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Spatial planning to the test of property rights in Switzerland: an innovative land management approach to coordinate spatial planning goals with property rights interests.

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Abstract:

In Switzerland, the land management regime is characterized by a liberal attitude towards the institution of property rights, which is guaranteed by the Constitution. Under the present Swiss constitutional arrangement, authorities (municipalities) are required to take into account landowners' interests when implementing their spatial planning policy. In other words, the institution of property rights cannot be restricted easily in order to implement zoning plans and planning projects. This situation causes many problems. One of them is the gap between the way land is really used by the landowners and the way land should be used based on zoning plans. In fact, zoning plans only describe how landowners should use their property. There is no sufficient provision for handling cases where the use is not in accordance with zoning plans. In particular, landowners may not be expropriated for a non-conforming use of the land. This situation often leads to the opening of new building areas in greenfields and urban sprawl, which is in contradiction with the goals set into the Federal Law on Spatial Planning. In order to identify legal strategies of intervention to solve the problem, our paper is structured into three main parts. Firstly, we make a short description of the Swiss land management regime. Then, we focus on an innovative land management approach designed to implement zoning plans in accordance with property rights. Finally, we present a case study that shows the usefulness of the presented land management approach in practice. We develop three main results. Firstly, the land management approach brings a mechanism to involve landowners in planning projects. Coordination principle between spatial planning goals and landowners' interests is the cornerstone of all the process. Secondly, the land use is improved both in terms of space and time. Finally, the institution of property rights is not challenged, since there is no expropriation and the market stays free.

Keywords:

Coordination, land management, property rights, spatial planning, Switzerland.

1 Introduction

Switzerland has seen its population grow more strongly than normal during the last decade, this mainly due to the net immigration located in urban and periurban areas (OFS 2009). In terms of land use, population growth is producing obvious impacts that

it is imperative to manage in order to avoid uncontrolled spatial developments, which have negative effects on the environment especially. In this context, land use planning is a necessary condition for the achievement of an ordered territorial development, which can fulfil the objectives set in spatial public policy (spatial planning, energy, environment, etc.). Regarding the State intervention, the fact is that for most of landowners it is difficult to restrict their rights, namely the constitutional guarantee of ownership so that land use match as much as possible with what have been planned. It is thus common to be faced to owners who do not wish - for various reasons¹ - to develop their land according to what has been planed by municipalities.

The concept of land hoarding, or the withdrawal of a buildable plot of the land markets, allows showing that it exists a gap² between a *potential supply* of buildable land (defined by the planes) and a *real supply* of buildable land available for construction (defined by the land markets). The stake is very important since land hoarding is one of the trigger elements of spatial planning problems to which Switzerland is currently confronted (urban sprawl, poorly localized land supply, land prices) (BCV 2007; Rüegg 2000). Regarding public authorities and the interests they represent, it is imperative to consider appropriate measures for striving against this problem to ensure a rational development of our territories and an equal treatment between landowners and other stakeholders. What are the available tools within the Swiss spatial planning system? What is their efficiency?

We prefer to announce immediately the limits of our paper. We do not pretend to write a comprehensive study of the Swiss system, and therefore we will focus on a specific tool developed and implemented in the canton of Vaud, Switzerland: the Land Improvement (LI) Syndicate in buildable land. The canton of Vaud, in order to restore the balance between potential and real supply of buildable land, and thus to address the problem of land hoarding, is implementing a land management approach based on the coordination between public interests and private interests. The main hypothesis of this paper, which is guiding our reflexion, is that the coordination between public and private interests is a necessary condition but not sufficient to reduce the gap. As much as we know, the tool used by the canton of Vaud has not yet been assessed, partly or fully. To fill this gap, this paper seeks to describe this tool theoretically, and then assess its contributions and limits through a case study.

2 From land markets to land policies

Comby & Renard define the object of "*land science*"³ as that which "*allows to state either in terms of results or in terms of method, how the lands will be allocated among different possible uses*"⁴ (1996, p.3). Inspired by the definition of economical science, the land, as a specific economic resource, obeys not yet to rules and conditions that depend not only on the law of supply and demand because of its nature (unique, irreproducible, nonproduced) and the functioning of the market linked to its exchange

¹ For example, these reasons may include the retention for speculative purposes or heritage.

² It may be more or less important regarding the regional contexts where this phenomenon is analysed.

³ Author's translation from french: "*science foncière*".

⁴ Author's translation from french: "*de permettre de fixer, soit en termes de résultats, soit en termes de méthode, comment les terrains seront alloués entre les différentes utilisation possible*".

(atomicity, transparency). Indeed, there are many other factors that influence land values such as the rights attached to a plot. Accordingly, land markets are working in an imperfect manner, and should be therefore regulated by mechanisms that the State coordinates in order to avoid drifts that are socially unacceptable, economically inefficient, ecologically dangerous (Comby & Renard 1996; Prélaz-Droux 2008; Rüegg 2000).

These mechanisms, which we may call *land policies*, follow two bodies of objectives, physical and financial. From a physical point of view, it is to promote a rational and coherent territorial development with rules and plans. Our hypothesis is that the market is not enough effective to generate a sustainable territorial development. From a financial point of view, it is to inflect the harmful redistributive consequences that land markets generate spontaneously. For example, the fact that an owner sees his parcel gain value under authorities action is something to be regulated (Comby & Renard 1996; Prélaz-Droux 2008).

The following of our paper focus mainly on the physical body of land policies. Into the next chapter, we present briefly the Swiss land regime. This allows us to do necessary linkages between the land hoarding problem identified in the introduction chapter and the necessity of its regulation regarding to the elements identified just above.

3 Land regulation in Switzerland

During the period 1960-1990, the Swiss land management regime has strongly evolved regarding the Federal constitution and law. After the 90's, the land issue seems to have been taken off the political agenda, as demonstrated by the lack or absence of relevant research and publications in this field (Nahrath 2005). Now, under pressure of demographic constraints, urbanisation process or still environmental challenges, land management issues resurface within the Swiss scientific and political agenda in becoming more than ever essential in the context of sustainable development.

In Switzerland, the institution of property rights is an individual fundamental liberty that is guaranteed by the Constitution (art. 26 Cst)⁵. In this context, any restriction on property rights must be based on a legal basis, justified by a public interest, and proportionate (art. 36 Cst). Thus, the Swiss Constitution provides a number of bases that legitimate the action of the State in various field related to natural resources (land, environment, forest, water, noise, etc.). Spatial planning (land use), on which we will

⁵ Art. 26 Swiss federal Constitution state that: "*The right to own property is guaranteed. The compulsory purchase of property and any restriction on ownership that is equivalent to compulsory purchase shall be compensated in full*". The doctrine and jurisprudence define the guarantee of ownership along two axes: the subjective guarantee and the objective guarantee. The first is the one understood in the classical sense (explained in the text) that is the respect of private property right by the state in terms of spatial planning. According to this view, the owner may oppose to a measure of planning when it does not respect its rights. The objective guarantee is this more subtle that it requires the maintenance of the institution of property rights in itself. Two elements are constitutive. The first is quantitative, in the sense that the land market must stay free and it should have enough land in the hands of private landowners. The second is qualitative and implies that property rights keep a sense for the landowner. The concept of objective guarantee is relatively recent within the Swiss law and, as much as we know, no decision has yet been taken on this basis.

work more precisely, has a constitutional article (art. 75 Cst)⁶ that gives to the State the possibility to work towards an economical use of the land and its properly ordered settlement. The introduction of this constitutional basis in 1969 has allowed the creation of the Law on Spatial Planning in 1979 (LAT), which specifies the constitutional objectives and defines a number of tools in order to achieve these objectives. The three main tools of the Swiss system are: conceptions and sectorial plans (Swiss Confederation); the cantonal Master Plan (cantons); the zoning plan (municipalities). The two first are strategic documents, which have not force of law for landowners. They are respectively implemented by the Confederation and the cantons. On the contrary, the zoning plan implemented by municipalities is binding on landowners and authorities. It has force of law once it has been accepted democratically. Zoning is in this sense a restriction to property rights' institution that is a legally accepted practice formalised in the LAT. This arrangement explains why municipalities have such an important autonomy in terms of spatial planning. Regarding the implementation and the contexts, municipalities are facing different problems, but especially the one we have presented in introduction: land hoarding. This problem is resulting of a complex articulation between private interests and public interests. Indeed, as we have presented, the constitutional arrangement requires taking into account the guarantee of ownership by the authorities in the implementation of spatial planning. In fact, private interest outweighs public interest. In other words, although the LAT legitimates the practice of zoning, it requires not the landowner to build his property after the entry into force of the plan. Thus, inaction leads not to a penalty and cannot be considered as non conform behaviour regarding the legislation on spatial planning. For example, the fact to not maximise the potential use of a buildable plot do not constitute a sufficient element for expropriation or compulsory purchase. The landowner is thus in situation of quasi monopole once building rights have been distributed after the entry into force of the zoning plan (Rüegg 2000).

The land hoarding phenomenon, which is in our view constituting a market failure generated by the functioning of land markets, should be regulated so that the spatial planning objectives can be operationalized. The regulation of this problem constitutes a big issue for both public authorities and the owners, which are *a priori* forces going in opposite directions. In this context, the land management tools provided are generally pursuing the balancing of these forces in order to achieve a territorial production of good quality.

4 Land management issues in the canton of Vaud, Switzerland

Traditionally, the planning process is made of successive levels within which planers aims to draw up zoning project for urban production. Land issues are only solved once planning project has been done. This kind of approach, which is common in Switzerland, creates a lot of difficulties and incoherencies, and fails to reconcile conflicting interests between private and public in order to achieve a quality urban production with respect to the LAT. Moreover, it fails to reduce the gap. Thus, it often leads to the postponement, or even the cancellation, of land development projects.

⁶ Art. 75 Swiss federal Constitution state that: "*The Confederation shall lay down principles on spatial planning. These principles shall be binding on the Cantons and serve to ensure the appropriate and economical use of the land and its properly ordered settlement*".

Within the Swiss land management regime, the canton of Vaud has developed a specific approach based on the introduction of new tools within its land management regime, which aims to establish coordination between spatial planning and land management issues in order to avoid such problems (land hoarding, diverging interests, etc.)⁷. Thus, in agreement with the federalism principle, Vaud has edited laws both on spatial planning (Canton de Vaud 1987) and on land improvements (Canton de Vaud 1962). Approach advocated by Vaud is based on a major principle: the coordination between spatial planning (public interests) and land management issues (private interests) (art. 55 LATC; art. 4 LAF). We assume that coordination between public and private interests is a necessary condition, but not sufficient, to rebalance the forces. The principle of coordination is what we wish to focus on, and more particularly the process that it entails. The question is how does the coordination between spatial planning and land management issues takes place.

4.1 Feasibility study

In most of the case, zoning plans can be realized through the signature of conventions between landowners. In fact, in complex cases, when public interest is obvious or/and there is a major conflict of interests, authorities (Cantonal Office for spatial development, municipality) or landowners can launch a *feasibility study* made up of a territorial project outline and a preliminary land improvement study (art. 85a-i LAF). Such a study seeks to assess the land development project feasibility both on spatial planning and land management issues. In general, this approach leads to four main results: a territorial project outline and its implementation principles (i.e. a localised zoning plan); an outline of the collective spaces and equipments that need to be provided; a cost estimate of collective spaces and equipments to +/-25% which establish investments to be done by landowners; a land management approach proposition adapted to the case. According to the feasibility study results, concerned landowners can express their opinion, as to whether they agree or not. Landowners' answers can be threefold. In the first scenario, all landowners are agree with the project. The land management approach is essentially based on the signing of conventions. Or some landowners don't agree with the project although a majority who wants to pursue it. In this case, the majority can create a voluntary *Land Improvement Syndicate* (LI syndicate), which comprises the whole perimeter of the project. Here, all landowners are members of the LI syndicate even if they do not agree, because decisions are taken on a majority basis (1 plot = 1 voice). In the third case, landowners oppose the zoning plan. The authorities (municipality) either accept this decision, or create a mandatory LI syndicate in order to implement the zoning plan of municipal jurisdiction (art. 27 LAF; art. 85k LAF), or launch a limit and easement correction process for the purpose of overriding public interest (art. 93a LAF). Within the case study we especially focus on the voluntary LI syndicate.

4.2 Land Improvement Syndicate in buildable areas

In terms of land management, the LI syndicate is the most developed organisational model. By reading articles 702 and 703 of Swiss Civil Code (CC), the LI syndicate is a public corporation, which is a form of property and works as an association. It is

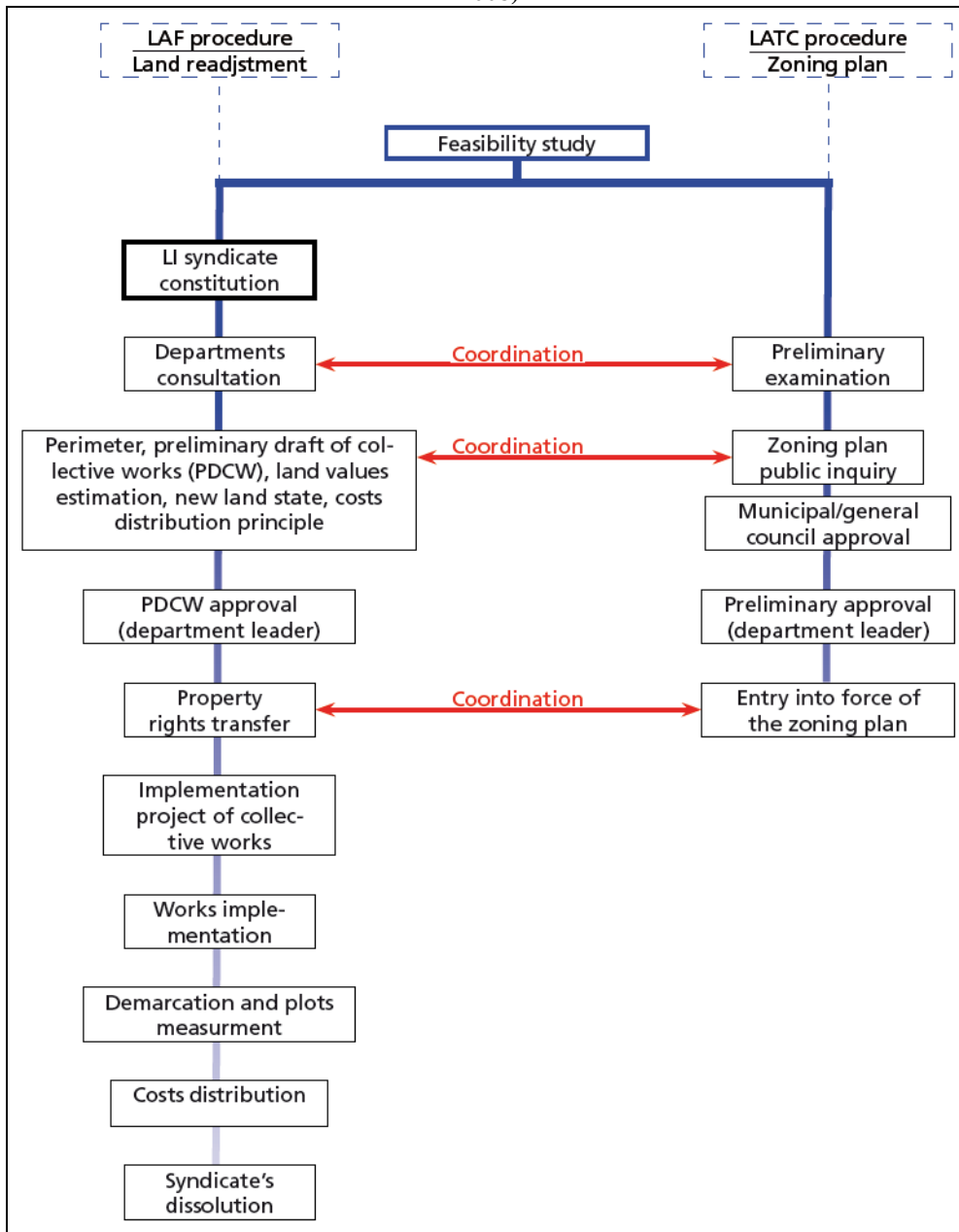
⁷ This chapter is based for its most part on the paper of Denis Leroy, engineer at the Cantonal Office for Spatial Development (SDT) of the Vaud Canton, Switzerland (Leroy 2008).

governed by LAF's dispositions and supervised by the authorities (art. 122 LAF). All landowners affected by the spatial and land development project are members and have the right to vote within the decision process. Decisions are taken on a majority basis, i.e. each owner has one voice. Together, landowners seek to reorganize the land property to allow valuable development of the land, to equip their properties accordingly and to update the building rights according to the chosen development project (Leroy 2008; Prélaz-Droux 2008; Service des améliorations foncières 2003; Service des améliorations foncières 2005). A LI syndicate is divided into five bodies:

- The *general assembly* is the central body, in which all landowners take part (1 landowner = 1 votes).
- The *steering committee* is the executive body, which implements decisions taken by the general assembly. It also has an administrative role.
- The *management commission* is in charge of accounts auditing. It ensures the proper financial management of the steering committee.
- The *classification commission* is a panel of neutral and independent experts who establishes the project and treats complaints in first instance.
- The *technician* provides the realisation and the coordination of the project. It is generally a surveyor.

The lifetime of a LI syndicate is divided into three main steps (see table 1). The first step is dedicated to studying the land property management, costs distribution, changes between old and new land state. On the other hand, the land improvement file and the zoning plan are subjected to a simultaneous public inquiry. The coming into force of the zoning plan and the property rights transfer, simultaneously treated, mark the end of the first phase. The second step is dedicated to the servicing of the land and the building of collective spaces. And finally in the last step cadastre and land registry are updated. Costs are distributed between all members, and the LI syndicate is dissolved (Leroy 2008). We can see that coordination is ensured during the whole process, since the feasibility study until the property rights transfer.

Table 1: Procedures coordination under LI syndicate after the feasibility study (from (Prélaz-Droux 2008))



In financial terms, the whole process is supported by a self-financing system whose content is decided by the general assembly. In fact, all members must pay fees each year proportionally to the size of their plot (art. 43 and 46 LAF). These fees pay for the studies done during the first step (see table 2). Nevertheless, within the second step, LI syndicate must often get bank loans in order to ensure the costly servicing of the land. Bank guarantees are provided through the coming into force of the zoning plan, which ensures the legality, the feasibility and the building of the whole project in a given time. Thus, the entire land value is used to back up the debt (see table 3): agricultural value, capital gain obtained by zoning, capital gain obtained by land improvement (collectives spaces and equipments). In other words, the land servicing and the public services are

what need to be financed, while the guarantee covers the whole land value (Leroy 2008; Service des améliorations foncières 2005).

Table 2: LI syndicate implementation's process (from Service des améliorations foncières 2005)

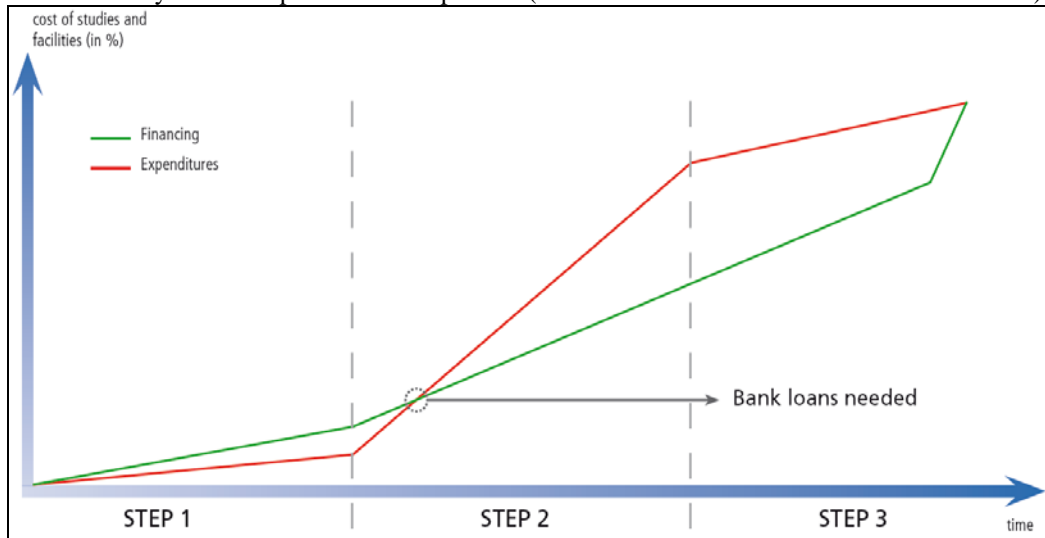
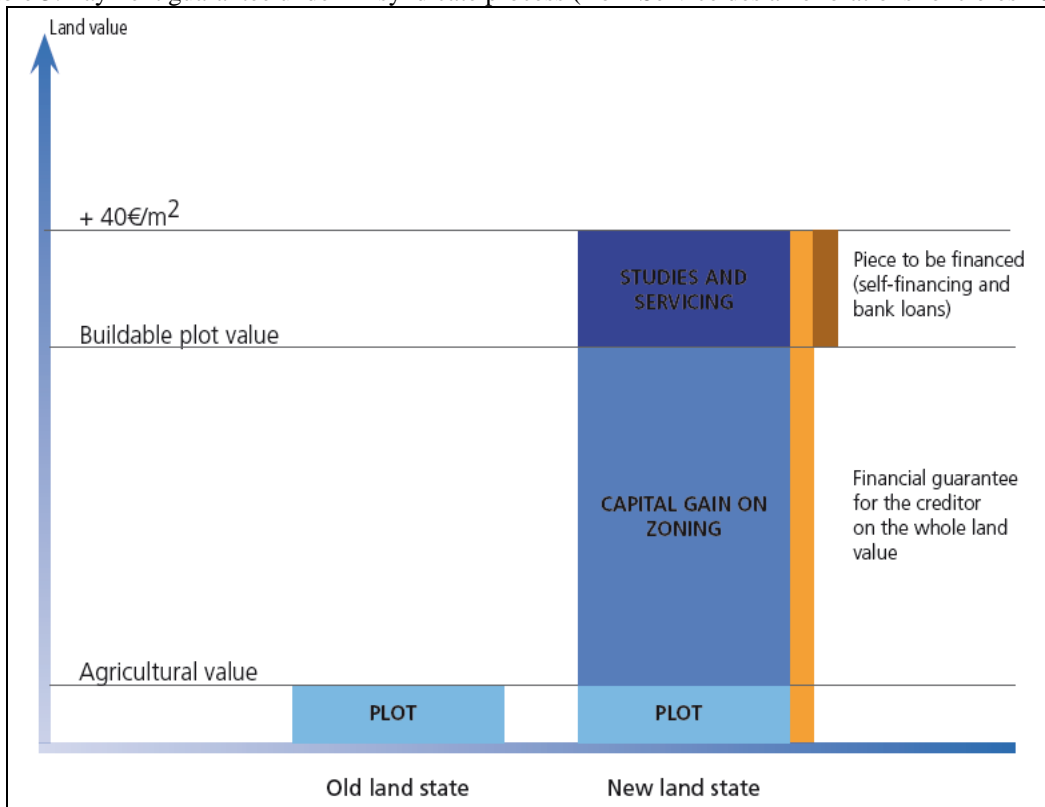


Table 3: Payment guarantee under LI syndicate process (from Service des améliorations foncières 2005)



5 La Boironne case study

In Switzerland, it is common to deal with stalled situations for years. As already said above, the problem comes mainly from owners who hoard them land. Thus,

municipalities facing growth (population) don't dispose the necessary surface at the right place. This leads finally to sprawl which is not desired. In this kind of case, authorities can launch a feasibility study in order to draw up an urban project outline and to propose a land management approach adapted to the case in order to realize the land as it has been zoned before. Our case study addresses explicitly this aspect and allows us to demonstrate the relevance of our starting hypothesis.

5.1 Context and history

Yens is a little rural village of about 1'000 inhabitants. It is located near the cities of Morges and Lausanne, within the Geneva Lake metropolis in Switzerland. Within the village of Yens, *La Boironne* area has been the subject of many planning studies between 1980 and 2000 (see figure 1). It has firstly been decided to zone this area as a buildable one in 1980. Legally, this area has been managed with a partial zoning plan⁸ since this date, but hasn't been built yet. Different reasons are involved, especially the wish express by the municipality to build a collector road crossing the area, which has delayed the project.

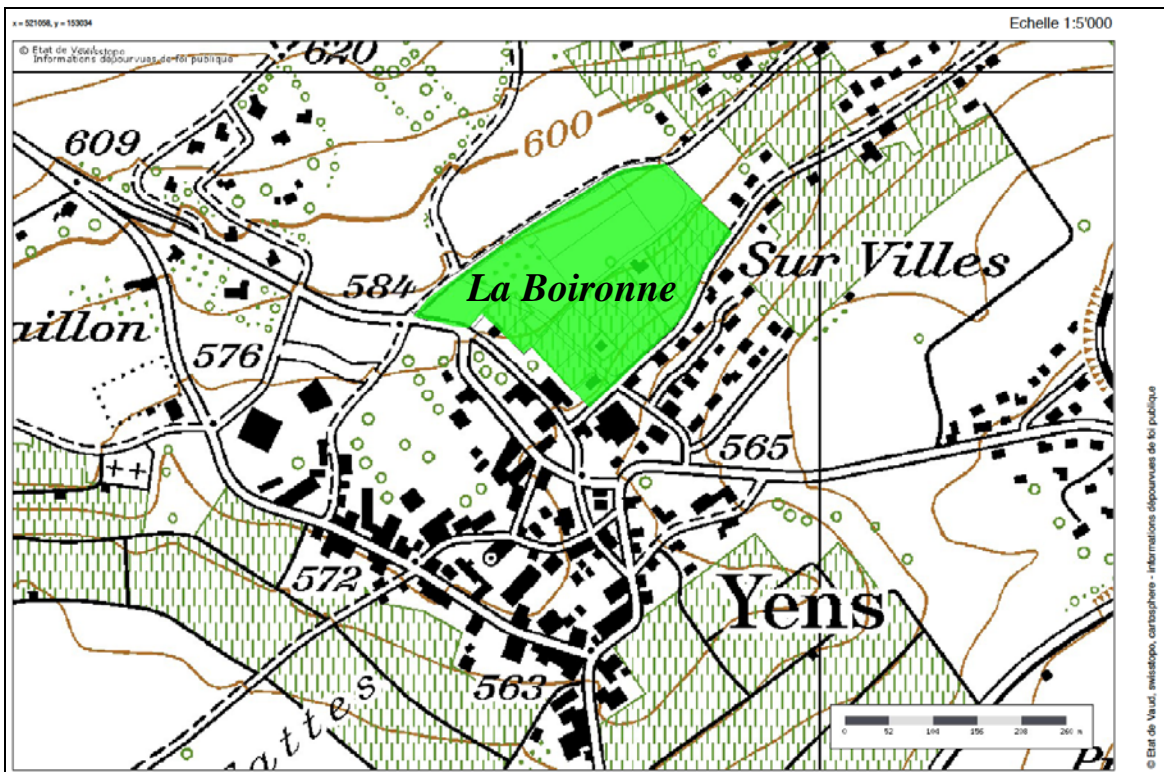


Figure 1: Situation map of Yens and La Boironne area (from www.geoplanet.vd.ch)

In 2000, a new partial zoning plan was drawn up for the area at the initiative of certain landowners. This initiative led the cantonal office in charge of spatial planning to propose the launch of a feasibility study on the area. In fact, from a legal point of view - it has been demonstrated that the plan might have impacts on the state of land and on

⁸ In fact, such a kind of plan allows managing an area in accordance with specific constraints by taking into account local process as well as regional ones.

the property rights and would therefore necessitate a land readjustment - the canton had to launch such a feasibility study (art. 85a LAF and seq.).

The figure 2 shows the area selected and the zoning categories with which the project have to cope. The two first zones are buildable areas. The brown zone describes an area dedicated to village area. The yellow area is dedicated for low-density housing (villas). Then, the area in light-grey is called intermediate zone. Its definition is formulated by article 51 LATC. Briefly, intermediate zones are in fact agricultural zone in terms of value and can't be built. But, drawing such a zone is useful as it enables to define areas, which will probably be zoned as buildable in the future. In the present case, a part or the whole surface can be zoned in the buildable category only if a real equalization ensures equal treatment between landowners, either by conventions or by land readjustment. Finally, plots and roads already drawn show the new land redistribution between landowners.

Still within the figure 2, we can see that the surface is already divided into plots. They correspond to the new state after the land readjustment. As we can see, the plots size corresponds to the developments, which will be realized in this area. The old state didn't make possible the implementation of the plan due to small vineyard plots, which were too tight to be developed. That was another reason launching a land readjustment.

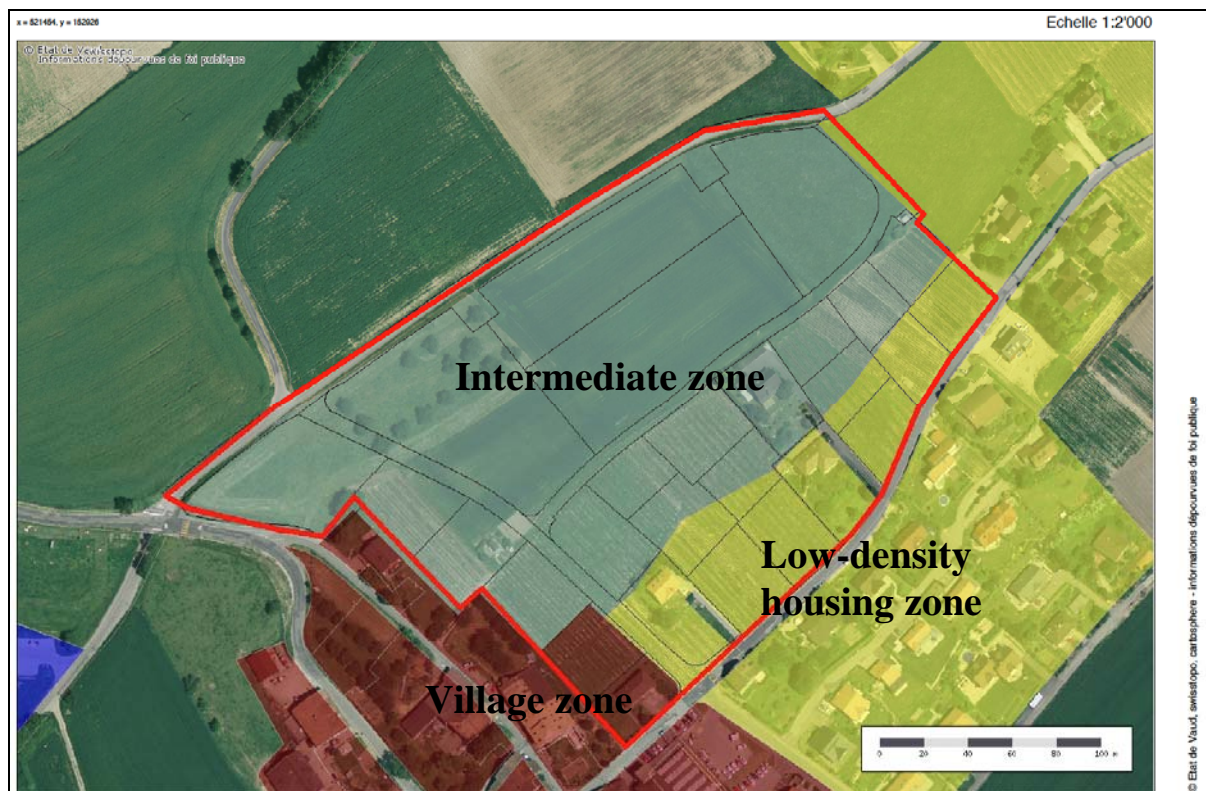


Figure 2: New land state and old zoning categories inside La Boironne area (from www.geoplanet.vd.ch).

5.2 Feasibility study

In order to move forward with this project, the feasibility study was launched the 8th of April 2002 with the following objectives. It had to analyse the urban project outline,

define estimating land value principles between old and new land state, define costs' distribution principles, draw up a first project outline for collective spaces and equipments and the resulting costs, and finally propose a land management approach for further operations (Robyr et al. 2003).

As we have said in theory, such a feasibility study should lead to four main results. What are they in our case? The panel of experts, who was in charge of the feasibility study, has produced a report (Robyr et al. 2003), which has been given to authorities. This first step is the starting point of the coordination process between spatial planning and land management issues. On its content, the report proposes the following results⁹.

About the territorial outline and planning principles, experts conclude to the feasibility of the partial zoning plan. In addition, according to the land use index, the plan capacity is estimated to 160 new inhabitants distributed on three main parts (see figure 3): 16 housing units (150m²/housing) within the orange area (village area); 18 housing units (150m²) within the yellow area (villas); 22 individual housing units (175m²) and 15 common settlements (150m²) within the light-grey area (intermediate zone subject to real equalization).

Collective spaces and equipments are planned to provide new roads, collectors for wastewaters and freshwater distribution, electricity, gas and telecommunications networks. Investments, which have to be done, are estimated to approximately 1,400,000€ (25€ per square meter). 85% of this sum concerns collective spaces and equipments. The rests belongs to studies. It is considered to be an average price.

In order to implement the spatial planning project, the adopted land management approach is that of the voluntary LI syndicate, because experiments show that in such a complex cases (many landowners, readjustment, etc.) this way is the only one that can reach the goals within a reasonable period of time. In addition, the report contains land value estimating principles and some more details on real equalization principle.



Figure 3: Areas distribution according to the partial zoning plan (from www.geoplanet.vd.ch).

⁹ Results presentation follows the same structure as described in the chapter 3.1.

5.3 *La Boironne* LI syndicate

Following recommendations of the feasibility study, *La Boironne* LI syndicate is constituted on November 8th 2004. It is made up of 21 landowners and its perimeter contains 34 plots. In reference to the third article of the syndicate statutes, its aims are the approval of the partial zoning plan, the land readjustment that allows the implementation of the partial zoning plan, and the servicing of the land and construction of collective spaces.

As we have seen above, the process takes place in three main phases. The first step, which is very important in terms of coordination, has already been completed. Apart from two oppositions, which have been quickly resolved, the process was conducted according to the model presented above (see table 1). Indeed, one of these was the compensation of an orchard situated inside the intermediate zone. In this case, the municipality supplied a parcel outside of the perimeter in order to replant it. Currently, the procedure is not yet complete. It still lacks the transfer of property rights and the coming into force of the partial zoning plan, a crucial step for obtaining the necessary bank loans. Accordingly, the second and the third step need some works more. The servicing of the land has started in November 2009, and is still in progress. From a financial point of view fees paid by landowners are currently sufficient to pay the initial works. Thus, it seems likely that the syndicate will be dissolved during the years 2010/2011. Therefore, since the launch of the feasibility study in April 2002, between 8 and 9 years will have passed.

5.4 Case study results

This case study allows us to highlight the following results. First, the process of land management developed by the canton of Vaud (feasibility study which leads on the choice of the appropriated land management tool) gives to authorities the possibility to integrate all the stakeholders inside the process of territorial development. It is thus possible to compare the functioning of the LI syndicate to that of a municipality. Of course the concerned area is much smaller. Nevertheless, in terms of decision, the process works almost identically, whether a majority of owners that can impose their choice to the rest by having integrated the opinion of the minority. The decision is thus accepted democratically, since the vote has been endorsed.

Another very important element is the capacity of the LI syndicate tool to manage the compartments of urban production (Prélaz-Droux 2008) at the same time: zoning (building rights), readjustment (property rights), and collective equipments and spaces. Thus, the implementation of the zoning plan is not only dependent on the goodwill of the landowners. Instead, each compartment is producing effects on the others what we should manage at the best in order to reach a result of quality. For example, in terms of zoning, the LI syndicate allows to plan an urban project (partial zoning plan) by integrating the wishes of the owners directly at the start of the process. In fact, landowners become shareholders of the project. This means that the value that landowners have at the start is proportionally redistributed at the end of the project, thus conforming to the equal treatment principle and to the real equalization principle. This is what might be called the principle of value conservation, by referring to first law of

thermodynamics in a closed system. Goods are not lost, but in constant mutation with reference to land readjustment. In terms of land value, a part of capital gain can be levied by getting land in order to build collective spaces and equipments. Moreover, one very important thing is that land values increased during the whole process¹⁰. Thus, landowners are in any case better off at the end. This is probably why the approach presented works so well in this case. On the other hand, if the landowners had not participated in the process, they would have had difficulties to obtain such a capital gain. Thus, their plot would stay unused increasing the problem of land availability for municipalities. Finally, the procedure guarantees the construction of collective spaces and equipments since the members have the obligation to implement the plan, following the public inquiry. In terms of time frame, we can easily say that the process has allowed the resolution of a stalled situation in a short period of time.

6 Conclusion

In this study, we presented a case study dealing with the canton of Vaud's land management approach. We started from a theoretical point of view by discussing about the structure and the content of the Swiss land management regime. We described its current arrangement by defining two important constitutional articles. This allowed presenting one big problem we have to cope in Switzerland, land hoarding, which can be defined as a measure of the gap between a *potential supply* of buildable land (defined by the planes) and a *real supply* of buildable land available for construction (defined by the land markets). In order to show some of the existing possibilities to reduce this gap, we described one approach used in the canton of Vaud, which combines a feasibility study with a LI syndicate land management approach. We showed these theoretical bases and analyse them through the case of Yens, Switzerland. Finally, we presented specific results about the case study, by which we can say that the proposed process for this case is working very well.

Now, regarding our starting questions and hypothesis, we can point to the following results. According to our hypothesis, we firstly mention that this land management approach brings a very complete mechanism to involve landowners in planning projects so that the zoning plan can be realized. In fact, the coordination principle between spatial planning goals (public interests) and land issues (private interests) seems to be the cornerstone of all the process. Thus, achieving spatial planning goals, and more generally spatial public policies, seems to be strongly conditioned by the necessity to coordinate stakeholders' interests (private and public).

Secondly, from a local point of view, the land use seems to be improved both in terms of space and time. Indeed, the implementation of the process has allowed the resolution of a conflict situation in a short lapse of time. Furthermore, the partial zoning plan has been updated according to the last criteria of spatial planning which will ensure a result of quality.

Thirdly, as we have discussed above, the Swiss Constitution guarantees the institution of property rights. Under this basis property rights can be restricted only under certain

¹⁰ This information comes from a conversation we have had with Denis Leroy December 9th 2009 at the Territorial Development Service of the canton of Vaud.

conditions. In this context, the presented land management approach does not challenge the guarantee of ownership since the owners retain control over their land. Another important element is the fact that the land market stay largely dominated by private landowners. Indeed, this approach does not consider the purchase of lands by the State on the ground of the implementation of the zoning plan.

Finally, by looking at a municipal scale, urban production seems to be well situated from the spatial planning point of view. However, if we look more global (spatial scale), commuters should probably inhabit such an urban production, what has become the norm now. This leads to an increase in terms of mobility and an increased land consumption, which is not desired in a long term. Thus, the future of human activities seems likely to play within the limits of cities. One of the next steps, which is now considered as a big stake, is the implementation of such approaches in brownfields where we can identify a very important source of land reserve for the next fifty years and where developments are currently widely challenged because of a lack of a suitable land management approach to such cases.

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