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The urban planning of french cities and the challenge of sustainable town planning: improvement and limits

Aurélie Prévost, Nathalie Molines, Philippe Dehan, Jean Bandet

THE URBAN PLANNING OF FRENCH CITIES AND THE CHALLENGE OF SUSTAINABLE TOWN PLANNING: IMPROVEMENTS AND LIMITS

Aurélie Prévost[1], Nathalie Molines[2] , Philippe Dehan[3] , Jean Bandet[4]

Abstract

This article challenges the efficiency of the French urban planning system in front of national and European legislative objectives regarding sustainable urban development. It is based on a historical analysis of the effectiveness of urban management tools. Thus, in a first part, one will show that the major problems of cities such as they exist today, namely urban sprawl and zoning by unique urban function (Williams *et al.*, 2000; Mangin, 2004) and the creation of districts in the 60 ‘s fostering social problems today, appeared in spite of the development of the urban planning system at the same time.

The awareness of these problems and the rise of the notion of sustainable development have made the practices in town planning evolve (Raffaud, 2003). "By making” the legislation “green", they have also strongly developed the rules which change the contents and forms of urban planning (Mathieu *et al.*, 2005).

Then, one needs to ask the question of the current efficiency of the documents dealing with the planning of French cities confronted to the challenges of sustainable development. After a quick presentation of the French planning system and the local plan, which is its tool at the scale of the city, the article will present, in the second part, the advantages and the difficulties encountered. It will hence to light the difficulties we have to translate in a statutory way the planning orientations. One will also highlight other problems, such as the necessity to make the local planning orientation consistent with other public policies of planning and the variety of temporalities, and the limitation of the effects of local plans … (Blanc *et al.*, 2008).

This article will also attempt to demonstrate that town planning documents, if accurately written, can be invaluable tools to improve the quality of town planning and that the limitation of its "impacts", made compulsory by the European legislation

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in 2001, seems to be an extra security for the quality of the cities (Lerond *et al.*, 2003; Miller *et al.*, 2005; Alexander, 2006).
To conclude, after having presented the recent sustainable objectives of planning, by showing the improvements along with the numerous difficulties with which the planners are confronted, the article will focus on the fact that urban planning is not the only tool to be mobilized to make the sustainable city, but a necessary control lever, to be coordinated with other positive public actions, urban studies and responsible political choices.

1. Introduction

This article fits into an international context of urban development (Rogers, 2000) and studies on the quality of urban environments and resource conservation. In France, "sustainable planning" issues are increasingly present, owing to the Grenelle 1 and 2 laws (which aim to improve the awareness of the environment) and the legislative reinforcement in the assessment of plans and programmes (2001 EU directive, translated into French law in 2004).
In this context, the article questions the actual efficiency of urban planning with regard to sustainable development and the environment. To do so, it provides an analysis of the means and tools made available for the urban planning of French cities today, highlighting the improvements and limits encountered throughout the course of history.

The first section of the article shows that urban planning in France has existed for over a century, although this has not kept problems linked to social, demographic, economic and cultural factors, as well as to political decisions, from arising. Thus, history shows that planning and its developments aimed at improving urban quality have mainly been the translation of political choices, the latter being influenced by societal change.
In the meantime, global environmental issues, linked to the difficulties encountered by cities, have contributed to the emergence of global awareness, leading to the generalization of the "sustainable development" concept. Through legislation, sustainable development has also brought about changes in urban planning philosophy, as can be seen through the effects of the 2000 law on Urban Solidarity and Renewal, as well as the significant developments in urban planning practices.

The second section is focused on urban planning at the city level. Urban planning gathers all the institutional means that are implemented to try and control urban changes and city expansion. In France, such control is carried out through zoning and land use regulations at the city level. The second section shows precisely where these plans stand in the French urban planning system, the way they are linked to other planning documents and their actual impact. It also highlights the regulatory levers that the *Plan Local d'Urbanisme* (PLU) is provided with to act in favour of the environment, even though sectoral PLU efforts must be completed with other policies.

Finally, the last section deals with the assessment of these plans. This assessment, which was reinforced through EU laws in 2001, aims to curb their impact on the environment. Considering the State's level of environmental requirements, there are reasons to be optimistic about the impact of such procedures.

2. A century of urban planning hindered by uneven control of urban development

2.1 Evolution of urban planning in France

Originally, the urban planning of French cities boasted few legal instruments. It dealt with issues separately: traffic lanes and public area planning, public health, protection of heritage, management of hazardous institutions, etc.

The first significant law pertaining to town planning was the *Loi Cornudet* of 1919, in a post-war reconstruction context. This law, which stipulated "extension and improvement plans" in cities of over 10,000 inhabitants, was grounded in the values and goals of the time: health awareness and aesthetics. However, these first tools of urban planning did not produce the desired effect. After very long delays[5], only a quarter of the Cornudet plans were implemented, while a single regional project came into existence (that of the Paris region).[6]

Then, in 1958, "urban master plans" and "detailed plans"[7] were introduced. The master plan included land use zoning, dedicated spots for public facilities and protected woodland areas.
The detailed plan was a kind of "floor plan" that dealt with sectors defined in the master plan. In particular, this "floor plan" pattern was then blamed for being too rigid (the prescribed "floor plan" leaving no room during the building permit process).
Another major criticism was the lack of a global project, causing land speculation and excessive clustering. And yet, the aim of city planning, which was invented in the late 19th century according to Françoise Choay's analysis (Choay, 1965), is the management of urbanisation to help meet human needs. It was therefore essential to place regulatory town planning within a project context (Raffaud, 2003).

This was first attempted in the 1960s, when the notion of "territorial management" emerged, with the *Loi d'Orientation Foncière* (LOF) of 1967. This law (which remained in force until 2000), allowed for the creation of the *Schéma Directeur d'Aménagement et d'Urbanisme* (SDAU) and the *Plan d'Occupation des Sols* (POS), two town planning documents.

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[5] The first plans only received final approval on the eve of World War II. See P. Merlin, L'urbanisme, Que sais-je, PUF p.65.
[6] Le coin du droit de l'urbanisme website: http://www.coin-urbanisme.org/urbanisme. J.-H. DRIARD
[7] Since urban master plans were not compulsory for all towns, additional plans also existed (for large towns or towns confronted with specific problems) and basic plans.

The SDAU is a supra local planning document that sets out development guidelines while the POS is the local document that must be compatible with SDAU guidelines. The POS includes a territorial diagnosis and statutory documents that are binding on third parties and aimed at conditioning future constructions. Two elements stand out from these documents: the desire to define a coherent territorial urban project, and the willingness to respond to previous criticism by separating the project from the regulation to improve building rights management.
These documents aim to instil a strategic vision into territorial management, both in the SDAU at the supra local level through development guidelines, and in the POS at the local level through compatibility with the SDAU. However, with the POS, the town does not have a true guidance tool. That flaw and the criticism it incurred led to a redrafting of town planning documents in 2000 with the *Schémas de Cohérence Territoriaux* (SCOT) and today's *Plans Locaux d'Urbanisme* (PLU). Thus, the *Solidarité et Renouvellement Urbains*[8] (SRU) law of 2000 deeply changed the approach to territorial planning and remains a milestone in the history of French law. If it brings a new dimension in town planning, it does so also in terms of sustainable development and environment[9].

Thus, the evolution of urban planning in France has seen the emergence of a global town project, as well as the willingness to base decisions on a more accurate and scientific analysis of the territory. Yet, the urbanisation of French cities was far from flawless in the early years of town planning, probably because changing lifestyles and economic context as well as current political decisions precede issues and planning tools, thus conditioning planning to a great extent. These changes, which recent laws have tried to mend, often caught the fledgling town planning process unprepared. Indeed, such laws as the SRU laws or the more recent Grenelle[10] laws, which have made urban planning more sustainable, seem to have been created as a response to the issues we are now going to discuss.

[8] Or "Urban Solidarity and Renewal Act »
[9] The goals of the PLU as defined by the laws pertain to urban renewal, protection of natural areas and heritage, urban quality and urban functions such as housing and environmental awareness. (According to article L121-1 of the French Town Planning Code)
[10] Since the last decree of the Grenelle 2 law was published in February 2012, we lack the required perspective to assess the actual effects of the law. Therefore, this article will mostly address the PLU in its "SRU law" version, by introducing a few major tools brought by the Grenelle 2 law.
Furthermore, it seems that this law has helped raise environmental awareness and introduced some new tools and concepts, though it has not changed significantly the form or substance of PLUs.

2.2 Urban forms facing influences

This section aims to present urban evolution in France throughout the years, in order to compare the problems that occurred with public policy decisions and the evolutions of urban planning.

As early as the 1950s, the "house" was highly acclaimed. Yet, in the beginning, the state was more inclined to favour the construction of large collective apartment blocks to try and solve the housing crisis, while structuring a building industry that was too fragmented. After an initial satisfactory reception, apartment blocks were soon blamed for their monotony, formal rigidity and defects, and lost their appeal within a very short time. This lack of intrinsic quality, combined with the fast-increasing purchasing power of working and middle classes during the post war *trente glorieuses* (thirty glorious years) led these populations to fulfil their dream by leaving these dwellings in favour of individual houses. The attractiveness of the latter has not decreased ever since (Djefal et al., 2004).

The complete transformation of French urban designs was favoured by policies (the State's in particular) that radically shifted in terms of housing strategies. After fifteen years or so of restrictive policies regarding individual houses, their attractiveness was then strengthened by the implemented policies. Thus, in 1969, Albin Chalandon, then Minister for Infrastructure and Housing, claimed he wanted to "be able to give people what they wanted" (M.Carmona quoting A.Chalendon in Paquot, 2010). To do so, he organized a contest on individual houses, with the aim of finding an inexpensive "product" for villages of 3,000 to 4,000 houses. However, the so-called "*Chalandonnettes*" brought about a number of problems. While low-value individual houses became more accessible, sub-urbanisation increased with the inherent problems of energy, commuting and space consumption. Furthermore, with urban sprawl came an additional problem that is particularly acute in France, which Éric Charmes (Füzesséry et al., 2010) calls "crumbling". The town or the village is sucked up by the city centre, which tends to sprawl, in particular through the building of housing estates. This "crumbling" is problematic in terms of coexistence between natural, agricultural and urban areas, since it increases contact between populated areas, natural areas and farms.

In industrialized countries, increased access to individual housing accelerated urban sprawl. Indeed, this phenomenon, correlated to increased access to cars from 1960 to 1985 and the appearance of numerous shopping centres and *zones d'activité* (activity areas), began in the 1960s (Mangin, 2004, Figure 1.).

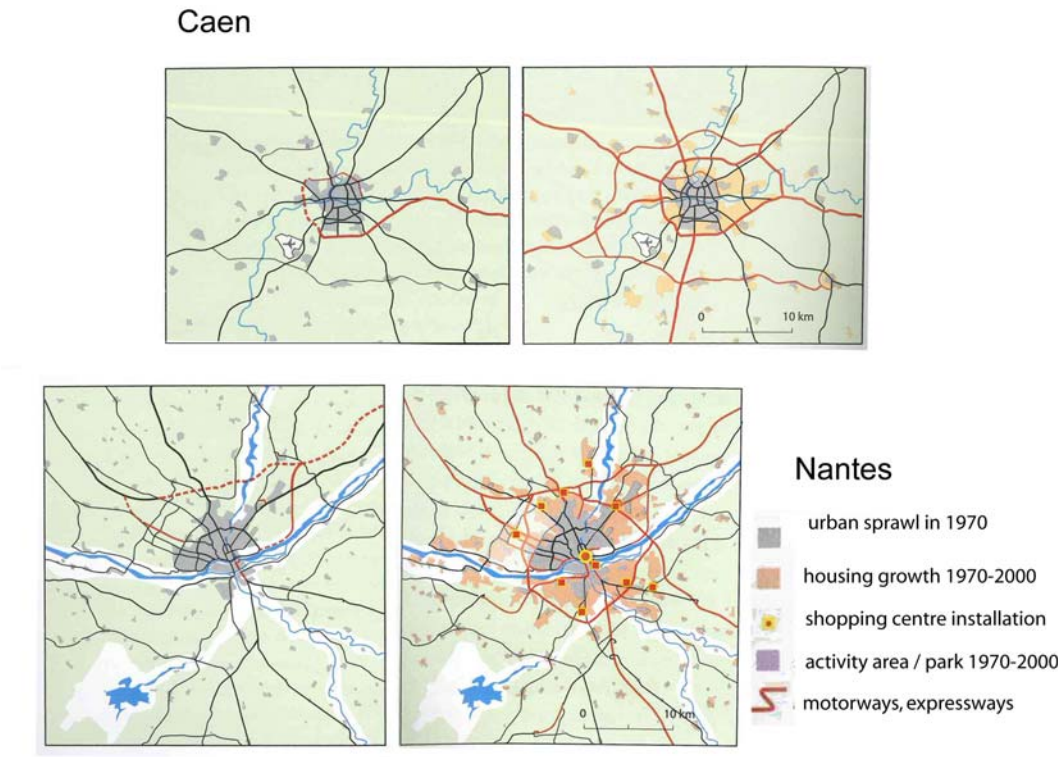

Figure 1. Concentric growth of Caen and Nantes from 1970 to 2000
Source: According to Mangin 2004 p.86, 87.

Increased access to cars, changing road networks and consumption modes are linked to evolving city structures and therefore to urban sprawl processes. Thus, we perceive that the reasons for the rapid growth of "houses" and "detached houses" in suburban areas are numerous. Such sprawl is linked to the home-owning dream, land prices, and mobility and consumption modes made easier by cars. In addition to - and as a response to - these societal levers, public policies have backed all these changes. Through this historic study of the urbanisation of French cities, we can see that public authorities and politicians have endorsed planning choices that perpetuated difficulties over 40 years, with the massive increase of detached houses and a political willingness to develop road and trade networks in favour of automobiles.

Finally, the *Loi de décentralisation* of March 2nd, 1982, was a turning point in urban planning since it entrusts competence to local authorities in planning matters – until then, it was the State's prerogative. To sum up, decentralization clearly proved beneficial for towns as it ensured localized action and strong involvement. However, it sometimes created pitfalls due to the complex planning system. Profits - whether financial or electoral - for the various actors, the quest for the collective interest and the definition of the common good that may vary from one individual to another do not always guarantee optimal planning choices.

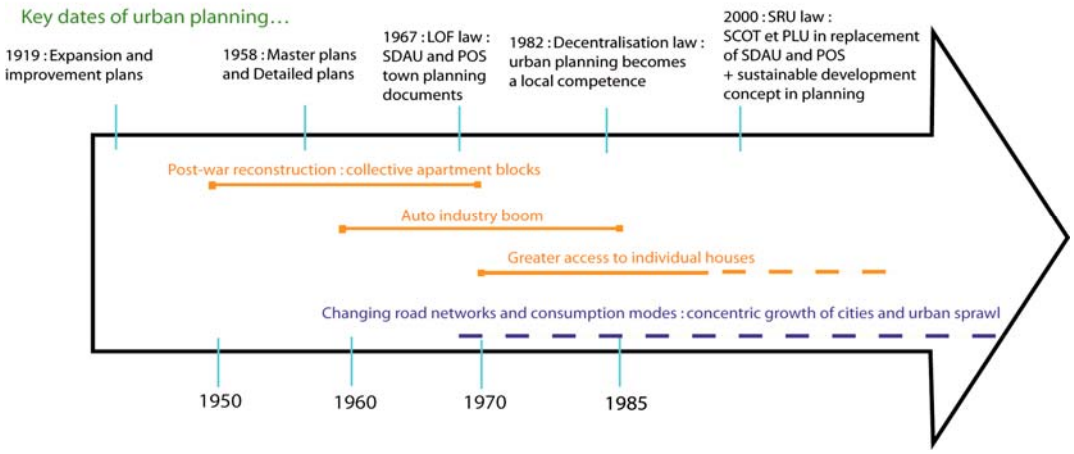

Figure 2. Evolution of urban planning and urban dynamics

Today, owing to these changes, the role of sustainable development in urban planning has become significant, as shown by the changes presented in 2.1. The next section deals more precisely with the functioning of the French planning system and the means of integrating the environmental component into city planning.

3. Local urban plans can be levers of sustainable development, provided they are coordinated with additional public policies

3.1 The role of local urban plans and their impact on the French urban planning system

From the late 1990s and the publication of the Labetoulle[11] report - a critical assessment of urban planning in the previous decade - the government has been trying to mend the errors pertaining to decentralization and the weaknesses of documents originating from the LOF law. To do so, it passed the SRU law in 2000, which changed the philosophy and structure of French urban planning.

As in the past, the current French planning system is built on two levels: the supra local and the local (of a town or of its agglomeration) levels.

[11] « L'urbanisme pour un droit plus efficace », French Council of State report, Labetoulle Commission. Documentation Francaise, May 1992.

The first tool at the supra local level is the *Schéma de cohérence territorial* (SCOT). This inter-municipality document allows towns or their groups of municipalities "to provide coherence and coordinate policies in terms of urban planning, housing, economic development, commuting and commercial installations in a sustainable development perspective." (Goze, 2007)[12]
The broad guidelines for urban development at the supra local level contained in the SCOT were then enforced in the *Plans de Déplacements Urbains* (PDU) for cities with over 100,000 inhabitants and the *Programme Local de l'Habitat* (PLH).
PDUs aim to define the organizing principles of human and merchandise transportation, traffic and parking within urban transport perimeters in an attempt to achieve a balanced use of the different modes of transport and promote the cleanest and most energy-efficient modes.
PLHs aim to meet housing and accommodation needs while favouring urban renewal and social diversity.

At the local level, cities are provided with the *Plan Local d'Urbanisme* (PLU), which must be compatible with the SCOT and other PDUs and PLHs[13].
As for the actual content of the PLU, the SRU law of 2000 brought a new dimension to the former Plans d'Occupation des Sols (POS) by endowing them with a *Projet d'Aménagement et de Développement Durables* (PADD), which sets out territorial management priorities with a crosscutting approach (town planning, functions, commuting, environment, equipment, etc.). In order to be consistent with identified dynamics, strengths and weaknesses, the PADD is based on a territorial diagnosis. The development guidelines set out in the PADD are then translated into the PLU regulations, which condition future construction in terms of land occupation, volume and layout. Local territory zoning makes it possible to adapt the rules dictated by the general urban structure and space characteristics. Thus, the PLU regulations condition building rights (setting up, volume, outdoor areas) and space organisation (function, land reserves for equipment, etc.), while making sure that the PADD local objectives and PLU general objectives defined by the laws are respected. These general objectives apply to urban renewal, the preservation of natural areas and heritage, urban quality and urban functions such as housing and environmental awareness.

In their current form, these regulations are very often blamed for one aspect: they are regarded as extremely complex, either in expression (legal regulations that may be difficult for citizens to grasp), or in rule interaction that sometimes makes their consequences in terms of buildings and urban landscape difficult to anticipate. For each plan area, there are 16 articles available to restrict destination, aspect,

[12] GOZE, M. 2007. "Schéma de cohérence territoriale" Les outils de l'aménagement, http://www.outil2amenagement.certu.developpementdurable.gouv.fr/rubrique.php3?id_rubrique=41 website

[13] There are also "*cartes communales*", very simplified document adapted to municipalities with no land pressure or need for requalification of public spaces for instance. As soon as town planning becomes a true local issue, the low building impact of these "maps" (the National Master plan Regulation is applied) may encourage the drafting of a PLU.

installation, volume, surroundings and connection to future buildings, but only 2 are mandatory: those which condition installation in relation to the road and to boundaries. However, all PLUs use at least ten of them in order to control development as much as possible. That difficulty in reading regulations and grasping their impact is increased by the ever-changing city itself. The French government claimed it wished to simplify urban documents. If this reform becomes reality, one may wonder about the "right" form to give to these documents, the right balance between constraint and freedom, and the complexity of their future use.

The function of regulations is to translate the highly crosscutting guidelines of the PADD on a regulatory basis, the PADD being merely the political project for the city, while taking supra local prescriptions and legislative objectives into account. However, it is clear that the scope of regulations - building rights, urban functions, zoning and spatial organisation – does not systematically allow an extensive translation of all political challenges that may be set out in the PADD. The PADD either goes beyond the scope of the PLU (willingness to stand for political actions that exceed the scope of the PLU), or the complex PADD guidelines require regulatory decisions (see next section). Thus, some guidelines, like density growth in a particular zone or the conservation of heritage buildings, will be translated directly. Others will be addressed less directly through regulatory tools with less impact, and/or the PLU, with its regulations, will mostly make sure that it does not hinder its implementation through more adequate public policy tools. The example of how environmental issues are taken into consideration in regulations will be developed in the following paragraph.

Finally, we will see in the final section of the article that PLUs should comprise elements related to project assessment faced with sustainable development and the environment.
The following paragraph presents the means made available to PLU regulations to take environmental issues into account.

3.2 PLUs can be used as a tool in favour of sustainable development and environmental protection

Throughout history, laws have become more ambitious in terms of sustainable development. The SRU and Grenelle 2 laws have defined goals for PLUs that cover all urban components in terms of housing, functional and social diversity, equipment, but also the environment. However, it seems that all of these challenges should be dealt with adequately according to the territory and its characteristics. If local authorities are willing to be ambitious in terms of sustainable development, they must fix priorities and make decisions so as to best respond to the challenges of their territory.
Within this "green" legislative framework and the political and urban context of each city, the PLU translates the political development project, and also attempts to translate other supra local policies regarding housing, commuting, trades, etc.

To achieve these goals, its regulatory scope makes it possible for the PLU to have an impact on a number of urban and environmental aspects, with varying levels of prescription and prohibition. Besides systematically defining zoning and building regulations, the PLU can be regarded as a "tool box", from which each town may be free to pick the most interesting one to translate a development plan in coherence with territories and laws. Moreover, some PLUs also have to take into consideration the "plans and programmes" European directive regarding the effects of plans on the environment, and prove that the chosen regulations have no impact on the environment.

We will see that the first interesting "tool" is local plan zoning, which allocates specific functions (in particular agricultural and natural ones) to some areas, and defines town planning rules (morphological ones in particular) that are related to them. The second tool directly regards the rules, either written or graphical, that can be applied.

The "zoning" of urban functions, which is designed to reduce nuisance and incompatibility between industrial activities and housing for instance, is widespread in many countries. The use of "buffer zones", which enable the separation of nuisance sources from housing areas through green areas, is common practice. (Pearce, 2005). In France, at the local level (that of PLUs), these buffer zones exist and are mainly defined in two ways.
First, there are regulatory buffer zones around the sectors presenting a technological or natural risk, or a high level of nuisance such as airport-related sound pollution. These buffer zones have an influence on the chosen types of activity, as well as on building rights, in order to curb the density of houses in the vicinity of nuisance sources in particular. Such zones are mostly the result of State prescriptions and are transcribed as such in the PLU. These prescriptions come on top of zoning and corresponding regulations. This is the case for the *Plans de Prévention des Risques* (Risk prevention plans).

Secondly, as for noise pollution from road infrastructures and industrial activities, the towns that elaborate plans can organize zoning to protect populated areas, without being legally obliged to do so. Thus, areas dedicated to industry and commercial activities can be primarily located in the vicinity of major road networks in order to reduce their impact on populated areas. Guidelines from the building code, which are not taken into account in PLUs, strengthen this scheme as they are directly applied to the building industry.
Finally, areas where construction is no longer allowed are also dedicated to the protection of natural, agricultural and forest spaces. Green areas can also be created through land restriction tools used in PLUs.

Furthermore, the Grenelle laws have made the implementation and protection of *Trames Vertes et Bleues* (which include "ecological corridors") compulsory. These belts may be favoured through various PLU tools, including zoning. However, it seems quite difficult today to make these belts consistent at the local level (i.e. the

town level) as they are defined on a larger scale. (Cormier et al., 2010). These guidelines are recent and it will be interesting to see how PLUs try to overcome these difficulties.

As far as regulations are concerned, local plans can operate in two very different ways. They can either fit into the general everyday town planning framework by "legally" conditioning the building permits filed in the different urban areas; or these regulations act as an expression of a global project (mostly at the neighbourhood level), conducted by local authorities or within the framework of negotiated projects (Raffaud, 2003; Burkart, 1999). Therefore, it is logical that environmental and sustainable planning efforts should be easier in a "project" town planning approach. This is also the case for the new *Orientations d'Aménagements et de Programmation* (OAP), which were introduced by the Grenelle 2 law and make it possible to define "development guidelines" for a sector that are binding on third parties in terms of accountancy. They would contribute to make town planning more flexible and more controlled at the neighbourhood level.
The various examples we are now going to present mostly apply in the case of building permits that are filed on a daily basis rather than in the case of global projects, for which PLU rules are mainly a framework that were made compatible with these projects' development plans.

The issues of urban shapes and functional diversity are widely addressed in PLUs as they meet the first purpose of local plans. Zoning and regulations allow certain urban functions to be allocated to particular areas, while prohibiting others. The buildings that are expected in each zone are conditioned by rules of height, hold, size, etc. These tools may be used to achieve the quest for a "sustainable" city morphology, even if such a notion is the subject of debate and seems closely linked to the characteristics of each territory (Williams et al., 2000).
These morphological rules, provided they are drafted properly, can have an impact on the amount of sunshine, which helps improve energy performance ratings (Prévost et al., 2011).

As far as integrated devices of renewable energy production are concerned, the recent Grenelle 2 law provides that PLU rules will no longer be allowed to oppose the installation of such equipment. This new law also provides for the possibility to impose energy performance criteria, although we do not know exactly how. Until now, the PLU could not enforce any energy regulations. However, some incentive schemes already existed and are still valuable today since they provide the possibility of increasing constructability provided an effort in favour of energy is made.

Other themes, such as the protection of heritage buildings, social diversity, rainwater management and sanitation per plot, can be found in PLUs.
All these themes may be addressed within the rules of each area in various (more or less pro-active) manners, and by using incentive measures such as derogations under specified conditions. Moreover, they may be taken into consideration as a guideline

within the framework of OAPs, for instance in view of a global project at the neighbourhood level.

In this section, we have seen that local town plans in France are provided with a number of tools to integrate the environment in the management of the changing city. Furthermore, although the PLU is sometimes limited in prescription by its regulatory scope (in terms of water or biodiversity for instance), one should bear in mind that territorial management and other actions in favour of the city are also addressed by other public policies. These general interest measures are sometimes more adequate and complement the effects of the PLU. For example, within the cross-industry *Agenda 21*, which takes all sustainable and environmental dimensions into account, the French PLU could act as a lever, on such aspects as the coherence between urban planning and transport (prioritising density along public transport corridors), or the development of new forms of housing such as intermediary housing (through morphological rules).

It is clear that PLUs are provided with sustainable development and environmental tools. Indeed, if there are limits in taking the environmental component into consideration, such limits may be found elsewhere. There may be difficulties in bringing together policies that are defined at different levels, and others in translating urban guidelines on complex territories into concrete terms. This is due to the choice of rules and tools, the impact of which is not always easy to anticipate.
Eventually, there may also be a lack of political ambition in terms of sustainable development, which may result in “minimum” PLUs.

The PLU regulation is the element that is applied to buildings and equipment in concrete terms. The next section will illustrate that this component is not the only one in the PLU from which the environment may benefit. In addition to the diagnosis, the PADD and regulations, the PLU comprises elements pertaining to the environmental assessment of the project. The coming chapter will present its content, contributions and limits.

4. Environmental assessment of urban planning documents: a global approach for less impactful planning, while facing urban complexity

Since the SRU law of 2000, urban planning documents have been required to develop a more transparent approach on the protection of natural areas and resources, as well as on the limitation of pollution and nuisance within guidelines and projects. Besides defining legally consistent urban principles, these documents must include an “environmental profile”, an analysis of the Plan’s main foreseeable effects, and a presentation of the various choices made to define the PADD. Since the 2001 “plans and programmes” European directive, which was translated into French law in 2004, urban documents, including some PLUs, have had to provide reinforced environmental assessment, which sets compensation, reduction and avoidance measures for identified effects, as well as an analysis of the Plan’s effects at the end

of a ten-year period following its approval (now a six-year period with the Grenelle 2 law).
This assessment is part of the strategic environmental assessment of policies, plans and programmes that precede projects (Strategic environmental assessment), and have become common throughout the world (Lichfield, 1997). This strategic assessment can be carried out at different stages: before the process, in order to guide decisions regarding environment, during the implementation, or after the process for ex-post assessment of the plan (Lerond et al., 2003).

Significant PLUs which are not covered by a SCOT (or whose SCOT is not provided with assessment) as well as PLUs which cover an area close to or inside a Natura 2000 area[14], are subject to strengthened environmental assessment, that is under the European directive.
The State has become very strict about the quality of this assessment, especially when the area is related to a Natura 2000 site. Indeed, the State demands that all doubts concerning possible impact of the PLU on such sites be dispelled. Eventually, once the Plan has been created, the State may cancel the plan if it deems the quality of research insufficient (as with the Bouguenais PLU, which was cancelled in February 2011).

The content of the environmental assessment includes the environmental diagnosis of the area, the justification of planning choices, and the impact study. The impact study has to deal with political guidelines, urban planning rules, zoning, as well as with Natura 2000 sites and environmental themes as a whole. This accounts for its complexity since the impact of regulations is difficult to anticipate. As a result, the "impact" is sometimes defined "hypothetically", with no possible quantification. If negative impact is anticipated, the PLU must provide ways of avoiding, reducing, or compensating them[15] (ex-ante assessment).
Finally, the PLU must review its impact at the end of a six-year period following its implementation (ex-post assessment). Feedback in terms of PLU results is currently inexistent as the legislation is very recent. However, PLUs with a monitoring framework are all provided with a system of sustainable development territorial indicators, often in the form of "sets of indicators" that we may call "dashboards". This system of indicators is intended to help actors make decisions, grasp the complexity of the real world and work together (Joerin *et al.*, 2005).

One may tend to think that indicators measuring impact on sites (like Natura sites) are more specific and enable assessment of the actual impact of the PLU since they are based on precise, localized inventories. As for some thematic environmental indicators (that of a dashboard for instance), which provide a record of environmental issues (like water or air quality), from which the impact of the PLU is

[14] "The Natura 2000 network gathers various natural sites in Europe, on land and at sea, that have been identified for the scarcity or fragility of animal and vegetal wild species, and of their habitat." (http://www.gouv.fr)
[15] "Compensation measures", within an impact study on Natura 2000 sites, are the last stage of measures to be set. They prompt the decision of higher authorities.

to be deduced, the analysis seems less direct (i.e. “hypothetically”). However, despite these few drawbacks, all these existing indicators (also in the case of impact studies) are quite useful to assess the changes in the territory and, if need be, to use the PLU or any other public policy which may be more efficient to improve the environment.

We have seen that the PLU is strictly controlled by the State in terms of assessment and circumscribed by law. Assessment brings greater attention to environmental issues and, while making people more aware of the crosscutting plan effects, also mobilises other more targeted and even fully dedicated public policies.
However, some limits need mentioning. The complexity of the city seems to make it impossible to precisely and thoroughly assess the impact of urban policies (hence the impact that is sometimes defined “hypothetically”). Furthermore, while modelling methods of urban phenomena are developing, no French town is currently ready to use these complex methods for assessment. The detail level of the requested assessment is often in coherence with the magnitude of the projects and the means (mostly data) available.
Finally, these environmental studies remain the responsibility of local authorities, which steer all projects, particularly those related to planning. Still, local authorities have a duty to favour major urban projects that are supported by representatives. Therefore, we are faced with a potential conflict between the obligation not to harm the environment on the one hand and political requests in terms of development on the other. As a result, the whole issue in terms of assessment is to avoid such impact while making room for development projects. It is up to the State and its competent environmental authorities to be sufficiently demanding while acting as advisors to all projects, including the PLU.

5. Conclusion

The emergence of urban problems and international awareness have brought about changes in the laws that govern French urban planning, by allowing planners to be more pro-active in terms of sustainable planning.

At the city level, PLUs, which have a number of tools available to them to incorporate environmental matters, must implement the recommendations of the SCOT. However, although laws set ambitious general goals, the use of regulatory tools varies considerably according to towns. Furthermore, it is extremely difficult to coordinate regulations that have an impact on intertwined urban themes. These are the restrictive points for handling environmental matters in PLUs.
On the other hand, all plans must provide an analysis of the likely impact through simple (under the SRU law) or strengthened (under the “*Plans et Programmes*” directive) assessment. This appears to be a real improvement in terms of environmentally-friendly planning in France.

Thus, considering what has been discussed in this article, we understand that “cautious” planning involves sensible political decisions. These decisions should be made through anticipating the maximum impact that planning may have on the

various components of the city. Political guidelines should also be shared by urban actors, including among citizens (for environmental assessment, we have seen the importance of communication with government services in section 4.). Governance and consulting are essential, lest the process should not be achieved and public policies should not be coordinated properly.

As far as urban planning is concerned, the anticipation of public policy impact accounts for a closer relationship between representatives, local authorities and the field of urban studies and research. Today, “reports” and the use of developing tools such as modelling are increasingly present before the creation of public policies and within ex-post16 assessment. A model for the complexity of urban rules itself will soon be developed (Brasebin et al., 2011).

Finally, we may hope that the next legislative and regulatory changes will help improve environmental awareness. The Grenelle 1 and 2 laws, though they have not revolutionized urban planning, have provided a number of interesting tools for PLUs, such as the development and programming guidelines, new measures in favour of coherence between urban planning and transport, the setting up of *Trames Vertes et Bleues*, etc. Within a few years’ time, we may witness a reform aimed at simplifying French urban documents, with the hope that these simplifications will allow for more incentives and innovation.

6. References

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