risks, PCS- Municipal Plan of Safeguarding, DICRIM-Municipal Information Document on Major Risks, etc.) or one or more of them specifically (GEMAPI-Management of Aquatic Environments and Flood Prevention, decrees on the safety of hydraulic structures, fire policies, etc.). The new competence, GEMAPI, combines the management of aquatic environments and flood prevention. Urban planning instruments (SRADDET- Regional Scheme for Sustainable Territorial Development and Equality between Territories, SCOT-Territorial Coherence Scheme) are explicitly designated as implementation tools designed to achieve objectives.

Historically, the first initiatives to protect the environment in France date back to the Middle Ages. The first forest codes and especially the creation of the Water and Forest Administration date from 1291. Environmental law was recognized at the inception of the French Ministry of the Environment in 1971; it is framed by the Environmental Code which entered into force by virtue of the Ordinance of 18 September 2000. Concerns about risks developed strongly in the 1930s with the appearance of the PSS (Plan of Submersible Surfaces), whose objective was to ensure the free flow of water and protect fields from floods. The structure of the environmental code is organized in 7 volumes including those related to:

- two natural physical environments: aquatic and atmospheric;
- natural areas: natural heritage, coastline, parks and reserves, sites, landscapes and access to nature;
- natural risks: floods, earthquakes, landslides, avalanches, wildfires, cyclonic storms, rockfall, tornadoes.

Forest management, under the supervision of the Ministry of Agriculture and Food, is exclusively regulated by the forest code, however the wildfire hazard is shared between the forest and environmental codes.

3.2. Representation of legal links between tools

Various types of relations exist among policy tools and some of them are necessary for successful integration. In her article, H. Briassoulis underlined 3 cases: relationships among instruments of the same type, relationships among instruments of different types, and the use of integrative instruments (Briassoulis 2004). The following sections are organized in the same way as the previous one.

3.2.1. Focus on two integrated tools

Some of the texts identified led to the creation of management tools. Some of them are related to land-use planning. Figure 3 shows the territorial scale of the scope of action as well as the theme of the documents. This figure was built by specifically taking into account two integrated tools (SCoT and SRADDET) and the documents with which they are related through different types of relation (compatibility and/or consideration). These are landscape tools that transcend sectoral boundaries.

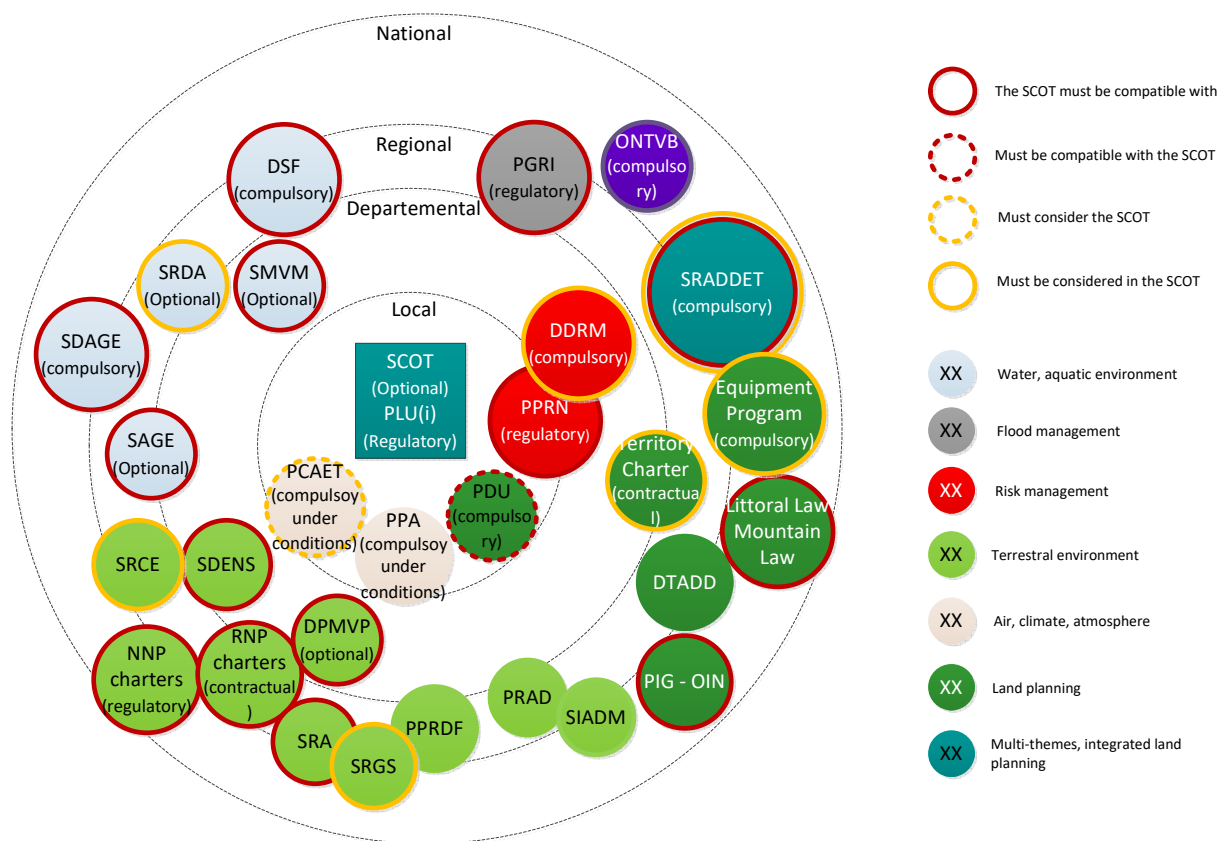


Figure 3. Links between thematic tools and territorial management in the French regulation (acronyms are listed in Appendix A)

The territorial scale depends on the tools considered: for instance, the scale of application of SDAGE is the hydrographic basin (7 basins in metropolitan France) and the DSF (Strategic Document on Seafronts) is applied to 4 seafronts. At the national level, the policies concern the Littoral and Mountain laws, the Green and Blue Frameworks (ONTVB), the Equipment Programs, and the Projects and Operations of Interest (PIG, OIN). The topics of water, parks and forests are very well represented through various tools at different levels (from regional to local levels, following the hierarchy of norms): e.g., the SDAGE and SAGE (Water Development and Management Scheme) for water; PNR (Regional Natural Park), the PPRDF (Regional and multi-year Action Plan for Forests) for the terrestrial environment. Risks are addressed in the DDRM (Departmental Document on Major Risks) and the PPRN.

Some documents are compulsory while others are optional. Some of them are compulsory under certain conditions (PCAET-Plan For Climate, Air, Energy Territory is compulsory in the case of more than 20 000 inhabitants and the PPA-Plan for Atmospheric Protection if more than 250 000 inhabitants).

The hierarchy of norms converges towards two integrative management tools. The first of these is the SCoT, which is a strategic and prospective tool that enables planning a territorial strategy at the scale of a “living area” (see Figure 3). The regulatory relationships between the SCoT and the other documents are based on the principle of opposability (compatibility; consideration). The SCoT must be compatible with most of the documents related to the topics studied in this article. However, when a document is optional (example of the SAGE), the document which can replace it (for example, a river contract) is not necessarily bound to the SCoT. No relationship is imposed with the territorial management contracts (city contract, state-region contract, etc.). For some documents such as the PPRDF and the PRAD (Regional Plan for Sustainable Agriculture), no opposability relations exist with the SCoT but they are consulted during its drafting as they contain relevant information.

Secondly, particular attention must be paid to the SRADDET. As the unique diagram of environmental concerns, it sets out the basic and medium-term orientations for the sustainable development of a regional territory and its management principles. In application of the NOTRE Law (2015), it integrated two important plans on 01/01/2016: the SRCE (Regional Scheme of Ecological Coherence) and the SRCAE (Regional Climate, Air and Energy Plan). Relations exist between the SRADDET and other tools (cf. Figure 4). The SCoT must be compatible with the general rules of the SRADDET and must consider its objectives. The SRADDET must be compatible with the SDAGE and the PGRI (Flood Risk Management Plan).

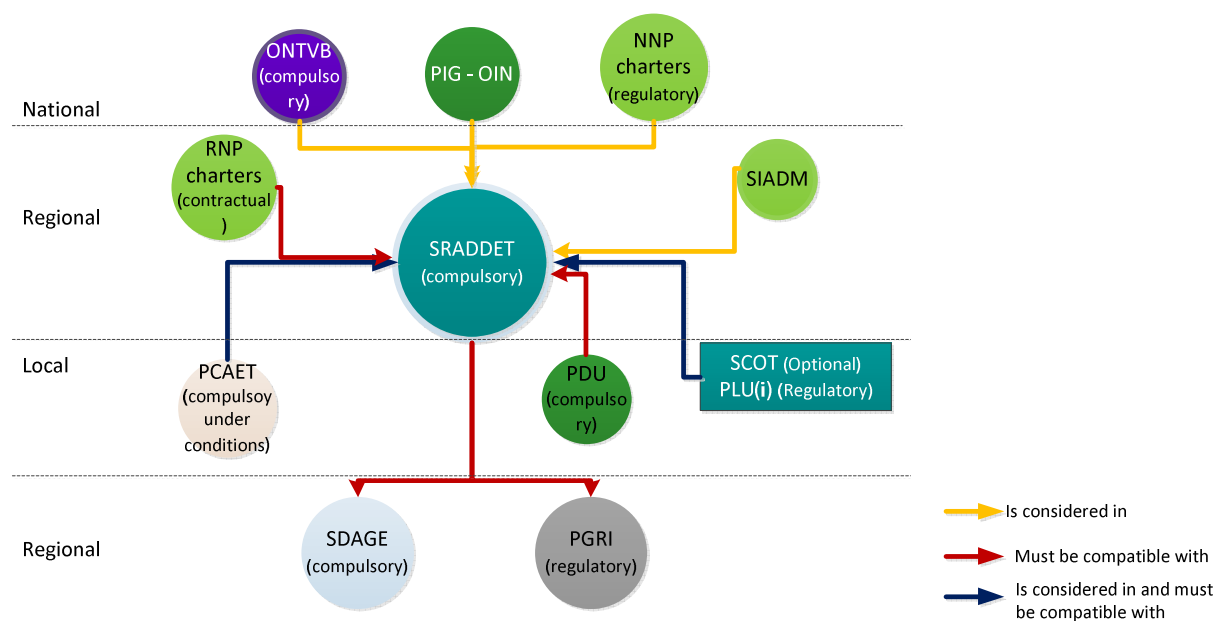


Figure 4. Relations between management tools and the SRADDET which sets up medium-term orientations for sustainable development of a regional territory and its management principles (acronyms are listed in Appendix 2)

3.2.2. Interactions between tools involving territorial components

Another representation can be given of the different tools shown in Figure 3, considering different components: the territory itself (see Figure 5), and the “Water” and “Earth System” components (with a greater number of tools for these components). A distinction according to color is made between the strategic tools, that is to say those which give major orientations or objectives, and the operational tools, those which give a regulation to be applied, a specific program of actions, etc.

Concerning the land planning, some instruments are used at various scales from regional to local. It is the case for the PIG, OIN and PDU. Others are declined only at a specific scale : Territory Charter and Littoral or Mountain Law.

Concerning risk management, the DDRM addresses all the major risks present in a Department, but they are considered one by one. There is a lack of integrated practices for this

topic, though this is not specific to French practices: this case is common and has been mentioned by Scolobig et al. (2017).

A link between land planning (“nominal mode”) and risk management (“faulty mode”) is established through the PPRN and the PLU. The former must be annexed to the latter as the PLU must take into account natural risks.

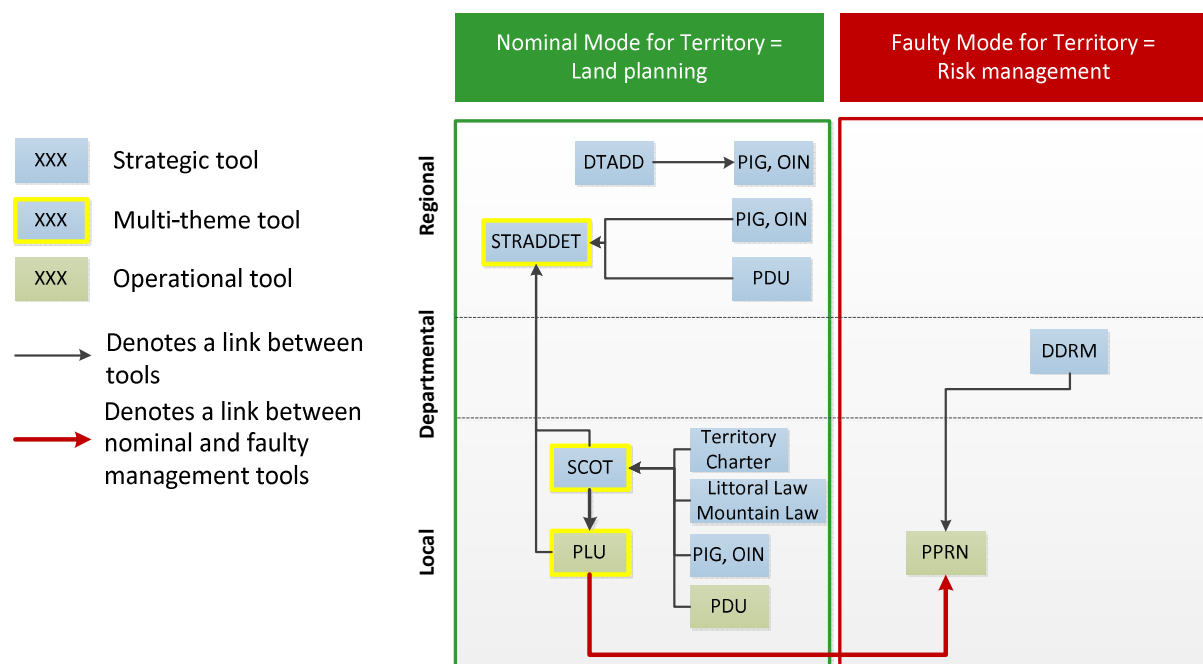


Figure 5. Interactions of the tools by themes – representation for the whole territory (acronyms are listed in Appendix A)

The aim of the next part is to highlight the territorial realities of implementation, facing this complexity.

3.3. Analysis of territorial implementation

All the operational tools studied here generate planning and management rules applicable on a territorial scale. These superimposed regulations must not present any contradiction between

them. Cartographic representations allow initial analyses like that presented in Figure 6 for the Buëch Basin. It is completed by interviews with the actors present in the territory: a synthesis is presented below.

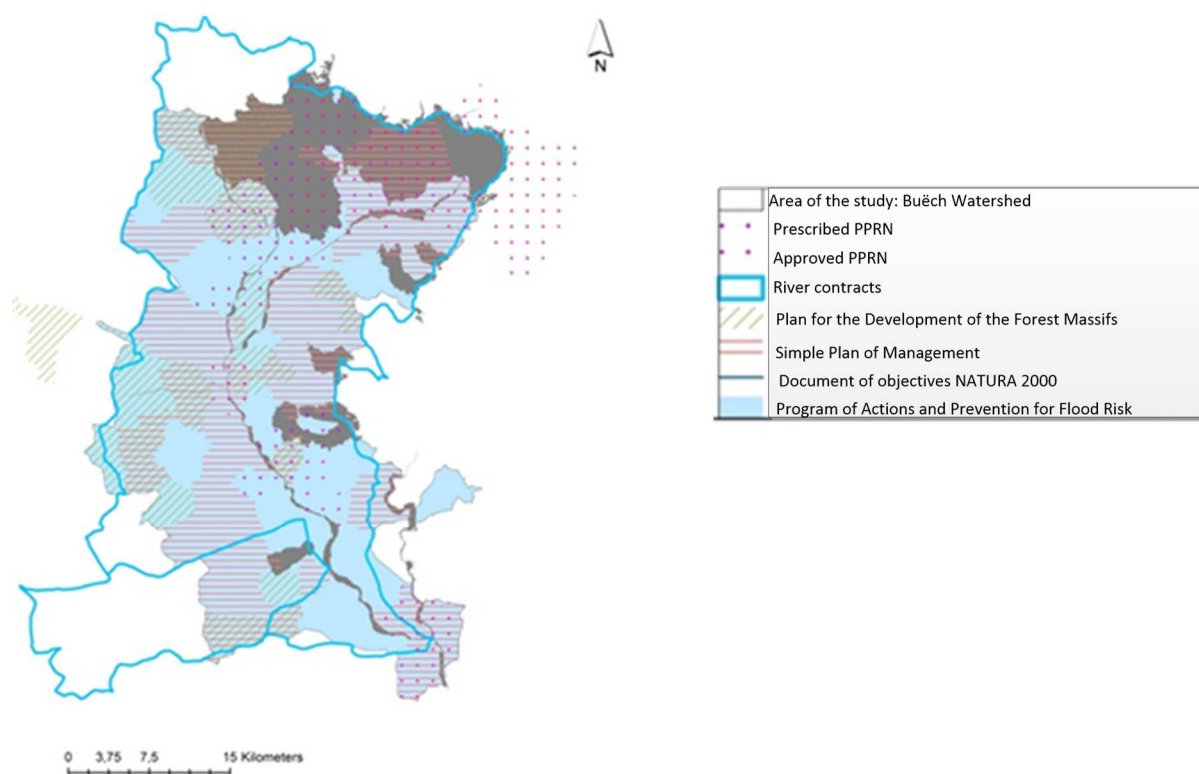


Figure 6. Management tools for the Buëch Valley

The ambition of integrated management is to superimpose or to link the perimeters of action and themes in order to drive multi-thematic development that is ‘compatible with different local themes (or risks)’. For some territories, pieces of the puzzle composing them are missing and the legal link is not guaranteed. Indeed, some do not have a PLU (Local urban Plan) or SCoT to integrate environmental documents in spatial planning. In addition, despite hazard characterization maps indicating a territory susceptible to risk, these territories do not necessarily have the corresponding PPRN. Sometimes, territories lack a protection scheme despite the risks.

Environmental policies sometimes conflict with those dedicated to risk. For example, the dikes of the Buëch river host tree vegetation and several protected species, but the presence of these trees could lead to the failure of these structures (Bambara et al. 2016). The result is a conflict between two uses of the structure: the dike, on which it is normally forbidden to plant trees, and the habitat in which the dike stands classified as a source of biodiversity. Finally, a compromise was found between cutting and the size of the trees in question. This example takes us to the heart of the concerns raised by the GEMAPI, an integrated approach for risk management and environmental protection. The other example concerns actions to prevent the propagation of wildfires that are contradictory to those of ecological continuity. Indeed, fire policies advocate the creation of open spaces without vegetation to avoid continuity between vegetable fuel, whereas preserving plant corridors is essential for green and blue framework policies. However, biodiversity policies follow the same broad objectives, and despite the variety of regulatory zoning sources (SRCE, international, etc.) they complement each other well at the local level.

Internal factors important for the implementation stage including political will, leadership, resources, guidance and knowledge are listed in the literature (Persson and Runhaar 2018). Territorial and financial inequalities also exist. For example, certain territories manage a particular resource, while others benefit from it. The main resources in the Buëch Basin are agriculture and tourism. But protection works are expensive, likewise for environmental protection. Moreover, due to deconcentration, local authorities bear increasingly more responsibilities, but they do not necessarily have the financial and technical capability to implement them due to the increasing disengagement by central government from financial and management aspects. Faced with these disparities, and with this financial situation, the territories seek alternatives. Local managers have a clear preference for a 'contractual' tool rather than a regulatory one. Indeed, as with the contracts of environment

and action plans, commonly found in the implementation of public policies, operating by contract releases significant financial resources for the territories.

4. Discussion

4.1. Dramatic events frequently result in a change of the law

Natural hazard events together with technological and scientific progress were the driving forces behind the evolution of environmental concerns. Indeed, our inventory revealed that when an event causing significant damage occurs, existing laws are almost inevitably reformed: for example, the French State drew up a national plan to combat submersion risk after the Xynthia storm; a law on the repression of pollutant discharges by boats was passed following the massive sea pollution generated by the sinking of the Erika oil tanker in 1999.

4.2. Integration of policies depends on the theme considered

The comparison of the representations for the different components showed a difference in public concern between water policies, which are more sophisticated, integrated and cross-cutting, and land-based policies, which more sectoral and simpler, and which depend on landowners and biodiversity policies. The latter are scattered and from multiple sources. Indeed, all the texts concerning water policies are precise and linked together like the water, aquatic and flood prevention policies. Flood risk is clearly the first political concern in France.

Environmental protection policies are very punctual and scattered. Indeed, in their implementation, the only document that integrates coherence in environmental policies is the SRCE which adapts the green and blue framework policies at the regional level. This plan does not include all the tools for protecting spaces (for example, protected forests are classified via the forest code). As for the rest, they are policies fragmented by major European

or international policies (Wetlands, Natura 2000 network, ZNIEFF-Natural Area of Ecological Interest, Faunistic and Floristic, etc.) or national policies (PNF-Natural Park of France, PNR, RNN-National Nature Reserve, conservatory spaces, etc.). Alongside this, the SRCE creates its own zonings that add to existing zoning. Finally, even if the law seeks to become 'integrated' (integrated management of the sea and coastline, water resources, and water and aquatic environments), it remains very sectoral.

4.3. Policies are coherent from a legal point of view but difficulties can arise for their implementation

The representations (in relation to planning and by component – Figures 3-5) show that there is no contradiction between texts at the legal level. This is a central aim and concern of policymakers, as stated by Howlet et al. (2017). As a result, the political themes appear to respond to territorial needs in a sectoral way. However, when put into practice simultaneously, they raise the problem of tackling a patchwork of intertwined tools and it becomes difficult to analyze the legibility of legal links (see Figure 3 and Figure 4). The choice of tools, the fact that the regulatory tools are too specific or, on the contrary, too general, and disparities between territories (more or less rich, more or less subject to risks, etc.), can lead to tools that are poorly adapted to the territorial reality or the needs of the territories. As seen with the Buëch Territory, environmental policies sometimes conflict with those dedicated to risk, as for the management of the vegetation present on levees.

Finally, the position of the elected representative can be delicate when it comes to enforcing the regulations related to the environment. As noted during field surveys, the application of OLDs (Legal Obligation to Control Brush) as well as the levy of an environmental tax, are devices that generate conflicts within local action. Indeed, in the face of the electorate, some elected officials prefer to conduct a less rigorous policy.

4.4. Contractual tools and taxes are two ways for rising funds

French territorial governance has undergone two major changes since the 1980s: decentralization and deconcentration that have financial implications on local collectivities. These do not necessarily have the financial and technical capability to implement increasing responsibilities. Decentralization has pro and cons (Yang et al. 2015), but takes on its full meaning when it provides sufficient control of the financial resources needed, and thus more autonomy. Local managers can have a preference for a 'contractual' tool rather than a regulatory one. However, certain contractual tools do not have legal significance for planning documents such as environmental contracts in the water management process. The contract is also the vector of voluntarist policies with subsequent financial support, and partnership policies, giving rise to new conditions for certain funding bodies (European funds associated with local funds). Indeed, with the growth of contractualization, the territories must convince funding bodies in particular through the mechanisms of voluntarist policies and through applications for various tools like the PAPI (Program for Actions and Flood Prevention), for the Barnier fund, and for the various European and national tools available in the framework of the ERDF (European Regional Development Fund) and the EAFRD (European Agricultural Fund for Rural Development). The financial quest is time-consuming for local managers. The administrative machinery and the quality required from the candidacy files in a competitive environment, lead the territories to compete with each other for funds, meaning that the territories with the least resources can be disadvantaged. Taxes can be another way of funding: to face the costs due to the exercise of the GEMAPI competence, the law stipulates that a specific tax can be collected from citizens by the collectivity in charge of this competence. Another originality in France is the entity entrusted with driving the application for funds. Indeed, the river syndicate and the park syndicate are two entities with specific natures and missions, but they nonetheless have recourse to the same tools (river contract and

PAPI). In addition, the history of the territories and the type of communities in charge of the file lead to different renderings. There is a real difference between a general community such as a municipality or an EPCI, and a specialized community that depends on its area of expertise and manages the territory around this area. The municipality is not able to manage every subject in the same way, and prioritization is imposed according to the interests of the elected. If the latter has no environmental expertise and / or is disinterested, the territory will feel the impact. Although regulatory tools are mandatory, the quality of their integration in the existing scheme applied to a given territory is not always ensured by law. Some territories want to exercise a competence but cannot afford the cost or criminal liability. The challenge is to know or share a technical competence, the responsibility associated with this skill, and define the partnerships that can spring from it.

Finally, the aim of the SCOT and the SRADDET is to go from a contractual logic towards a regulatory one in order to have more scope. In other words, these tools attempt to both integrate public policies and increase the regulatory scope.

4.5. What about the integration and coherence of policies?

Our study invoked a diagnosis of the coherence and integration of public policies. This section aims at discussing our results face to several recent approaches dealing with integration and coherence of policies: landscape approaches integrating environmental issues (LAE), environmental policy integration (EPI) and policy coherence (PC). LAE and EPI explicitly deal with environmental issues while PC can considered this kind of issues. In the literature, LAE issues are relatively recent (van Oosten et al. 2018). A landscape approach is defined as ‘a framework to integrate policy and practice for multiple land uses, within a given area, to ensure the equitable and sustainable use of land while strengthening measures to mitigate and adapt to climate change’ (Reed et al. 2014). Integrated conservation and

development projects and ecosystem approaches toward landscape approaches have evolved incrementally, with the recognition of the need to address the complex interactions between different spatial scales, and the need to embrace the full complexity of human institutions and behaviors (Sayer et al. 2013). The concept of environmental policy integration (EPI) is used by scientists to evaluate and assess initiatives for coordination (Weber and Driessen 2010). This implies ‘the incorporation of environmental objectives into all stages of policymaking in non-environmental policy sectors’ and ‘a commitment to minimize contradictions between environmental and sectoral policies, by giving principled priority to the former over the latter.’ (Lafferty and Hovden 2003). Different factors influence the successfulness of policy integration (Weber and Driessen 2010): organizational factors; procedural factors and contextual factors. EPI emerged as a response to sustainability issues but its fulfilment seems as far away as ever (Jordan and Lenschow 2010). However, the literature does not currently provide an adequate answer to the question of what EPI strategies work, where and why (Runhaar et al. 2014)? Policy Coherence is another relevant concept. It is defined as ‘The process where policy-makers design a set of policies in a way that, if properly implemented, they can potentially achieve a larger goal’ (Cejudo and Michel 2017). It explores several questions such as: Do the policies studied overlap?; Do these policies reinforce each other?; Do these policies serve the same overarching goal?; Are these policies sufficient to achieve the larger goal (that of the policy domain)? There are three ways in which a policy maker can formulate a set of coherent policies: coherence between the objectives, instruments, and target populations of the different policies (Cejudo and Michel 2017).

Our results showed that French policy goes in this direction, with attempt to integrate in unique instruments different concerns regarding notably land planning, environmental protection and risk management. In this way, the new competence, GEMAPI, combines the management of aquatic environments and flood prevention. Two landscape tools, SCOT and

SRADDET, transcend sectoral boundaries, integrating in a unique instrument different concerns regarding notably land planning, environmental protection and risk management.

We specifically considered risk management as risk is part of territories. In our analysis, risk was viewed as a “faulty mode” comparing to the “nominal mode” typical of land planning (cf. Figure 5) or management of the resources in case of water or land environment. We claim that this double point of view is of main importance for the analysis of the policy integration because it allows a realistic vision of the territory. Moreover, risk is strongly involved in sustainability issues. Principles of LAE and EPI advocate for sustainability but risk is not explicitly indicated in these approaches.

5. Conclusion

This paper proposes a policy analysis based on various types of concern and provides an answer to the question: Do the difficulties of implementing environmental policies stem from the complexity of environmental law or from the organization of local land management? In France, environmental policies and risk-related policies are drawn up along sectoral trajectories that are not linked to the multi-thematic logic of territories. This makes it more difficult for them to be appropriated by local managers, who must ensure that policies are embedded in their territorial project. The thematic overlays of the policies and their scope of action give rise to regulatory contradictions, as evidenced by risk management policies that contradict environmental protection policies, and inconsistencies in the management process due to the lack of legal relationship when it is necessary to choose a tool. Nevertheless, environmental concern becomes more and more cross-cutting through notably the Green and Blue Frameworks impacting urban planning and some tools (SCOT, SRADDET) attempt to integrate in a unique instrument different concerns regarding notably land planning, environmental protection and risk management. The difficulties thus come from the law that

structures all the processes, from the competences attributed to the themes, and from the limited means made available by the State, proof of its financial disengagement in certain domains. Thus the territories must resort to alternative solutions to carry out their territorial projects.

The analysis method presented here is not exhaustive, but it seems capable of integrating broader themes in view to analyzing a wider range of public policy implementation scenarios. Therefore, the approach proposed here can be used for other concerns and in other countries.

Acknowledgements

This work was supported by the Eccorev Research Federation [APOGEE Project] and Irstea [GERIMAE Project].

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Appendix A– List of Acronyms

DDRM: Departmental Document on Major Risks

DICRIM: Municipal Information Document on Major Risks

DPMVP: Directive for the Protection and Enhancement of Landscapes

DSF: Strategic Document on Seafronts

DTADD: Directives on development and sustainable development in territories

NOTRE: New territorial Organisation of the Republic

OIN: Operation of Interest

OLD: Legal Obligation to control brush

ONTVB: National Orientations relative to Green and Blue Frameworks for the preservation and restoration of ecological continuities

PADD: Structuring and Sustainable Development Plan

PAPI: Program for Actions and Flood Prevention

PCAET: Territorial Plan for Climate, Air and Energy

PCS: Municipal Protection Plan

PDU: Urban Mobility Plan

PGRI: Flood Risk Management Plan

PIG: Projects of General Interest

PLU: Local Urban Plan

PNF: Natural Park of France

PNR: Regional Natural Park

PPA: Atmospheric Protection Plan

PPRDF: Regional and multi-year Action Plan for Forests

PPRN: Plan for the Prevention of Foreseeable Natural Risks

PRAD: Regional Plan for Sustainable Agriculture

SAGE: Water Development and Management Scheme

SCOT: Territorial Coherence Scheme

SDAGE: Blueprint for Water Development and Management

SDENS: Departmental Scheme on Sensitive Natural Areas

SIADM: Interregional Scheme for Massif Development

SLGRI: Local Strategy for Flood Risk Management

SMVM: Sea Enhancement Scheme

SRA: Regional Forest Management Scheme

SRDA: Regional Scheme for the Development of Marine Aquaculture

SRGS: Regional Forest Management Scheme

SRADDET: Regional Scheme for Sustainable Territorial Development and Equality between Territories

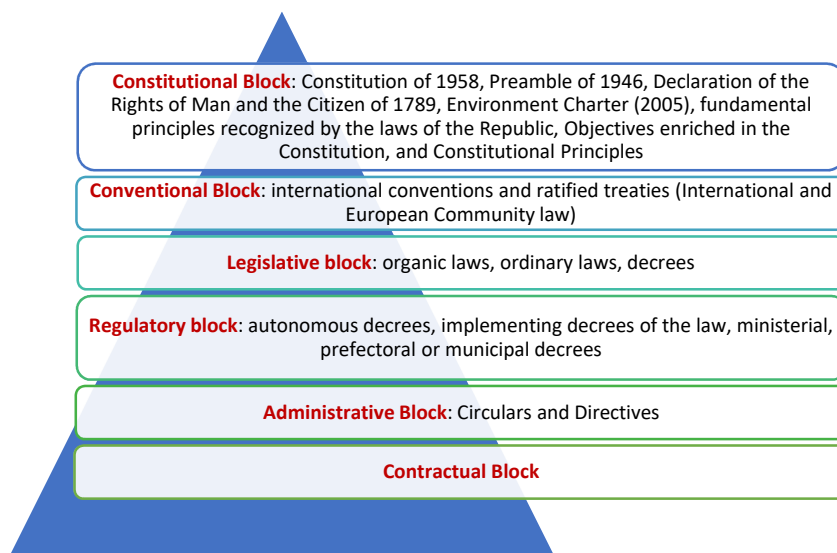
SRCAE: Regional Climate, Air and Energy Scheme

SRCE: Regional Ecological Coherence Scheme

ZNIEFF: Natural Area of Ecological, Faunistic and Floristic Interest

Appendix B: Supplementary data

1. Hierarchy of norms in the French law



2. Interviews

2.1. Issues

Four main issues were discussed during the interviews:

- Introduction of the interviewee: career, job, function and familiarity with the topics covered;
- Overview of the environmental characteristics (including risks) of the territory managed in order to understand the relationship to the territory and perception of risks;
- Overview of policies applied and management tools used (appropriation and application of public policies);
- Problems concerning the implementation process and strategies to overcome these problems; needs to improve the implementation process.

2.2. Questionnaire

PRESENTATION OF THE INTERVIEWEE

1. Can you please introduce yourself and present your background, role and missions in your organization? How are you involved in the management of territorial risks?

OVERVIEW ON TERRITORIAL RISKS AND THEIR MANAGEMENT (knowledge and perception)

2. Which are the (natural and technological) risks present on your territory? Can you prioritize them according to their importance specifying which criteria you use for this ranking?

3. In this map, can you tell us which places are vulnerable to different risks? Can you prioritize them according to their importance specifying which criterion you use for this ranking?

IMPLEMENTATION OF PUBLIC POLICIES WITHIN THE TERRITORIAL PROJECT

4. What are the public risk policies (sectoral - laws / norms / regulations / etc.) applied in your territory? For which purpose?

5. Which are the documents or management tools used to implement these policies? Please specify the role of each of them

6. Among these documents, which deal with different risks and how?

DIFFICULTIES AND NEEDS FOR THE DECISION-MAKING AND TERRITORIAL RISK MANAGEMENT PROCESS

7. Do the various risk management policies and their instruments (examples: PCS, PPR, Natura2000) present synergies, incompatibilities on your territory?

8. Are these policies and instruments in line with your territorial reality?

9. Which are the regulatory practices? Which ones are more voluntarist?

10. What general (positive or negative) feedback have you concerning the implementation of risk management policies and systems?

CONCLUSION

We come to the end of our survey. Do you have any elements to add?

2.3. Interviewees

N°	Person interviewed (anonymous)	Level of operation	Date
1	Regional Director	Regional	29/05/2017
2	Director of urban planning	Local (Municipality)	30/05/2017
3	River Contract Manager	Local (Joint Syndicate)	31/05/2017
4	Deputy Mayor	Local (Municipality)	28/06/2017
5	Project manager for the integrated management of natural risks	Regional	28/06/2017
6	Project manager for water, prevention and natural risks	Regional	28/06/2017
7	Advisor on water and risks, and agriculture	Regional	28/06/2017
8	Project manager for urban planning and risks	Departmental	11/07/2017
9	Elected official in charge of risk prevention	Local (Municipality)	12/07/2017
10	Project manager for regional planning (biodiversity and natural resources)	Regional	13/07/2017
11	Project manager for major natural risks	Regional	13/07/2017
12	Project manager for forestfire risks	Departmental	11/08/2017