

Chapter 2

Institutions and the Environmental Management of Contaminated Sites: A Theoretical Framework

Abstract In this theoretical chapter, we argue that management of contaminated sites cannot be understood separately from the institutional context that binds these processes. Within the policy sciences, rational choice institutionalism is presently the dominant scientific paradigm in studies of the relationship between institutions and the outcomes of environmental management processes. However, in order to analyze contaminated sites management in modern democracies, we found it necessary to partially depart from this mainstream. We argue that there is in rational choice institutionalism a problematic oblivion of power and politics that leads to institutional determinism, a neglect of actor processes in environmental decision-making that produces causal reductionism, and a weak understanding of the socio-legal nature of institutions, which does not allow one to fully grasp the changes to environmental management that relate to the governance era. Therefore, we present our own theoretical framework that combines institutional analysis and policy process analysis, in order to study the politics of contaminated sites. Drawing from the literature on institutional regimes, policy process theories and network analysis, we discuss several research hypotheses on what might influence the environmental performance of contaminated sites management.

The management of a contaminated site is embedded in an institutional context that must be apprehended in order to understand the processes involved in ecological management. The work of renowned Anglo-Saxon scholars like Elinor Ostrom (1990) has contributed to demonstrate that besides economic and macro structural factors such as the GDP or the population, institutions are fundamental research objects to understanding why natural resources are under stress, and how ecosystems are actually managed.

Among the various approaches to institutional analysis that deal with environmental management, rational choice institutionalism (Ostrom, 2007b) has been the most fruitful analytical framework. However, in order to analyze contaminated sites management in European countries, and to account for the changes related to the governance era, we found it necessary to partially depart from this mainstream out of several reasons that will be discussed below, before we introduce our own theoretical framework.

2.1 A Critical Perspective on Rational Choice Institutionalism

First, institutions and governance, which are some of the most basic theoretical notions that underpin rational choice institutionalism, have become so widely used that they can be considered as “magic words” (Pollitt & Hupe, 2011) under which contradictory meanings are conflated. Notwithstanding the vagueness of the term of “institution” and the frequent confusions between the concepts of institute, organization, policy, regulations, formal and informal rules which can all be referred to as “institution”, at least four different theoretical perspectives on institutions exist, each with singular understanding of the meaning, scope and effects of institutions (Schmidt, 2010).¹ Scholars also mix different things under the concept of governance, which is employed alternatively to designate the structure of institutions (polity), the types of regulations and policy instruments (policy), the power interactions between decision actors (politics), or all of that at the same time (Treib, Bähr, & Falkner, 2007). Governance is moreover a normatively loaded concept, which has been conveyed by international institutions such as the OCDE or the World Bank. It entails the idea that governments are only one of the governing institutions in modern free market society and it is implied that self-regulation of private actors in highly decentralized settings performs better than steering by public authorities, although empirical backing for these claims has often been lacking (Bäckstrand, Khan, Kronsell, & Lövbrand, 2010; Mayntz, 2004; Offe, 2009). In order to avoid reproducing this *doxa* (Bourdieu, 1993) in scientific research, alternative concepts for thinking about governance and institutions must be sought.

There is also a problematic tendency in the rational choice literature to exaggerate the explanatory power of institutions by considering well-designed institutions as a panacea that will solve environmental problems (Ostrom, 2007a; Young, 2002, pp. 165–190). For instance, in one of the founding texts of the institutional analysis of environmental problems, Garrett Hardin (1968) uses the metaphor of a grazing land in a free access situation to demonstrate how the absence of institutional rules that restrict the right to use the land results in depletion. Largely influenced by the thinking of Malthus, Hardin presents a solution of enacting institutions that would limit access to natural resources. However, Hardin’s analysis is a case of *institutional determinism* (Radaelli, Dente, & Dossi, 2012) that omits the role of power and politics. Indeed, institutions are socially embedded constructs that are produced by domination and power (Giddens,

¹ In order to clarify what we ourselves mean by institutions, and before we provide our own definition, we adopt for now the one suggested by Young (2013, p. 89):

“Institutions are collections of rights, rules, and decision-making procedures that give rise to social practices, assign roles to the participants in these practices, and guide interactions among the participants.”

1984). It is the state of the relations of force between actors that produces, at each moment, the crystallized rules and norms we call institutions (Bourdieu & Wacquant, 1992, p. 99).² Therefore, in real-life decision processes, power relations between the decision actors engaged in environmental management highly matter, in order to explain why institutions emerge and what functions they perform (Arts & Van Tatenhove, 2004). Hardin himself recognized that the root of the problem of resource depletion is not a lack of institutions as such, but the high-population density, which, in that case, is the reason why too much cattle is fed on the grazing land. Unfortunately, because economic incentives and the quest for continuous growth tend to be among the principal driving forces behind the social action of agents (Weber, 1978b, p. 7), the likelihood that dominant actor coalitions would support institutions that limit the use of natural resources that play an essential part in economic growth dynamic is relatively low.

One of the grounds behind the problematic determinism in mainstream institutional analysis is the temptation to predict the outcomes of decision-making processes based solely on institution characteristics, and thereby eclipsing the process by which causation unfolds. Institutions affect reality only because actors mediate and materialize their effects by conforming their behavior to institutional rules and norms. Actors who are involved in the complex power relations that constitute the decision process have heterogeneous interests and values, differing resources, and are therefore also likely to react differently to the same rule (Knoepfel, Larrue, Varone, & Hill, 2011). An actor's leeway in translating rules in congruent actions is the reason why the outcomes of the decision process can hardly be predicted based on the sole analysis of institutions (Scharpf, 2000). In order to understand how, and under what conditions, institutions might be able to steer decision processes towards environmentally sustainable outcomes, it is necessary to focus on the actor level, and to dig into the process by which institutions are reinterpreted by actors and materialized into actions and non-actions, and how (Bachrach & Baratz, 1963). This endeavor notably allows understanding why the intentions to protect the environment that can be found in many policy documents often stay on the paper: actors may resist or circumvent the various rules and behavioral norms that emanate from environmental rules and laws, which results in the phenomenon of the implementation deficit (Hupe, 2011; Owens & Bressers, 2013). Moreover, actors are not only capable of emancipating themselves from existing rules and norms, but can also produce innovation by engaging in a process of new rules creation (Laesslé, *in press*; Schweizer, Dupuis, & de Buren, 2013). In a nutshell, there is hence a complex dyadic relationship between actors' actions and institutions. Actors certainly tend to follow the rules of appropriate or exemplary behavior that are organized into institutions, which is referred to in the literature as the *logic of appropriateness* (see: March & Olsen, 1998; Olsen, 2007). However, actor actions are also driven by *the logic of consequentiality*: rules are

²Bourdieu used the concept of "field" rather than of "institution" during his career, although these concepts have meanings that share many similarities.

variously interpreted, and institutional alternatives are sought as ways of perpetuating the self-interest of the actor.

In seeking answers about how institutions could steer environmental management processes towards more sustainable outcomes, a functionalist conception has prevailed in the rational choice literature. Institutions are usually defined according to their regulatory function. Schlager and Ostrom (1992) for instance distinguish between the rules that regulate the rights to access, to manage, to exclude from, or to alienate a specific resource. This functionalist understanding underpins a reflection on the good design of institutions. It is argued, for example, that one of the fundamental conditions for good management of ecosystems is the congruence between the rules specifying the amount of natural resources units that can be withdrawn by users and the local ecological conditions (Anderies, Janssen, & Ostrom, 2004; Cox, Arnold, & Tomás, 2010). These are illuminating insights that however neglect the socio-legal nature of institutions. Rational choice approaches do not distinguish the role of formal laws and public policies from the local and informal rules in ecosystems management, and the importance of the latter is often stressed over the former. Arguably, this picture does not fit the context of modern democracies, in which environmental management processes are dominantly based on the rule of law, which implies a hierarchy between formal and informal norms that we will discuss further below. Moreover, the functionalist understanding of institutions fails to account for the effects of the fundamental trend that has affected environmental management in the last decades: the pressure to privatize the management of common or public natural resources (see: Gerber, Nahrath, Reynard, & Thomi, 2008). In the next sections, we discuss how a socio-legal understanding of institutions can contribute to better problematize these issues.

2.2 A Socio-legal Reading of Institutions

Max Weber considered that the foundation of the efficacy of an institution is based on its capacity for producing formalized rules that generate predictable and calculable behavior among actors (Weber, 1978a). In this perspective, the power of institutions depends first on the degree of formalization of the rules they provide and on their legal status. Institutional rules can be *de facto*, meaning that they are the product of informal and sometimes non-written practices inherited from the past, or mutual consent of the actors concerned. By contrast *de jure* rules are the formally recognized product of the legal system (Schlager & Ostrom, 1992). Formalization also relates to the level of *generality* of the rule. Rules can have an extremely large scope and wide applicability or affect only a few individuals. Highly general rules tend to be abstract, whereas individual rules have more concrete provisions. In strict

legal terms, there is a clear *hierarchy of the norms* in most European democracies (Haarscher, 2005), whereby highly formalized rules provide secure and durable rights to actors that overrule the provision of less formalized or less general norms. In a sociological perspective, highly general and formalized rules are the most powerful mechanism of domination in complex societies. That is because, they tend to similarly inform “the behavior of all social actors, beyond any differences in status and lifestyle” (Bourdieu, 1986, p. 846).

Another trait of the socio-legal nature of institutions that is important to understand ecological management in modern democracies pertains to the distinction between public and private rules. Again, in a legal perspective, public rules originate from public law, and are the set of norms that regulate the vertical relations between the State and private parties, whereas private rules are the product of private law, which apply to horizontal dealings among private actors (Rosenfeld, 2013). For instance, public policies and environmental regulations fall within the category of public laws, whereas private property rights, or a contract between the owners of a water spring and a mineral water company would be based on the private law, which is codified by the civil code in the case of Roman-Germanic legal systems. Because the possibility of mutually adjusting private interests through private rules depends on the stability of public institutions, in most democracies, “the *res publica* must stand tall” (Supiot, 2013, p. 130) that is, public rules supersede private rules. There is also a functional reasoning behind the institutional primacy of public rules over private rules: in theory, private rules have the teleological function of regulating conflict between individuals, whereas public rules have the higher moral attribute of being driven by the general welfare.

The double distinction between the degree of generality and the public/private nature of rules can serve to draw a typology of formal institutions (Table 2.1), which help to comprehend the hierarchy between norms. In turn, the understanding of institutions as socio-legal constructs that are related by hierarchical relations allows us to fully grasp the claim of the governance literature claims that, since the 1980s, the State has been hollowing out the steering of social issues (Rhodes, 1997, 2007).

Table 2.1 A socio-legal typology of formal institutions

Degree of generality	Public	Private
High	Public law	Private law
	Public policy	Civil code
Medium	Regional political program	Contracts
Low	Administrative decision	Private arrangement
	Implementation act	Mutually agreed upon norm

2.3 The Theoretical Puzzle: The Management of Contaminated Sites in the Era of Governance

With respect to environmental issues, the era of governance can be interpreted as a move away from the use of highly formalized public rules, towards informal and private regulations such as market-based instruments, contracts or voluntary agreements, a trend which is particularly visible in novel regulation domains such as climate change (Baranzini & Thalmann, 2004; Jordan, Wurzel, & Zito, 2003).

The ontological differences between rules of different socio-legal nature contribute to explain why some analysts consider this evolution, and more generally, a trend towards privatization of natural resources governance as “a tragedy of enclosure” (Monbiot, 1994; Saurin, 1993). Indeed, and by definition, natural resources that are uniquely regulated by private rules – i.e., private property regime or common property of a restricted group of individuals – are managed, before everything, in the sole interest of their owners. The symbolic violence that results from the appropriation of parts of the environment by well-defined groups of actors through private rules does however not necessarily lead to less well managed ecosystems; and this paradox is one of the principal lessons taught by rational choice institutionalism (Acheson, 2006; Ostrom, 2005, pp. 236–240).

Fortunately, this trend towards privatization of natural resources governance is probably overstated. Private and informal rules do not simply substitute the provisions of existing formal public rules, but add, or are juxtaposed in new layers of regulations. This is due to the democratic principle of the hierarchy of norms, which implies that private and informal regulations exist only *in the shadow of the hierarchy* of higher level norms (Scharpf, 1997, pp. 195–217).

Moreover, an increasing use of informal and private arrangements in ecosystem management for instance does not necessarily imply absence of the State. Rather, the juxtaposition of public and private regulations goes hand in hand with a *hybridization of the public authority* (Conca, 2005): public authorities are increasingly involved in the regulation of public problems through private means. This occurs, for instance when the State acts as a private entity, in order to negotiate pollution reduction agreement with a company through the conclusion of bilateral contracts. In this respect, one can argue that the governance era does not represent the end of governmental intervention in environmental management, but rather an opening of renewed public – private interactions.

Still, the increasing use of private or hybrid arrangements and rules of less generality in ecosystem management raises several questions regarding the capacity to manage environmental issues such as contaminated sites. From a socio-legal perspective, the era of governance implies the loss of the State’s capacity to reach calculable environmental objectives by way of public rules of high generality to the profit of negotiated and case-by-case solutions through private arrangements that have, for better or worse, less predictable outcomes on the environment. Does the flexibility associated to private and informal regulations lead to better environmental outcomes in the context of contaminated sites management? Or on the contrary, does a retreat from the practice of governing through highly formalized public rules relate to

sub-optimal outcomes? Furthermore, one might also ask whether the complex convolution of rules with different socio-legal attributes create new coordination conflicts that impede effective environmental management. In order to answer these research questions, an original conceptual framework is presented below.

2.4 A Conceptual Framework for Analyzing the Politics of Contaminated Sites

Taking stock of the limitations formulated in the above, namely, conceptual polysemy, institutional determinism, and finally the lack of a socio-legal comprehension of institutions, we propose an analytical concept that is based both on the research framework on public (environmental) policy and implementation processes by Knoepfel et al. (2011) and the approach to institutional analysis called *the institutional regime* (Gerber, Knoepfel, Nahrath, & Varone, 2009; Knoepfel, Nahrath, & Varone, 2007). This analytical concept organized in Fig. 2.1 involves three levels of analysis: institutional regime (1) environmental management process (2) and environmental outcomes (3).

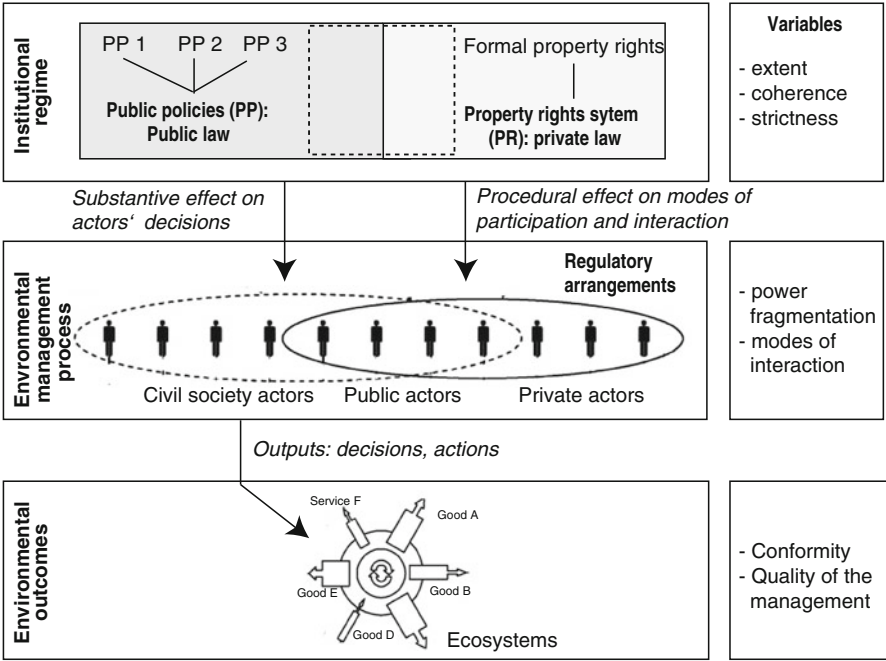


Fig. 2.1 Theoretical framework: the politics of contaminated sites (“PP” means public policy. Modified from Dupuis and Knoepfel (2013) and Gerber et al. (2009))

The epistemology behind this conceptual framework resembles the actor-centered institutionalism of Renate Mayntz and Fritz Scharpf (Mayntz & Scharpf, 1995; Scharpf, 1997). We bring politics and power games back into focus, by recasting institutions in the games real actors play in environmental management.

Our conceptual framework is also grounded in implementation research, which is mainly concerned with the study of how formal policy objectives are translated into concrete actions by field actors (Barrett, 2004; Barrett & Fudge, 1981; Hjern & Hull, 1982). We hence conceive of environmental management as a decision process about how ecosystems and natural resources should be used and conserved, and in which procedural rules, and environmental regulations are implemented with more or less success. The ambition of our framework is thus to unravel the process by which these formal institutions are materialized into actions that produce environmental outcomes by the actors engaged in the environmental management process.³

Our framework accounts for the hierarchy of norms of modern democracies, and the phenomena of norms juxtaposition and public authority hybridization by detangling two levels of institutional rules according to their socio-legal nature. First, we refer to the general and highly formalized public and private rules that structure the environmental management process as “institutional regime” (Gerber et al., 2009). Second, we use the concept of “regulatory arrangements” (Schweizer et al., 2013) to designate the ad-hoc and more or less formalized rules that public or private actors may adopt in the course of the environmental management process aside institutional regimes. We hope that by applying these theoretical lenses to the management of contaminated sites, we might learn something about the conditions under which formal policies and self-regulation can combine and produce successful outcomes. Below, we turn to a description of the concepts, indicators and hypotheses that we use to apprehend the three levels of analysis our framework describe and their relationships.

2.4.1 The Institutional Regime of Contaminated Sites

The effects of formal institutions on the management process are conceptualized using the *institutional regime framework*. This framework originates from a section of the literature on public policy analysis which incorporates findings of rational choice institutionalism, in order to comprehend the complex relationship between institutions and the sustainability of natural resources management (Gerber et al., 2009; Knoepfel et al., 2007). This approach is relatively close to Elinor Ostrom’s Institutional Analysis and Development Framework (IAD) (Ostrom, 2007b), but has developed a far more comprehensive understanding of the role of public policies and formal institutions in the governance of natural resources. The institutional

³We must underline that we do not focus on the process by which actors strive to modify formal policies and rules which is generally the focus of policy process approaches (Sabatier, 2007).

regime framework also widens traditional policy analysis by including formal private rules such as property rights for analyzing the management processes that relate to natural resources, and by incorporating a “regime approach” that is better able to deal with boundary spanning issues such as environmental contamination (Jochim & May, 2010; May, Sapotichne, & Workman, 2006).

“Institutional regime” designates all the formal regulations (public and private) that pertain to the management of a specific natural resource. In the context of this study, the natural resource under enquiry is the *site*, which we define as:

The entire complex of natural resources, that is the air, soil, water and biomass and their interactions, within a precisely defined and delimited area.

By extension, the institutional regime of contaminated sites designates:

The set of formal public and private law rules that allocate various forms of rights and obligations to the actors involved in the management of the contaminated site.

The institutional regime hence determines the legal conditions, under which actors may use a certain site, in particular as a receptacle for pollution or waste. The rules produced by the institutional regime have two principal effects on the management process. On the one hand, substantive rules (or regulations) influence the behavior of actors by constraining or enabling certain decisions and actions. On the other hand, procedural rules partially define the constellation of actors who can participate in the management process, and make precise the nature of the relations that must be established between public and private actors (Knoepfel et al., 2011, pp. 95–117). The strength of these two effects, and by extension, the capacity of an institutional regime to steer the management process towards defined outcomes, depends on two characteristics, which have been identified by previous researches. These are the *extent*, and the *coherence* of an institutional regime (Knoepfel et al., 2007). For this study a third criterion is proposed, the effect of which we would like to test further: *strictness*.

2.4.1.1 Extent

“Extent” is a criterion that enables evaluation of whether or not a regime assumes the regulatory function of limiting the uses of the environment that can cause damages. Table 2.2 lists seven uses of the environment that highly contribute to sites contamination. The extent concerns the presence of a formal regulatory act with regards to these uses (for a similar approach see: Knill, Schulze, & Tosun, 2012; Koski, 2007).

Table 2.2 Uses of the environment that adversely impact sites

Production of waste
Discharge of wastewater into surface and ground waters
Discharge of wastewater in the soil
Storage/disposal of solid waste into the soil
Emission of atmospheric pollutants
Harm to the biodiversity
Activities generating the risk of future impacts

The idea behind using the extent as indicator is based on the finding of the rational choice institutionalism that rules must exist that hinder the overuse of the capacity of ecosystems to naturally buffer pollutants and externalities in diverse forms (Ostrom, 1990, p. 90). In the absence of such rules, a site would be in the same situation Garrett Hardin depicted in *the tragedy of the commons* (1968) and that is, the lack of institutional counter-incentives to contamination or resource depletion. If the necessity of rules fulfilling this restricting function is highly agreed upon in the literature, a more open question relates to whether this task should be assumed by the institutional regime and its highly formalized rules or by case-specific regulatory arrangements between actors. For instance, some scholars have criticized the regulatory approaches that formalize highly abstract and general ecological thresholds in national level rules, which do not always fit the attributes of local ecosystems (Holling & Meffe, 1996).

In order to measure the extent of the institutional regime, we will use, in the empirical part of this book, a *rating* system based on Table 2.2. The presence of each type of regulatory function earns the regime one point; hence a regime with the maximum extent would be awarded seven points and non-existent regime would get zero points.

2.4.1.2 Coherence

In this research framework, the term coherence refers to balancing of the objectives adopted in relation to the protection of sites and the different instruments provided by formal regulations to attain them. What is involved here is the evaluation of the extent to which the goals and means of formal regulations are congruent. Coherence is a qualitative criterion, which is frequently used in public policy analysis (Goggin, 1986; Matland, 1995; Mazmanian & Sabatier, 1989). It is based on the idea that the internal contradiction between objectives and instruments often explain deficits in policy implementation. Coherence also refers to the degree of coordination between the multitude of formal, public and private rules that constitute a regime. Obviously, a coherent regime is particularly desirable so that coordination conflicts between rules with contradictory objectives or effects are well managed. Rational choice approaches emphasize this point as well by asserting that rules allocating the right

to withdraw resource units should be coherent with the rules imposing limits based on some ecological threshold (Cox et al., 2010). This is also referred to as *integration* in the policy literature (Lafferty & Hovden, 2003). The coherence of the institutional regime is important, not only because statutory incoherence produces self-contradictory messages, which must be reorganized, reinterpreted and translated by actors into actions that make sense and that perform the desired tasks, but also because they incite actors to ignore these rule of indeterminate meaning.

The coherence of an institutional regime may only be measured on a qualitative basis through analytical research by analyzing the validity of the causal chain relating goals and means, and through comparison of the provisions of potentially conflicting rules. We propose to measure this characteristic simply using a nominal scale: “weak”, “average” and “strong” (1 to 3 scale).

2.4.1.3 Strictness/Flexibility

Strictness is a measure of the coercive force represented by the institutional regime. A strict regime has a considerable number of obligations that impose defined and detailed behavioral norms on the firms responsible for the contamination. For instance, the obligation to limit pollution according to defined emission standards, or to remediate a site once a specific threshold has been exceeded (see Fig. 2.2). The

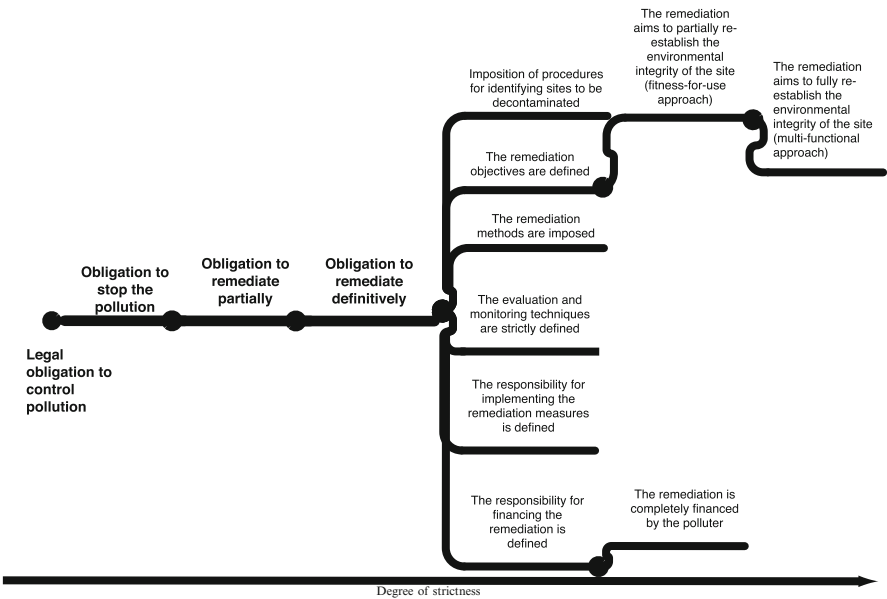


Fig. 2.2 Degree of strictness of a regime for the protection of contaminated sites (Modified from Dupuis and Knoepfel (2013))

strict regime leaves little scope for maneuver to the actors of the management process. Under a strict regime, the management process has the advantage of being more predictable and comparable throughout a territory in accordance with a straightforward top-down conception of policymaking. However, the clear disadvantage of rules stringency is that the associated obligations may not always suit the specific site features and preferences of the stakeholders, who may therefore resist them (Knoepfel et al., 2011, pp. 174–177). Some scholars also argue that strict and rigid top-down rules are myopic by nature and that their unexpected consequences are worse than the environmental issues they attempt to solve (Holling & Meffe, 1996).

Strict institutional regimes have become increasingly contested in the era of governance. The legitimacy of strict regimes relies uppermost on their democratic character, that is, the behavioral norms and obligations they impose are enacted by public actors who are democratically elected and accountable (*input legitimacy*). However, strict regimes can be criticized for having no *throughput legitimacy*, i.e. the quality of deliberation and participation in strict regimes is low because formal rules impose rigid and non-negotiable codes of conduct to stakeholders. Finally, in a globalized context where the authority and the steering capacity of the State is said to have weakened (Meadowcroft, 2007), the *output legitimacy* of strict regimes, that is the efficiency and effectiveness of their implementation, is also questionable (see: Papadopoulos & Warin, 2007).

The flexible regime, in contrast, voluntarily contains few obligations. It provides regulatory frameworks that leave considerable scope for maneuver to the actors responsible for implementing the measures in question. Hence, the flexible regime allows for case-by-case application on a participative basis. This freedom translates into highly diverse processes and results from region to region. The advantage of this is that it guarantees a form of respect of local realities and stakeholder preferences. Furthermore, the deliberative aspect of decision making and the inclusion of private stakeholders contribute to avoidance of the throughput and output legitimacy gap, which supposedly affect strict regulations (Bäckstrand et al., 2010). Recently in academic discussions about how to manage environmental change such as climate change, many scholars have urged that flexibility is a necessary condition for success (Folke, Hahn, Olsson, & Norberg, 2005; Lebel et al., 2006) as it allows formulating adaptive clauses that fit the local ecological situation (Craig, 2010; Ruhl, 2010).

Based on a review of the scientific literature on the protection of contaminated sites (Bone et al., 2011; Christie & Teeuw, 1998; Ferguson, 1999; Hodson, 2010; Reijnders, 2009; Rodrigues, Pereira, da Silva, Hursthouse, & Duarte, 2009; Veenman, 2006; Vegter & Kasamas, 2011), we developed Fig. 2.2 which details the criteria that can be used for assessing the strictness of an institutional regime. We propose that the strictness of a regime be measured on the basis of the number of obligations it imposes on the polluter. For instance, a very stringent regime would not only force private firms to control pollution levels, but imposes a multi-functional approach to remediation, and full coverage of all the contamination costs in accordance with the polluter must pay principle. The regime is evaluated based on the below-presented tree diagram. We opted for a “hierarchical” classification, as the presence of certain obligations is conditional on that of others. Each time a criterion

is fulfilled by the analyzed regime, a “step” is taken to the right. Each step is allocated one point. As a result, a score of zero indicates that a regime is completely flexible, and a score of 13 suggests that the regime is as strict as it could be.

2.4.1.4 Research Hypotheses on the Effect of the Institutional Regime on Environmental Management Outcomes

Only a few studies have attempted to empirically test the effect of institutions attributes such as extent, coherence and strictness on environmental outcomes (for a recent review see: Fiorino, 2011). According to the literature on institutional regimes which has produced a substantial amount of empirical studies (Gerber, 2006; Knoepfel, Kissling-Naef, & Varone, 2001; Knoepfel, Kissling-Näf, & Varone, 2003; Nahrath, 2003; Reynard, 2000), the strength of institutional regimes is often related to positive environmental outcomes. We hence propose to test the validity of this assumption in the context of contaminated sites management and formulate the following research hypothesis:

H₁: The coherence, extent and strictness of the institutional regime in force (strong regime) correlate positively with the environmental outcomes of contaminated sites management.

If this assumption appears to be overly blunt, we actually do believe that the effect of institutional regimes shall not be conceived as deterministic: environmental outcomes are not mechanically related to institutional effects. An institutional regime certainly provides a structure of organized incentives that influences the choices actors make in relation to environmental management, but these decision processes are inherently contingent and largely unpredictable. Therefore, theoretical predictions based on institutions' attributes should only be considered as a counterfactual against which the empirical reality can be gauged (Scharpf, 2000). Bearing this in mind, we describe below how institutional regime rules intervene in the mechanism of producing decisions and actions in relation to contaminated sites management.

2.4.2 *The Decision-Making Process in Contaminated Sites Management: Actor Games, Resources, Rules, and Modes of Participation and Interaction*

We conceive the management of contaminated sites as a highly complex process, framed by institutional regime effects, in which constellations of strategic actors have heterogeneous preferences and values; these actors, variably endowed with

resources, participate and interact according to different modes, in an attempt to produce decisions and actions (the outputs) that are congruent with their self-interest (Knoepfel et al., 2011, pp. 117–119).

There is a multitude of factors that can intervene in the mechanism that controls decision process outcomes. In order to reduce this complexity, we focus on four factors described below: actor games, resources, institutional rules, and mode of participation and interaction.

2.4.2.1 Actor Games: The Confrontation of Values and Interests

The decision process in contaminated sites management can be conceptualized, in a very simplistic way, as a three-player game (the iron triangle) that is governed by public authorities, firms responsible for pollution and civil society representatives. If one assumes the view that actors are bounded rational beings driven by self-interest (Ostrom, 2007b, pp. 30–32), then firms and civil society representatives are likely to clash over the management of the contaminated sites. Firms are cost-minimizers that will seek to reduce the cost of remediation. For instance, in the context of the USA, Ciba, the former chemical multinational, has transparently exposed its strategy of dealing with contamination victims and environmental agencies as external customers that need to be satisfied cost-effectively (Wise, 1995). By opposition, the organizations defending civil society are likely to campaign for remediation that fully eliminates environmental risks and the residual pollution, no matter the costs. The behavior of civil society representatives ought not be considered as a purely value-driven demonstration of environmental activism, but also responds to the functional necessity of demonstrating the visibility and the social utility of these organizations in perpetual need of financial and public support (Salamon, 1994). In-between these two contrasting interests, the role of public authorities as stakeholders in the negotiation is rather difficult to anticipate. As an entity bound by the rule of law, the margin of maneuver of the public authority is supposedly limited. The public authority should act as the agent responsible for concretization and follow up of the provisions of the institutional regime. However, implementation research demonstrates that, in reality, public actors often deviate from this textbook picture (Hupe, 2011). We will come back to this issue below, in the section about the modes of participation and interaction.

2.4.2.2 The Power of Resources

In decision-making, the power to act and influence can be understood as endowment in resources of action that can be engaged to weigh on the outcomes of the decision process. Our understanding of the role of resources in decision games is highly similar to Pierre Bourdieu's notion of "capital":

We can picture each player as having in front of her a pile of tokens of different colors, each color corresponding to a given species of capital she holds, so that her *relative force in the*

game, her *position* in the space of play, and also her *strategic orientation towards the game* [...] the moves that she makes, more or less risky or cautious, subversive or conservative, depends both on the total number of tokens and on the composition of the piles of token she retains, that is, on the volume and structure of her capital. (Bourdieu & Wacquant, 1992, p. 99)

Knoepfel et al. (2011, pp. 67–95) identify ten principal tokens as resources in decision games: money, personnel, law, information, organization, consensus, time, infrastructure, political support and force. The balance of force in the negotiations depends on the distribution of these resources among decision actors. Of course, resources are generally not equally shared. Notwithstanding the obvious case of money, there is, in contaminated sites management, a structural power inequality in favor of firms that results from information asymmetry. This information asymmetry is the consequence of the fact that the polluting firms are often the sole parties who dispose of knowledge about the types of pollutants that were introduced in the soil and the techniques that should be used to remove them. This structural bias in information can be offset, if civil society or public authorities dispose of sufficient other tokens, for instance, money and organization, for engaging scientific experts to produce counter-analysis of the state of the pollution and of the best remediation methods.

2.4.2.3 Rules Compliance and Rules Alteration

The various laws and formal rules of the institutional regime can be thought of as a meta-resource (Bourdieu, 1993) that structures these power games. The substantive rules of the regime, by restricting or enabling certain decisions or actions, influence the other resources actors can enlist in driving the decision process towards their interest.

Moreover, formal laws and policies also produce procedural rules that partially define who can participate in decision-making, and codify the nature of relations that must be established between public actors, and private and civil society actors. These norms of participation and interaction are absolutely fundamental, because they determine the players of the decision game, and how the public authority will use the resources of force and law, in order to lead the decision process towards outcomes that are congruent with the institutional regime specifications. However, rules are just rules, and just as in the game metaphor, actors with enough resources can cheat, by circumventing, ignoring or trespassing on the rules.

Formal rules are not static entities that are impermeable to changes. The institutional regime evolves; regulations and procedural rules are modified by policymakers. Moreover, the joint-decisions that result from actors' negotiations are not durable in time. A change in the balance of power, or the participation of a new actor in decision-making can result in new decisions that contradict and overrule the previous ones. In order to stabilize the outputs of the decision process, and to ensure the consistency of future decisions, actors who are willing to maintain the status quo can resort to enacting institutions and rules (that we call regulatory arrangements), for creating a path-dependence that will bind future actions. Regulatory arrangements

are case-specific rules that can perform the same functions as the institutional regime. Regulatory arrangements can take the form of public rules of low generality such as implementation acts or administrative decisions, or can relate to the private law, for instance, in the case of contracts. Regulatory arrangements do not even need to be in written forms; oral agreement or habits can be the source of long lasting behavior and actions.

The emergence of regulatory arrangement can be encouraged by the procedural rules of the institutional regime. For instance, the subsidiarity principle, which is at the core of the institutional organization of some federal States, implies that, whenever possible, decentralized and private dealings should be preferred to public and centralized intervention in social problems (Gerber et al., 2008; Linder, 1994, pp. 54–56). Theoretically, if the principle of the hierarchy of norms were always respected, regulatory arrangement would be purely compliant and complementary to the institutional regime. However, in reality, these two institutional layers can conflict, as we will discover in the empirical part of this book.

2.4.2.4 Actors' Mode of Participation and Interaction in Decision-Making: The Traditional, the Market, the Corporatist, and the Network Models

The mode of participation and interaction in decision-making refers to the number and the types of actors (public, private, civil) that have a concrete right of voice in the decision arena, and the kind of mutual relations they establish. The modes of participation and interaction in decision-making are not only vital to understand the outcomes of environmental management processes, as some scholars argue (Carlsson & Sandström, 2007; Huitema et al., 2009; Sandström & Carlsson, 2008), but they are at the center of the debates raised by the Rio process about the needed democratization of natural resources governance, which is often plagued by the lack of transparency to the public, and weak accountability of decision-makers acting behind closed doors. The modes of participation and interaction are akin to the “modes of governance” that some scholars like to refer to (Treib et al., 2007), but we prefer not to use this expression, in order to avoid the conceptual confusion that we have already discussed in the above.

The mode of participation and interaction that prevails in a decision process depends on a variety of rules. As we mentioned earlier, the procedural rules of the institutional regime contributes, for instance, by giving to environmental organizations the right to appeal or to contest decisions that have an impact on nature. Modes of participation and interaction also depend on more informal norms such as the administrative culture, and habits of how private and civil actors are dealt with. Finally, rules about who is legitimate to intervene and with what attributes can also be defined during the decision-making process through the adoption of regulatory arrangements. In our view, modes of participation and interaction are rarely givens. We like to think of mode of participation and interaction as resulting from politics and power relations, as actors will strive to be in the nodal point of the decision

network, excluding actors with conflicting interests. Ultimately, public actors endowed with the authority of the law have the responsibility of delineating the structure of these interactions. Mode of participation and interaction can hence be understood as an iterative management choice of prime importance that public actors make on how to interact with private and civil actors (Klijn & Koppenjan, 2000).

Within modern political sciences, two theoretical approaches have embraced the project of making predictions about the outcomes of decision processes based on the structure and the types of relation between decision actors, namely *the network* and the *governance* approaches (see: Bevir & Richards, 2009; Fawcett & Daugbjerg, 2012; Provan & Kenis, 2008). Two dimensions of the network of relations between actors can serve to build a typology of modes of participation and interaction. The first is the degree of fragmentation/concentration of power. In general, the greater the number of actors that are given access to the decision-making arena, the more fragmented the power, and vice versa. The second concerns the nature of interactions between public, and private or civil actors. The relationships between actors may essentially be vertical and hierarchical in type or horizontal and cooperative (Adam & Kriesi, 2007). Based on these two criteria, the following typology of four models of participation and interaction may be proposed (Table 2.3):

- The *legal/traditional* mode, in which public authorities interact with private and civil actors through vertical and hierarchical relations, in accordance to the principal-agent model; (Howlett, 2009);
- The *market* mode, application of which has mainly been attempted based on the *new public management* ideal, through the extensive delegation of tasks to private and civil organizations based on hierarchical relationships arising from competitive relations on the market (Peters & Pierre, 1998);
- The *liberal corporatist* mode is typical of consensual democracies like Switzerland and Belgium, in which “cosy” horizontal relationships (Knill & Lenschow, 1998), characterized by trust are instituted between the public and a few business actors (Katzenstein, 1985, pp. 105, 130; Lijphart, 1999, pp. 37–38; Siaroff, 1999).
- Finally, the *network* mode which is characterized by the active participation of companies and civil society members in open networks, which are coordinated by horizontal and deliberative relationships. The network mode corresponds to the ideal participation model of *environmental governance* that the Rio process and the Aarhus convention attempt to implement (Jänicke & Jörgens, 2007; Jordan et al., 2003; Kravchenko, 2007; Lemos & Agrawal, 2006).

Table 2.3 Models of participation and interaction (Modified from Adam & Kriesi, 2007; Dupuis & Knoepfel, 2013)

	Modes of interaction between public and private sectors	
	Vertical and hierarchical	Horizontal and cooperative
<i>Fragmentation of power</i>		
<i>Weak</i>	Legal/traditional	Liberal corporatist
<i>Strong</i>	Market	Network

Of course, these ideal-types are somehow too broad and their use must be contextualized (see Sect. 3.2.2 for an application to Switzerland). Nevertheless, for public authorities, opting for one or another of these models of participation and interaction with private and civil society actors is a high stake that relates to the challenge of establishing patterns of interaction that are likely to favor the emergence of environmentally optimal decisions and actions. Much of the scientific literature emphasizes that public actors should favor decision process structures that enable *social learning*, the mechanisms through which actors with conflicting orientations and interests might learn from one another, in order to reach a mutual understanding that will favor the emergence of consensual decisions (Pahl-Wostl, 2009; Rijke et al., 2012). This requires the public actor to act as a facilitator who builds trust between other actors, which however is not necessarily possible with the kind of highly antagonistic constellations of actors that are likely to develop in contaminated sites management. Current approaches to the governance of environmental issues thus often fail to consider the role of conflict in decision actors' interactions. Conflictuality, and sometimes hostility are frequent attitudes between coalitions of actors with opposed "core-beliefs" (Sabatier & Weible, 2007) about the intrinsic value of the environment. It is hence not rare that the environmental decision process is caught in a struggle between pro-environment and pro-economy coalitions with clashing beliefs with regards to how to deal with pollution problems (Ingold, 2010). Mutual learning may often seem a mere wishful thinking in contexts where actors strive to obtain decision outcomes that are in their self-interest. *Bargaining* based on exchange of political resources, rather than cooperation based on trust, can be the main way of interacting for opposing coalitions seeking to reach well-defined goals and unwilling to learn from one another. Consequently, the actors' mode of participation and interaction in decision making is central to understand how conflict is managed in order to produce desirable environmental outcomes.

2.4.2.5 Research Hypotheses on the Effect of the Modes of Participation and Interaction in Decision-Making

Scholars have diverging expectations regarding the performance of models of participation and interaction in decision-making processes that relate to the environment.

According to Scruggs (1999), as a mode of relating between private and public actors, corporatism would yield better results than the legal/traditional modes of governance. In particularly technical areas like the remediation of contaminated sites, the State is in a situation of dependence towards the firms, which possess the know-how of remediation technologies. Hence, the establishment of direct forms of cooperation between companies and public authorities is inevitable. Furthermore, firms are generally more willing to cooperate in the context of corporatist relationships, which offers them the most freedom to act. Private companies are far more

inclined to respect the “rules of the game” if privileged and trusty relationships are established with the public authorities responsible for monitoring the application of the law. The liberal corporatist model is hence said to favor the emergence of jointly decided measures, the political acceptability of which increases the likelihood of successful implementation (Fiorino, 2011; Jänicke & Jörgens, 2007; Scruggs, 1999, 2001). Hence, one could postulate that:

H₂: The establishment of a liberal corporatist mode of participation and interaction is most suited to ensuring the environmental outcomes of contaminated sites management.

However, views on the hypothesis of a positive correlation between establishment of corporatist relations and environmental outcomes are much disputed. According to other scholars, corporatist agreements are structurally incapable of guaranteeing environmental protection as a quest for economic growth, which is the main objective of companies, comes into conflict with ecological considerations. Furthermore, the prioritized cooperation between public authorities and companies implied by corporatism runs the risk of capture of the State by private interests. Decisions taken through corporatist arrangements might reflect the private interests of companies more than the public and general interest in the protection of the common natural environment (Crepaz, 1992, 1995). For these reasons, extension of the circle of actors actively involved in decision-making to include civil society representatives in the context of decentralized, and participative or deliberative networks is often deemed pivotal (Fiorini, 2006; Huitema et al., 2009; Pattberg, 2007; Reed, 2008). Through the greater inclusion of civil society representatives, the adoption of the network model is seen as enabling avoidance of the risk of public interest being captured by private interests. Therefore, the network model is often seen as one of the factors that contribute to environmental quality (Andersson & Ostrom, 2008; Newig & Fritsch, 2009). It follows that:

H₃: The establishment of a network mode of participation and interaction is most suited to ensuring the environmental outcomes of contaminated sites management.

The superiority of the network model that has been fostered by international agreements such as the Rio declaration of 1992 and the Aarhus convention of 1998 (Kravchenko, 2007) is however not universally acknowledged.⁴ The multiplication of the actors involved in the decision-making process could constitute an obstacle to efficient decision-making (Pressman & Wildavsky, 1984; Tsebelis, 1995). The inclusion of NGOs, whose positions are often very far removed from those of private

⁴See also Sect. 3.2.2.3.

companies, automatically increases the transaction costs and the possibility of reaching a consensus. Moreover, the participation of NGOs may contribute, by comparison with the corporatist model, to increasing the conflictive nature of the relationships among actors, and polarizing the deliberations. Accordingly, the inclusion of NGOs may cancel out the potential benefits of corporatist arrangements based on trust between public authorities and a few private actors. It follows that:

H₄: The establishment of a network mode of participation and interaction involves an increase in transaction costs as compared with that of a corporatist mode.

2.5 Measuring the Environmental Outcomes of Contaminated Sites Management

Now that we have proposed a conceptual framework and several hypotheses, we come to a definition of our dependent variable and the question of how to measure the environmental outcomes of contaminated sites management.

Many researches in the field of rational choice institutionalism fail to define what they consider as successful practices of environmental management, creating a *dependent variable problem* (Dupuis & Biesbroek 2013; Green-Pedersen, 2004). This is of course related to the complexity of ecosystem interactions, and the uncertainty that characterizes our current knowledge with regards to questions such as the real extent of the anthropogenic alteration of an ecosystem's vital functions. This also reveals the fact that the meaning of concepts such as environmental performance, or *sustainability* are much contested, and no agreement currently exists on how to measure them (Goodland, 1995; Siche, Agostinho, Ortega, & Romeiro, 2008). The difficulty in assessing environmental impacts also relates to the fact that any assessment or judgment on the state of the environment is necessarily normative. The extent to which nature should be protected and conserved is a sensitive issue that triggers conflict in society, which is furthermore appropriated by political parties. In this context, developing universally valid indicators to measure success in environmental management is a daunting task. This is particularly true in the case of contaminated sites management, which involves acts of pollution committed in the past. The moral liability of polluters with regards to past events partially depends on whether the polluter knew about the environmental consequences of his actions. This is however extremely challenging to determine, and the temptation to condemn these issues anachronistically, on the basis of the evaluation criteria that would be used to assess current practices in environmental management, is difficult to avoid.

Within the political sciences, implementation research and the evaluation sciences have been the most active disciplines in elaborating ways to measure

environmental outcomes (May & Winter, 1999; Mickwitz, 2003; Rauschmayer, Berghöfer, Omann, & Zikos, 2009). In these approaches, the inherent difficulty of measuring the outcomes (the final effects) of environmental regulations has been long recognized (Knill et al., 2012). As a way to deal with this issue, output indicators that measure quality aspects of the decisions and actions taken are frequently used. We fall within the scope of this approach and propose to focus on *the environmental performance of the outputs of contaminated sites management* as a proxy for successful environmental outcomes. Thereby we suggest a relative, rather than an absolute, conception of success. Performance is hence assessed relative to the structural conditions in which the outputs are produced; that is the institutional regime, as the legal frame of reference, and the historical state of knowledge about pollution risks and remediation techniques, as a yardstick for evaluating management practices. We hence propose two indicators in order to measure performance:

- *Compliance*: conformity of the outputs of the contaminated site management with the formal rules of the institutional regime (May & Winter, 1999; Mazmanian & Sabatier, 1989; Pressman & Wildavsky, 1984). What is involved here is examination of the legality of the actors' practices. This is measured by comparing legal provisions with the empirical actions of actors involved in contaminated sites management. The coding for this indicator is simply "yes" or "no".

Diligence: the attention devoted to the quality of the environmental management compared to the state-of-the-art. What is involved here is verification of the extent to which the practices of the actors correspond to the optimum in terms of the technologies and knowledge available at the time. This is measured by comparing possible technological alternatives with the empirical actions of actors involved in contaminated site management through historical analysis. We measure the quality of the environmental management using a nominal scale: "weak", "average" and "strong".

2.6 Summary of the Theoretical Approach

This chapter has described the analytical lenses we will use to research contaminated sites management. In a nutshell, we propose to depart from the mainstream rational choice approaches by formulating a conceptual framework (Fig. 2.1) that emphasizes and links the role of formal institutions to the decision-making process in which actors, lead by actors' values and interests, interact in structures that are more or less open and in which power is more or less equally shared. We have suggested that, within the complex mechanisms that produce decisions relatively to contaminated sites management, two factors might be pivotal to explain performance: the strength of certain regulation characteristics such as coherence, extent, and strictness as well as actors' mode of participation and interaction in decision-making. We will explore the relevance of this theoretical framework in the empirical

chapters of this book, after having presented the Swiss context and the methods used for this research.

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