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L'instrumentation de l'action publique

sous la direction de
Charlotte Halpern
Pierre Lascoumes
Patrick Le Galès

SciencesPo.
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L'instrumentation de l'action publique

Controverses, résistances, effets

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Charlotte Halpern
Pierre Lascoumes
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SciencesPo. Les Presses

Catalogage Électre-Bibliographie (avec le concours de la Bibliothèque de Sciences Po)
L'instrumentation de l'action publique : controverses, résistances, effets / Charlotte Halpern, Pierre Lascoumes et Patrick Le Galès (dir.). – Paris : Presses de Sciences Po, 2014.
ISBN papier 978-2-7246-1456-5
ISBN pdf web 978-2-7246-1457-2
ISBN epub 978-2-7246-1458-9
ISBN xml 978-2-7246-1459-6

RAMEAU :
- Politique publique
- Gouvernance
- Administration publique : Prise de décision

DEWEY :
- 320.6 : Élaboration des politiques

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Remerciements

Après *Gouverner par les instruments*, publié en 2004, ce nouvel ouvrage marque la fin d'un programme de recherche de dix ans sur les instruments d'action publique que nous avons mené à deux, puis à trois, au sein du Centre d'études européennes de Sciences Po. Il conclut un cycle marqué par une série de publications et de projets de recherche (voir bibliographie). Nous sommes reconnaissants pour les invitations à présenter ces travaux, dans des séminaires et des colloques, ainsi que pour les commentaires et les discussions qu'ils ont suscités. La recherche est un sport collectif. Cet ouvrage est le résultat du travail mené lors d'un séminaire de recherche conduit pendant trois ans et d'un colloque international organisé à Sciences Po en janvier 2011. La majorité des textes rassemblés ici en sont issus. Nous remercions tous les collègues qui ont participé à nos discussions.

Ce travail a été financé par le programme rEr (réseau État recomposé) de la direction scientifique de Sciences Po et nous remercions particulièrement Bruno Latour, Cornelia Woll, Michel Gardette et Vincent Morandi pour leur soutien. Au sein du Centre d'études européennes, Renaud Dehousse nous a toujours encouragés et a contribué activement à notre réflexion collective. Nous sommes particulièrement redevables à l'équipe administrative exceptionnelle qui a permis d'organiser tout cela dans l'efficacité et la bonne humeur, à savoir Linda Amrani, Sophie Jacquot, Silvia Morandi, Samia Saadi et Katia Rio. Nos remerciements vont aussi à l'équipe des Presses de Sciences Po.

Ce livre est dédié à Alain Desrosières qui a, depuis l'origine, suivi ces travaux et participé à nos colloques. Lors de celui de 2011, il nous avait apporté des commentaires paradoxaux, profonds et parfois malicieux. Il n'a pas eu le temps d'écrire la postface qu'il avait accepté de rédiger pour cet ouvrage.

WERNER (Michaël) et ZIMMERMANN (Bénédicte) (2003), « Penser l'histoire croisée : entre empirie et réflexivité », *Annales. Histoire, Sciences sociales*, 58 (1), p. 7-36.

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Chapter 7 / REGULATING THE USES OF NATURAL RESOURCES WHEN POLICY INSTRUMENTS MEET PROPERTY RIGHTS

Frédéric Varone, Stéphane Nahrath

The simultaneous consideration of policy instruments and property rights is required to analyze the regulation of natural resources. While private law (Civil Code) establishes the basis for absolute ownership, public laws temper this by imposing limits on the owner's disposal and use rights. We define an Institutional Resource Regime (IRR) as the property rights to a natural resource and the policy instruments that regulate its exploitation and protection. The historical analysis of land management in Switzerland (1870-2000) demonstrates the added-value of the IRR framework.

Key words: *policy instruments – property rights – institutional resource regime – land use – Switzerland – sustainability – theory of regulation.*

Introduction[1]

This chapter analyzes the institutional rules that regulate the behavior of the different users of a natural resource. In particular, it shows that any analysis of the policy instruments regulating the exploitation (i.e. infrastructural, energy, agricultural, etc.) or the protection (environmental, spatial planning, etc.) of a natural resource must explicitly take into account the property rights system in place. Apart from public policies, which have been the main focus of attention for political scientists up to now, analyses must also incorporate the property rights granted to certain natural resource users and which are, moreover,

1. *The arguments presented here are based directly on a number of studies carried out with our colleagues Peter Knoepfel, Ingrid Kissling-Näf and Jean-David Gerber. For a more detailed presentation of our approach, see, in particular, Knoepfel* et al. *(2001, 2003, 2007), Varone* et al. *(2008), Gerber* et al. *(2009).*

considered as the determining institutional rule by scholars from the field of resource and institutional economics. Hence, we present an innovative theoretical approach—the Institutional Resource Regime (IRR) framework—which makes it possible to identify the various modes of regulation of the competing uses made of natural resources.

Our topic is developed in three stages. We begin by defining the concepts of policy instruments and property rights. We then demonstrate how these two factors simultaneously influence the users of a natural resource. The second part of the chapter presents the IRR analytical framework. In the third section, we apply it to the analysis of the historical trajectory of the public regulation of land use in Switzerland from 1870 to the present day. This case study highlights the dynamics at work between the choice of policy instruments and the property rights system from a long-term perspective. We conclude with the identification of some avenues for future research.

Two Modes of Regulating Natural Resources

This section presents our definition of policy instruments and property rights, and shows how these two modes of public regulation interact frequently and directly as they both target the (same) users of a natural resource.

Public Policy Instruments[2]

We define a public policy as a series of intentionally coherent decisions or activities taken or carried out by different public actors with a view to resolving a collective problem. This group of decisions and activities aimed at modifying the behavior of social groups presumed to be at the root of, or capable of sorting out, the collective problem to be resolved (i.e. target groups) in the interest of the social groups who suffer the negative effects of the problem in question (i.e. final beneficiaries). The relationships between these actors can be discerned empirically by identifying the pragmatic logic of action on which the public policy is based. The *intervention hypothesis* of a policy

2. *This subsection is directly based on Knoepfel* et al. *(2011 (2007)).*

establishes how the collective problem requiring resolution can be mitigated and, indeed, resolved. In a nutshell, it defines the policy instruments that will influence the decisions and activities of the designated target groups so that these will be compatible with the political objectives. This hypothesis can be formulated as follows: "if the State chooses and implements this policy instrument (mix), it then modifies the behavior of these targets groups (who generate the problem to be solved)". The State can compel target groups to change their behavior (for example through the imposition of obligations, bans, enforcing compliance with requirements for permission-granting schemes), induce a change of behavior through positive or negative economic incentives (for example, taxation schemes, tax relief, subsidies), or, again, suggest it through the manipulation of symbols and information (for example, campaigns to heighten public awareness of an issue, training programs).

Property Rights

While the public policies that regulate the use of natural resources developed since the second half of the 20th century, property rights systems clearly constitute considerably older institutional rules (see Article 2 of the Declaration of the Rights of Man of 1789, national civil codes, national constitutions). Historically, the guarantee of the rules that regulate the relationships between citizens and the goods in their possession represents one of the first fields of action of modern States. A property right transforms rules of possession to exclusive rights of appropriation of the "flow of benefits" governed by the law. In constitutional States, this means that a detailed analysis of the legal basis of the Property Rights System (PRS) in force (in particular, the constitution, civil code, code of obligations and case law) is indispensible to the understanding of the modes of regulation of the social uses made of resources.

Furthermore, when defining property rights, "it is essential to understand that property is not an object such as land, but rather is a right to a benefit stream that is only as secure as the duty of all others to respect the conditions that protect that stream." (Bromley 1991). The enforcement of property rights is basically guaranteed by

the State and we must refer to property rights as *de jure* claims (Cole and Grossman 2002). Consequently, property is to be understood as a social relation between owners, whose rights are protected by the State, and non-owners who are excluded from the uses (i.e. the benefit stream) of a natural resource or a thing.

In concrete terms, a property right grants an owner the right to access his or her land, to harvest its fruits, to sell it and to encumber property titles by taking out mortgages against them (Ostrom and Schlager 1996; Heinsohn and Steiger 2002). Landowners are free to use the resource in their ownership (and all the goods and services it provides) as they desire—and even to destroy it—as long as this freedom is not restricted by a legal provision based on a particular policy or derived from the Civil Code.

In order to describe the extent of property rights more accurately, we distinguish three layers of rights: (1) *Formal property titles* designate who is the formal owner of the thing or the (parts of the) natural resource (e.g. a landowner's property title is officially registered by the state). (2) *Disposal rights* concern the terms under which the formal property title is transferred: they include the right to sell, rent out, mortgage, bequeath as a legacy or even give away the property title to an object that is owned. (3) *Use rights*, which include withdrawal rights, represent the very concrete manifestation of property rights. They usually concern only one good or service provided by a natural resource (e.g. right to withdraw water, right of access to forests to harvest mushrooms).

Interactions between Policy Instruments and Property Rights

According to the Swiss Civil Code "the owner of an object has the right to dispose of it as he or she sees fit within the limits of the law" (Art. 641). While private law establishes the basis for absolute ownership, public law tempers this absolute ownership by imposing restrictions on potential uses (through public laws). This legal structure already indicates that property rights and policy instruments frequently and directly interact in practice, mainly on the level of use rights.

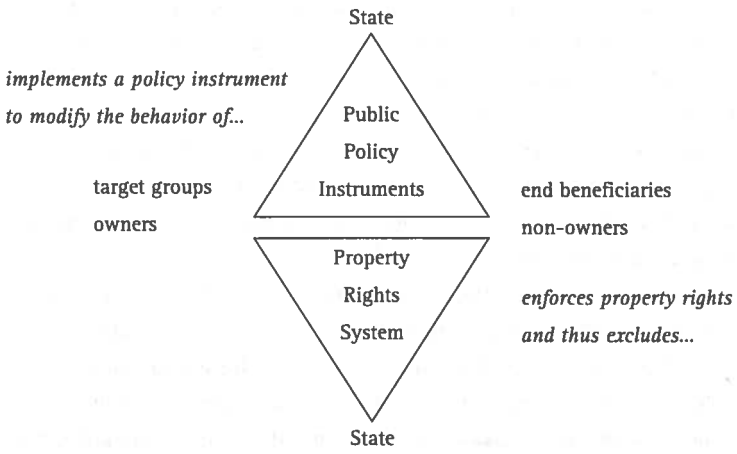
Hence, policy instruments often have *an impact on the value and content of property rights*. They are likely to impose limits on the rights of disposal and/or use through the redefinition of the substantive content of these rights, for example, in the form of restrictions in relation to construction, limits on the right to emit atmospheric pollutants, rights of extraction (water, wood, or rare plants) or rights of access (to lakeshores, forests, and fragile biotopes). One of the major challenges of this mode of regulation consists in defining the conditions applicable for the obtaining of compensation by negatively affected owners.

Although the definition of use rights often results from the combination of norms originating from both private and public law, it should, however, be stressed that not all use rights are rooted in formal property rights: they can also result directly from a public policy which creates such rights and attributes them to beneficiaries that may not be the legal owners of a resource. This situation is common in the case of resources for which no formal property titles exist (e.g. landscape, climate). In cases of this type, the question as to the conditions applicable to the obtaining of compensation is not as prominent because of the absence of property rights to the resources guaranteed by the State.

When the focus is shifted to the case of resources with formal property rights (e.g. land, water, forest), the correspondence between the target groups of a public policy and the holders of use rights derived from property titles constitutes the crucial issue (see Figure 1). This correspondence is lacking when policies address target groups that do not have use rights and whose eventual changes in behavior do not have any real effect on the actual uses made of the resource.

Policy instruments frequently lack the coercive power necessary to restrict the use rights of the users of a resource. It is easy to imagine, for example, the resistance that will be shown by forest owners who should allow mountain bikers or hunters free access to their forests.

Figure 1: Actors at the Intersection of Policy Instruments and Property Rights



Empirical research shows that a good indicator of the existence of such conflicts is the amount of case law generated by the courts to link policy instruments (or public policy; PP) and use rights (or property rights system; PRS) on an ad hoc basis (see Kirat and Melot 2006; Nahrath 2005). Beyond this indicator of conflict between two institutional rules for the regulation of the behavior of a resource's users, we have developed a theoretical framework to address the relationships between public policies and property rights systems, which is briefly introduced in the next section.

Institutional Resource Regimes (IRR)

We define an institutional resource regime (IRR) as all of the property rights to a natural resource and the policy instruments that regulate its exploitation and protection.[3] These two complementary regulatory dimensions reflect the collective desire to protect, guarantee, and prohibit given particular uses of the resource. The IRR analytical framework enables, therefore, the identification of all of

3. Hence, we focus exclusively on the formal rules and not on self-organization or social norms here.

the management practices being implemented at a given moment in time and space. It should be noted, however, that it is based on a definition of natural resources that remains contingent. The latter are recognized collectively and politically as such as their users acknowledge the goods and services derived from them as contributing to the satisfaction of their material and immaterial needs. Hence the definition of a resource may evolve over time (from one generation to the next) or in spatial terms (from one region to another).

IRRs may be characterized and categorized on the basis of two analytical dimensions: their extent, and coherence. The extent of an IRR refers to the number of goods and services regulated by the regime at a given moment in time. The criterion of coherence concerns the content and the links between the different public law (PP) and private law (PRS) that constitute the regime. The more numerous and varied these regulations (high extent), the greater the risk of incoherence between them.

As suggested by Figure 1, coherence depends in particular on the correspondence between the target group of a public policy and the group constituted by the holders of the property rights to the resource. This correspondence is lacking when public policies designate as target groups actors who do not have rights of use to a resource, or whose actions do not have any real impacts on the state of the resource (for example, the obligation imposed on Swiss municipalities to respect the minimum flow rates in watercourses, over which they lost control following the granting of licenses to hydropower companies). Other incoherencies exist in the relatively common case whereby a public policy does not succeed in restricting the owners' rights of use of a resource (e.g. the incapacity of Swiss municipalities to reduce oversized development zones due to the threat of demands for financial compensation on the part of landowners if their right to construct in these areas is denied).

One of the basic contributions made by the IRR analytical framework consists in its capacity to describe the different regulation regimes both theoretically and empirically. A simple typology differentiates between four different types of IRR according to their extent and coherence (see Figure 2).

Figure 2: Typology of Institutional Resource Regimes (IRR)

Types of IRR		Coherence (between PP instruments and property rights)	
		Weak	Strong
Extent (n° of uses regulated)	Narrow	N° IRR	Simple IRR
	Large	Complex IRR	Integrated IRR

Cases, in which there are no property rights or no policy provisions regulating the use of the goods and services provided by a resource, are referred to as *non-existent regimes*. Such a case may be observed, for example, when the need to regulate a resource has not yet been recognized politically despite the fact that the resource is subject to a variety of uses.

In a *simple* regime, a limited number of goods and services are regulated in a coherent way. The low number of rules in force contributes to the regime coherence. Such a situation is often the result of an initial attempt at regulating the main competing uses of a resource. The purpose of such IRRs is often not to protect the resource itself but to guarantee access to it to its main users so as to ensure the possibility of its use in the long term.

A *complex* regime is characterized by the fact that the majority of its goods and services are regulated, however, in a partly incoherent way. This situation, which applied to the majority of natural resource regimes in the late 20th century (in Switzerland) (Knoepfel *et al.* 2001), is due to the uncoordinated development of exploitation and protection policies, in particular from the 1950s. Unlike simple regimes, complex IRRs are essentially the product of policy mobilization aimed at finding solutions to problems arising from competing uses, which endanger the reproduction capacity of different natural resource systems. However, these regimes involve attempts at formulating—in particular through environmental policies (Knoepfel *et al.* 2010)—emission limits by sector of activity, at the minimum on the level of the goods and services considered separately, for example by imposing a reduction in pollutant emissions on industries that generate such emissions. The lack of coherence between policies is frequently accompanied by a lack of coherence between policies and property rights, whereby the limitation of use rights through public policies falls foul of the guarantee of property rights.

Finally, a situation in which all of the goods and services produced by a resource are regulated in a coherent manner is described as an integrated regime. Such regimes remain rare in the early 21st century. They exist when a resource is mainly in public ownership, for example forests, or under the control of a powerful collective actor, for example institutions for the common pool resource institutions (CPRI), as described by Ostrom (1990): e.g. corporations, nature conservation organizations, and Anglo-Saxon nature trusts. Examples may be found in Switzerland in the areas of forests (Bisang and Schenkel 2003), specific landscapes (Rodewald and Knoepfel 2005; Gerber 2006) and the management of water based on sub-catchments (Varone *et al.* 2002).

This typology is not only useful for identifying the evolution of the institutional rules that regulate the uses of a natural resource. It also underlies the following hypothesis: the closer an IRR is to integration, the greater the chance that it will create sustainable conditions for the use of the resource. Conversely, the weaker the coherence and extent of the regime, the greater is the risk that the resource in question is over- or under-exploited. A second central hypothesis based on this approach concerns the inverse causal relationship, and explains the historical dynamics of IRRs development as well as the major causes of changes in such regimes. This hypothesis stipulates that the greater the threat to the sustainability of the resource, the greater the probability that an increase in the extent of the regime will be observed (new regulations of new uses) or an improvement in relation to its coherence (better coordination of more restrictive public policy instruments and property rights).

Although we are unable to go into the theoretical framework of IRRs in greater detail here, we shall illustrate the modalities of its empirical application by presenting a case study concerning the regulation of land in Switzerland from 1870 to the present day.

Regulation of Land Uses in Switzerland: Historical Trajectory (1870-2000)

It is possible to identify empirically a significant number of different uses made of land, which are often competing as they are mutually exclusive, and which constitute the equally large number of ways of harnessing the goods and services (G&S) produced by this resource (for a list of these different uses, see Nahrath 2001 and 2003). As the historical analyses carried out by Stéphane Nahrath (2001, 2003, 2005) have clearly shown, the increase in the intensity of use and the heterogeneity of the users' groups over the course of time necessitated the imposition of both property rights (definition of the main provisions of land rights) and public policies (environmental and land use policies). In the following section we reconstruct the different stages in the establishment of these two types of regulation and then describe the development dynamics of institutional regimes through their combined effects.

Evolution of Property Rights

The historical evolution of the definition of landed property in Switzerland is characterized by six major stages. The first period (1850-1912) corresponds to the establishment of federal competencies in respect of the expropriation of land for reasons of public utility. The constitutional provisions adopted in 1874 and 1897 were limited to granting to the Confederation an instrument for accessing land held in private ownership so as to enable the construction of public utility infrastructure in the areas of railways, posts, and telegraphs, the hydraulic engineering police, hydraulic engineering structures and forests. These federal powers were assigned in a context in which there was no homogenous definition of property at national level (lack of a federal civil code) and various forms of common property (*"consortages"*—farmers' associations in Switzerland, *"bourgeoisies"*—citizens' communes, corporations, etc.) continued to coexist with the private ownership of land in the cantonal civil codes.

The establishment of a liberal legal order characterized the second period (1912-1940). This liberal property rights system still governs

property relationships in Switzerland today. The Swiss Civil Code (CC), which entered into force in 1912, and the new Federal Act on Expropriation of 1930 are the two main components of this order. The CC champions private property[4] as the only recognized legal form of property. This homogenization of the definition of property assumed central historical importance by allocating to owners—in the name of the principle of accession (Art. 641, 655, 667 CC)—*"omnipotence"* over the resources in their ownership. However, a number of limitations on this omnipotence already existed under private law.[5] While the CC defined the principle of ownership, it did not however fully define its content and substantive scope; paragraph 1 of Article 641 stipulates in effect that "The owner of an object is free to dispose of it as he or she sees fit within the limits of the law" and hence leaves the door open to restrictive interventions in relation to the content of property through the intermediary of public policies (public law).

During the third stage (1940-1955), regulation focused on the rights of disposal of the owners of agricultural land through three federal acts concerning rural land ownership (between 1940 and 1951). All of these laws were intended to protect this land against speculation. They imposed restrictions, in particular, on the capacity of farmers to mortgage their lands or sell them to non-farmers. This intervention logic focused on agricultural uses of the land and was reinforced by the establishment of the economic regime for the war period (so-called "Wahlen Plan" from 1938 to 1945), which involved an almost universal obligation to cultivate land, including in urbanized areas.

4. *Private property is understood here as the conception based on the principle of a unique and exclusive owner for each plot of land who holds, in accordance with the principle of accession and excluding contrary provision under the CC or a policy, the monopoly on the rights of disposal and use to all of the constitutive elements of the property in question (cf. Ost 2003 (1995)).*

5. *The main four limitations are the principle of* free access to woodlands and meadows *and the right to gather wild berries, fungi and the like (art. 699);* relationships between neighbours *(art. 684-698 CC) and particularly the right of way (art. 694-696 CC); the* restrictions on the transfer of property title in relation to rural land rights *to combat speculation on agricultural land (art. 621 CC);* easements *(art. 730-744 CC) and* building right *(art. 675 and 779 CC).*

In view of the relative success of these interventions, a fourth stage (1955-1969) applied a new restriction on use rights, in this case one that affected all categories of owners. The State attempted to restrict the right to build on sections of municipal land that were most obviously unsuited to the proposed use. The Federal Act on the Protection of Water (1955 and, in particular, 1971) was mobilized as an instrument for restricting the granting of planning permission in the case of plots located outside of the pipe-work plan. Simultaneous to these initial attempts at the imposition of indirect restrictions on development zones, the concentration of landed property in the hands of large capital investors became a political problem. Hence, in order to facilitate individual access to landed property or real estate assets, the concept of condominium ownership (*"propriété par étage"*) was introduced into the Swiss CC in 1963.

The fifth period (1969-1983) is absolutely central to the historical development of the definition of land ownership in Switzerland. Articles 22ter and 22^{quater} (so called *"Bodenrechtsartikel"* on land ownership) of the Swiss Federal Constitution of 1969[6] enshrined the social and political compromise that would enable the establishment of the new spatial planning regime. It was based on the political exchange between the constitutional garantee of ownership and the principle of (in principle full) compensation in the case of significant restriction of use rights (defined as "material expropriation"), on the one hand (both elements demanded by the right-wing parties and the landowners), and the constitutional recognition of the need to develop a federal policy on spatial[7]. While the constitutional articles of 1969 represented an intervention in relation to formal property rights (the latest to-date), all of the laws concerning spatial planning involved very significant intervention in relation to the use rights of landed property owners, in particular through the removal of the general right to build outside of development zones. The enactment of the spatial planning legislation in 1979 imposed a drastic

6. See Articles 26 and 75 of the new Swiss Federal Constitution of 1999.
7. The actual structure of the power relationships and compromise solution implemented in the land rights article of *1969 appear to confirm the relevance of the theory, which forms the basis of the IRR analytical framework.*

restriction on the use rights of all land and property owners, i.e. both private and public.

During the final period (from 1983 to the present day), state intervention focused, first, on rights of disposal through the imposition of restrictions on the acquisition of buildings by persons domiciled abroad and, the reinforcement of the ban on the purchase of agricultural land by non-farmers through the new Federal Act on Rural Land Rights of 1991. Second, it also affected use rights through the enactment of the Federal Act on the Protection of the Environment (1983, revised in 1995) and the Ordinance on the Pollution of Soil (1998). The restrictions on use rights primarily concerned agriculture (fertilizers) and the storage of waste, the exploitation of gravel pits and soil sealing (municipal water drainage plan), and, finally, construction site management (use of vehicles, machines, and tools) and techniques for the agricultural use of soil (prevention of compaction and erosion).

In conclusion, two major successive movements characterized the evolution of land ownership rights in Switzerland. First, the federal State established a homogenous and very liberal system of formal ownership rights to landed property for the entire territory. This was followed, second, by the increasing complexity of the substantive content of landed property, which involved the redefinition and limitation of rights of disposal and use.

Evolution of Public Policies

The history of the public policies implemented to regulate the exploitation and protection of land over the past 100 years may be divided into four periods. From the establishment of the Swiss Confederation in 1848 to the Second World War (first period lasting almost one century), land was not subject to any significant direct regulation by federal public policies.

The subsequent second period (1940-1955) was characterized by the establishment of the first state measures aimed at counteracting speculation on agricultural lands. The first real state intervention aimed at counteracting this speculation date back to the period of the Second World War. The main action logic considered that intervention

should be targeted primarily at the actual owners of these agricultural lands by limiting their capacity to withdraw them from agricultural use. The policy design was thus composed of three intervention hypotheses. Initially, the focus was on preventing the encumbrance of agricultural land with mortgages by restricting the scope of farmers to take out loans using their lands as collateral, on the one hand, and by encouraging the cantons to contribute to clearing such debts by cancelling debts that exceeded the estimate value of the operation, on the other.[8] In the second and third periods, attempts were made to control the circulation of property titles to agricultural lands by prohibiting (in principle) their sale to non-farmers,[9] and by making the reallocation of subsidized agricultural lands to other uses very expensive (obligation to repay any subsidies obtained).[10] This action logic designated farmers (with existing debts or those tempted to acquire debts) as the sole target group of the policy. In effect, the speculators, banks and entrepreneurs interested in transforming this agricultural land to development land only constituted third party groups affected indirectly (and negatively) by the measures taken at the time.

It was also during the Second World War that the concept of national planning underwent its most successful period of substantiation. The so-called "Wahlen Plan" for the increase in cultivated land represented an example—albeit temporary arising from the particular circumstances created by the war—of the planning of land use involving an area not previously covered in the country's history. Moreover, it is interesting to confirm that this agricultural production planning policy was extended to a certain extent in the agricultural policy of the post-war period and, beyond that, of the second half of the 20th century[11], thereby

8. Federal Council Decree Instituting Measures Against Speculation on Land and Against Over-Indebtedness and for the Protection of Farmers.
9. Federal Act on the Maintenance of Rural Landed Property.
10. Federal Act on the Improvement of Agriculture and Maintenance of the Farming Population (Federal Act on Agriculture, AgricA).
11. The various plans (the cultivation plan of 1967, the successive food plans of 1975, 1980 and 1990), which attempted to adapt the country's agricultural production to possible requirements arising in the event of a crisis, represent one of the more tangible manifestations of the perpetuation of the logical of "war agriculture" during the period from 1950 to 1990.

substantiating, in part, certain principles developed decades earlier by the interior colonization movement.

Hence, agricultural land represented the first significant portion of the national territory to experience state intervention aimed at relating the uses of land with particular plots in accordance with their characteristics and location. Unlike in other European countries (for example, France and Germany), spatial planning policy in Switzerland did not develop from urbanized areas (see the French urban planning code, *"Code de l'urbanisme"*), but from the agricultural sector.

A third stage (1955-1971) resulted from urban growth, i.e. the development in industrial activity, the construction of urban infrastructure, housing and transport infrastructure (road and rail), which contributed to a significant increase in the demand for building land in urban and suburban areas.

The absence of strict legal provisions in the area of construction law resulted in urban sprawl and speculative development ventures, in particular on suburban agricultural lands, vineyards, tourist areas and lakeshores. This gave rise, in turn, to a general increase in the price of land. Hence, in an attempt to compensate for the lack of spatial planning policy, the State then decided to protect—gradually but as much as possible—all areas that were not built on by creating a *de facto*—in the absence of a *de jure*—distinction between areas in which building was—and was not—permitted. Through different laws—in particular the Acts of 1955 and 1971 on the Protection of Waters, the 1963 Act on Condominium, the 1965 Act on the Promotion of Housing Construction, and the 1966 Act of on the Protection of Nature and Cultural Heritage (NCHA)—the State attempted to intervene through the definition of development areas (eligibility of land for construction subject to the availability of pipe-work), the conditions of access to real estate for the middle classes (introduction of condominium property) and, again, the construction of social housing (federal subsidies), on the one hand, and the protection of natural spaces that have not been constructed on and natural and cultural landscapes worthy of protection (NCHA inventories), on the other.

The target groups of the policy design are those who aspired to property ownership, the landowners—i.e. individual or institutional

investors (insurance companies, pension funds, etc.)—and their clients, not to mention the speculators, and, finally, the municipalities which, in some cantons, were in the process of developing their land-use plans following the enactment of the initial cantonal legislation in relation to spatial planning. In rural areas, the owners of lands located within the areas inventoried in accordance with the NCHA were also the target groups of the intervention designating the parts of such natural areas as worthy of protection.

The adoption of the constitutional articles (land ownership articles) concerning spatial planning and the guarantee of (landed) property in a referendum held in 1969 led to a fourth period (1972-1983), which was heralded spectacularly by the emergency federal decree (EFD) on spatial planning of 17 March 1972. The logic of this EFD consisted in preventively applying temporary protection to all lands not already built on, whose current or probable use was not likely to comply with the principles of the future spatial planning act, until the entry into force of the future Spatial Planning Act (SPA 1979). This EFD marked a kind of shift to the logic of protection based on inventories to a zoning logic based on the spatial planning logic, and hence foreshadowed, in part, the future designation of protected and agricultural (i.e. non-development) zones under the spatial planning act.

The main objective of this new federal spatial planning policy was to ensure the "moderate use of land" and "the settlement of land in a way that guarantees the harmonious development of the entire country" (see Art. 75 of the Federal Constitution and Art. 1, Spatial Planning Act, SPA). The application of these two principles implies two major operations: the strict distinction between development zones and other zones (agricultural and protected) and the better use of already developed areas. What was involved here, in fact, was the first general, explicit and direct regulation of the right to construct on all plots of the national territory. Hence, the zoning instrument attributed an administrative identity to each plot and a clear definition of the possible uses that can be made of it by its owner (target group).

The financial impacts arising from the implementation of zoning (increase in the price of land by between 100 to 500 percent based on its classification as development land) caused enormous conflict between the municipal authorities and the landowners when the first generation of the municipal land-use plans was created. The disadvantaged owners, or actually "injured parties" in the case of those, from whom the right to build was withdrawn, often resorted to legal action and the courts. Hence, the latter became central actors in this fourth stage as they had to define, in the context of very detailed and rapidly evolving case law, the conditions under which the negatively affected owners were entitled to receive compensation due to the withdrawal of their right to build (equivalent to "material expropriation"). In fact, as part of a political strategy to defend spatial planning policy, the courts opted to reduce the number of situations in which the payment of compensation to owners by the municipalities proved necessary. They did this by tightening the conditions for the granting of compensation to landowners negatively affected by zoning.

The fifth stage (1983-2007) was characterized by the gradual emergence of a policy for the qualitative protection of land and biotopes from the 1980s. This involved several areas of intervention including environmental protection, agricultural policy, nature, and landscape conservation, and the protection of watercourses and water bodies. The implementation of the Federal Act on the Protection of the Environment (EPA, 1983) is without doubt the focal event of this period. The principal objective of the EPA was to counteract and prevent damage caused by chemicals. Following its revision in 1995, the qualitative protection provided by the act also included measures to counteract biological and physical damage. To achieve this, emission limit values and ambient air quality standards (in particular for heavy metals), restrictions on the introduction of hazardous substances to soils and the environment (fertilizers, plant protection products, purification sludge, and GMOs), and, again, provisions concerning the contamination of soil and the pollution of watercourses and water bodies through the storage of waste were introduced. These provisions were taken up in part in the Federal Act on the Protection of Waters, which clarified the link between the protection of watercourses and water bodies and the

protection of soil by enshrining the principle of the restriction on the use of fertilizers and chemical products for the treatment of agricultural plants.[12] A second link between the management of water and protection of soil was also established through the obligation imposed on the cantons and municipalities to compile a plan for the drainage of water at regional and municipal levels. In the case of the municipalities, this involved detailed planning and the imposition of a restriction on the quantity of impermeable soil allowed within municipal territory.[13]

The dramatic changes which agricultural policy underwent from the 1990s (abandonment of the "intensive production" framework and "greening" of the subsidy system) also contributed to the strengthening of the qualitative protection of land through the imposition of new restrictions on farmers' rights of use in agricultural areas (muck spreading, cultivation methods, etc.) from 1992.

Thus, with the implementation of these different policies, almost all of the goods and services provided by the resource land are now regulated either directly or indirectly.

Evolution of the IRRs for Land

The combination of the two historical trajectories of the property rights system (PRS) and public policies (PP) enables the differentiation of six successive configurations of institutional resource regimes for the regulation of the uses of land between the late 19th century and the present day in Switzerland (Table 1).

Table 1: Stages in the Development of IRRs for Land in Switzerland since 1870

Stages	System of land ownership rights (PRS)	Public policies governing the exploitation and protection of land (PP)	Institutional resource regimes (IRR) for land
I. 1870-1912	*Stage 1:* Lack of definition of property at federal level	*Stage 1:* Lack of public policy regulating the use of the resource land	*Non-existent* regime (1)
II. 1912-1940	*Stage 2:* Introduction of the Swiss Civil Code, reinforcement of principles relating to expropriation		*Simple regime (2)* based on regulation through formal property rights High *coherence* but of little significance in the absence of PP
III. 1940-1955	*Stage 3:* Restriction of rights of disposal of agricultural lands	*Stage 2:* Policy to counteract speculation on agricultural land *Target groups:* (indebted) farmers *Instrument(s):* restriction of the mortgaging of agricultural land, cantonal subsidies for the release of farmers from debt, restriction on the sale of agricultural land to non-farmers and mandatory reimbursement of subsidies obtained in the case of a change in the use of agricultural land	*Simple regime (3)* based on regulation through rights of disposal of agricultural land High *coherence* as the two components of the regime focus on the owners of agricultural land
IV. 1955-1969	*Stage 4:* First *indirect* spatial planning interventions restricting building rights	*Stage 3:* Creation of indirect spatial planning instruments with a view to protecting agricultural land against speculation. *Target groups:* landowners (individuals or institutional investors), aspiring property owners, clients, speculators *Instrument(s):* indirect restriction of development zones with the help of piping plans, introduction of condominium property, federal subsidies for construction of social housing, federal inventories of natural and cultural landscapes	*Simple regime (4)* based on an initial series of restrictions on use rights Slight reduction in *coherence* due to the increase in the number of target groups of the PP

12. *Federal Act on the Protection of Waters (WPA) of 24 January 1991, Federal Ordinance on the Protection of Waters (WPO) of 28 October 1998.*
13. *WPO (Arts. 4 and 5).*

V. 1969-1983	*Stage 5:* *"Bodenrechtsartikel"* (land ownership articles) and general restriction of the right to build outside development zones. Constitutional guarantee of ownership and the principle of compensation in the case of (formal or material) expropriation.	*Stage 4:* (Very conflictive) process for the establishment of a federal spatial planning policy (zoning instrument) *Target groups:* all private and public, individual, and collective landowners throughout the territory of Switzerland *Instrument(s):* temporary ban on construction (EFD), followed by the general application of zoning (master plans and allocation plans) enabling the clear differentiation throughout the country of areas where building is permitted versus not permitted	*Complex regime (5)* based on the quantitative regulation of the land uses Considerable reduction in *coherence* due to the inherent contradictions in the *"Bodenrechtsartikel"* (land ownership articles) of 1969 (i.e. absence of coordination between the guarantee of ownership and the restriction on the right to build)
VI. 1983-2007	*Stage 6:* Creation of new restrictions on rights of use based on the protection of the environment and soil and, the reinforcement of the intervention affecting the rights of disposal of agricultural land and the property market.	*Stage 5:* Emergence of a policy for the qualitative protection of soils and biotopes *Target groups:* all emitters of substances that cause soil pollution, farmers, owners of protected biotopes *Instrument(s):* emission limit values and ambient air quality standards, restriction of substances that cause damage to the soil and environment (fertilizers, chemical products for plants, purification sludge, and GMOs), provisions relating to the (de-)contamination of soils/land and the pollution of water through the storage of waste, PGEEs and restriction of quantity of impermeable soil	*Complex regime (6)* based on the quantitative and qualitative regulation of the use of land/soil New reduction in *coherence* following the creation of new restrictions on use rights (qualitative protection of soil) that are very poorly coordinated with (the zoning of) spatial planning

This staged presentation allows identifying two major changes in the historical trajectory of the land regimes. First, the introduction of the Swiss Civil Code in 1912 marked the transition from a situation characterized by no regime to one characterized by a simple regime. Second, the constitutional land ownership articles (*"Bodenrechtsartikel"*) of 1969 institutionalized the historical compromise between the guarantee of ownership and the principle of spatial planning, in other words, the transition from a simple IRR to a complex one.

Moreover, the IRR-based approach also highlights four lessons concerning the emergence and implementation of land management instruments in Switzerland. First, the application of the IRR framework to the analysis of the regulation of the resource land demonstrates the need for an inter-sectoral analysis that incorporates a large number of different public policies. Interdependencies exist obviously between the spatial planning instruments (in particular zoning) and the implementation tools in an entire series of other policies with a spatial relevance, such as agricultural, water protection, environmental, landscape protection, military policy etc., whose instruments affect the regulation of the uses of land directly or indirectly.

Second, the historical analysis of land regimes shows how the choice and implementation of policy instruments are strongly predetermined and structured by the conception of landed property and by the constitutional principle of the guarantee of ownership. In particular, it is worth highlighting the five following phenomena:

– Up to the Second World War, there was no policy instrument, which regulated the uses of land in a direct and explicit way. The latter were only regulated by the intermediary of land rights.

– Initially, the first restrictive policy interventions only affected the disposal rights of farmers.

– The first policy interventions affecting the use rights of all landowners targeted the latter indirectly through water protection, housing, and landscape protection policies.

– The policy interventions regulating the main quantitative and qualitative uses of land in a direct, systematic, and restrictive manner were very belated–EFDS (1972), SPA (1979), EPA (1983), Ordinance on Direct Agricultural Subsidies (1993), Ordinance on the Pollution

of Soil (1998), Ordinance on the Remediation of Contaminated Sites (1998)—and their establishment was, moreover, highly conflictive.

– There is a structural weakness in the land-related instruments in spatial planning policy. For example, for 30 years, spatial planning was characterized by the lack of a mechanism for the levying and distribution of capital gains on land. This is all the more remarkable in view of the fact that the State (i.e. the municipalities) is obliged to compensate landed property owners in the case of formal or material expropriation (e.g. reduction of right to build).

Third, the IRR-based analysis also makes it possible to highlight a fundamental incoherence of the spatial planning regime established in 1969: it incorporated a number of contradictory rules, which resulted in the "judicialization" of the implementation of its central instrument, in the form of zoning. The fundamental incoherence of the regime results from the fact that, first, spatial planning policy obliges municipalities to limit—or reduce—the rights of landowners to build to a relatively significant extent. Second, the constitutional right of ownership requires the same municipalities to compensate landowners affected by spatial planning measures, in cases in which the latter would be similar to "material expropriation"—even though the regime's provisions did not specify any obligation to create a mechanism for the levying and redistribution of capital gains on land that would enable the municipalities to finance this compensation. This fundamental incoherence resulted in the "judicialization" of the implementation of the SPA: we acknowledge a strong increase in legal disputes relating to the implementation of municipal land-use plans and the development of case law in relation to compensation for material expropriation (Nahrath 2003). The research on this case law (Moor 1982 and 2002) shows that the judges, who recognized the imbalance in the contradictory orders, generally opted to prioritize the defense of the general interest of spatial planning over the excessively rigid application of the guarantee of ownership. Hence, they limited the conditions leading to the acknowledgement of material expropriation and the obligation on municipalities to pay compensation to landowners negatively affected by spatial planning measures.

Fourth, the normative utility of this new analytical framework is also evident. For instance, some of the observations, predictions, and suggestions presented in the conclusion of Nahrath's doctoral thesis (2003) are in the process of being confirmed empirically for the first time. The unsustainable and incoherent character of the spatial planning policy established in 1969 has hence been confirmed by the numerous attempts made to revise the SPA over the course of around one decade. The recent return of certain property-related instruments in the framework of regulations governing spatial planning in the regions most vulnerable to property-related pressures, such as tourist regions (Clivaz and Nahrath 2010), confirms the diagnosis of the structural weakness of spatial planning policy instruments in the face of landed property and the need for their reinforcement. Last but not least, the (re-)introduction of the mechanism for levying capital gains on land in the SPA[14]—an instrument initially planned as part of the initial SPA project and abandoned in the version of 1979 following in the referendum of 1976 which was won by land and property interests hostile to an excessively interventionist federal spatial planning policy—clearly shows the extent to which such considerable structural incoherence between the guarantee of ownership and zoning (and which precisely can be identified and analyzed using the IRR approach), is untenable in the long term and sooner or later will require the harmonization of the two formal regulatory corpuses governing a resource, i.e. the PRS and PPs.

Conclusion

In this chapter we argued that the simultaneous consideration of policy instruments and property rights enhances the empirical analysis of the regulation of natural resources. We demonstrated this by presenting a historical analysis of the regulation of the resource land in Switzerland.

14. This instrument, that requires a levy of at least 20% of capital gains resulting from land zoning, has been recently (re)introduced in the SPA following a partial revision of the law decided by the Swiss parliament and accepted by the voters in a referendum held in March 2013.

Up to now the IRR concept was essentially conceived from a heuristic perspective. It emerged and evolved over the course of our attempts to develop a system for analyzing conflicts surrounding the use of resources in a specific social, economic, legal, and political context, i.e. that of Switzerland (Kissling and Varone 2000; Knoepfel *et al.* 2001 and 2003; Rodewald and Knoepfel 2005). Its implementation in European research projects (Bressers and Kuks 2004; Kissling-Näf and Kuks 2004) also demonstrated, however, the relevance of its transfer to other institutional contexts, for example those of France, Spain, Italy, Belgium and the Netherlands. The hypothesis, according to which a causal relationship exists between the type of IRR (simple, complex, integrated) and the level of sustainability of the management of the uses made of a regulated resource has hence been tested on several occasions on a number of different resources (soil, water, forest, air, landscape, fauna), in different national contexts (Switzerland, France, Italy, Spain, Belgium, and the Netherlands) and at different geographical levels (national, regional, and local). It would appear to be confirmed in part by these initial empirical studies (see for example Reynard 2000; Nahrath 2000 and 2003; Varone 2002; Knoepfel *et al.* 2001 and 2003; Kissling-Näf and Kuks 2004; Bressers and Kuks 2004; Rodewald and Knoepfel 2005; Gerber 2006; Aubin 2007).

Beyond these initial international applications, we envisage the possible dual extension of the approach to elevate it to a more general level. The first measure in this regard would involve the extension of the empirical field, for example through the analysis of the implementation of European policies. In effect, the EU adopts policy instruments, which are implemented in considerably different national PRS, depending on the member countries. This is evident, for example, in the case of the Water Framework Directive, which aims to promote the integrated and sustainable management of the resource water. Another promising field of application would be the analysis of intellectual property rights (for example to patents), which are becoming increasingly prominent as structural influences in a variety of areas, such as cultural works, scientific discoveries relating to living organisms, drugs, etc. Therefore, it would make sense to extend the empirical field off the IRR analytical approach beyond that of natural resources.

The second possible way in which the approach could be elevated to a more general level is theoretical in nature. Thus, it would be particularly interesting to link the IRR approach with the theory of regulation (TR) as developed by R. Boyer (2003) in France.[15] In this context, the IRR concept would enable the taking into consideration of the historical evolution of successive "institutional configurations" for regulating the multiple uses of natural resources and to "reveal the variety in the forms of evolution" of institutions (see conversion, sedimentation, recombination processes). The historical analysis of the IRR for land in Switzerland also shows the relevance of R. Boyer's (2003: 197) proposal that "the viability of an institution does not stem from the permanence of each of its features but from the generative capacity of the corresponding configuration and from the potential for adaptation to variable contexts in both time and space."

The empirical case analyzed here shows both the robustness of the institution of private property as defined in Article 641 of the Swiss Civil Code and its capacity for adaptation to an evolving context. Hence, despite the upheavals experienced in social, political, economic, and environmental contexts over the turbulent history of the 20th century, the defenders of land rights succeeded in maintaining the philosophical and legal basis of this institution relatively unchanged over almost a century. In fact, landed property evolved successively from a situation in which it enjoyed a quasi monopoly on uses of land to a situation in which the various pressures on agricultural land (war economy, speculation, urbanization) necessitated its reconfiguration through specific regulations for agricultural lands and rural areas (rural land law, agricultural, and protected areas) and, later, for development zones (policing of construction, development zones). In short, the institution of land law succeeded in adapting to the strong pressures resulting from the increase in the power of public policies from the 1950s and 1960s, without, however, undergoing any significant transformation in terms of its fundamental principles. In conclusion, the evolution of the IRR for land in Switzerland confirms R. Boyer's hypothesis to the extent that the viability of the institution of private property (PRS) is linked

15. For an initial attempt in this direction, see Varone, Nahrath, Gerber (2008).

to the generative capacity of the institutional configuration (IRR) that it forms with spatial planning policy (PP).

Finally, we would plead that the analysis of policy instruments not lose sight of the fact that other institutional rules, including property rights, are equally important in explaining the genesis of public action and its impacts. This would appear to be particularly applicable to the analysis of natural resource management, but also of the very numerous fields affected by questions of intellectual property and patents, including for example culture, research and innovation, as well as health and international trade policies.

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Chapter 8 / THE UN-POLITICS OF INSTRUMENT SELECTION

Edward C. Page

A central claim of the "instruments" approach is that the characteristics and properties of instruments can help explain the choices made by policy makers. Constitutional arrangements, established policy frameworks, legal prescriptions and issue framing frequently serve to make the question of instrument choice unarticulatedand uncontested, much in the way that the absence of air pollution regulations was not the result of a conscious choice in Crenson's classic study of "un-politics".

Key words: *instruments – decrees – policy making.*

Introduction: Tools and Designs

One of the difficulties in offering a critical evaluation of the instrument approach to understanding public policies is that the concept of an "instrument" of government is used in at least two rather distinct ways. In its more traditional sense, which can be labeled a "tools" approach, it refers to the precise mechanisms that government uses to shape the environment it governs. Craft tools, the kind used by a carpenter or stonemason, differ in the way they have their effect on the materials they are used to work. By analogy, tools of government have different types of effects on the environment they seek to shape, such as with Vedung's (1998) sticks, carrots, and sermons ("regulation", "economic means", and "information"). Hood's (1986) NATO (nodality-authority-treasure-organization) scheme offers perhaps the most widely used formulation of this kind of tools approach. A tools approach along these lines may take a less generic view and distinguish between different types of instruments; for example distinguishing between litigation and regulation among legal instruments (see Coglianese 2011). However, a different approach to "instruments" is