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Tom Dedeurwaerdere

(UCLouvain and F.R.S.-FNRS, Belgium)

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A lot of work on institutions has focused on the design of well-adapted systems of rules, which best fit to the biophysical and social environment. In such a static approach the goal is to look for the most optimal institutional design given a certain model of the actor situation. However, in spite of the obvious operational strengths of this approach, it fails to address important dynamic features of complex systems—particularly in the case of environmental governance, in which the relatively slow natural evolution of ecological systems is at present confronted with new rapidly evolving, human-induced constraints such as the biodiversity crisis, climate change, and global market pressures on the exploitation of natural resources.

As a result, dynamic governance issues, such as knowledge generation and social learning among a range of new actors and stakeholders that are bearing the consequences of the rapid change, become increasingly important. Nevertheless, there is still a lack of empirical analysis that would allow for better understanding of the possible role and function of various governance mechanisms in fostering such social learning. To help bridge the gap, this chapter presents an in-depth case study analysis of such mechanisms by focusing on a specific governance experiment with social learning in the field of biodiversity governance.

The case of managed forest landscapes seems an appropriate test field for analyzing the contribution of social learning to dynamic efficiency. Indeed, to encourage forest owners to adopt multifunctional forest management, policy makers have used not only a wide range of regulatory and economic instruments, but also experimented with mechanisms based on processes of social learning.

In the case of the forest groups in Flanders, Belgium, which will be the focus of this case study, social learning has led to quite impressive outcomes in a relatively short period, in a policy field in which regulatory

and economic incentive policies were well established, but were not able to produce the expected outcomes. One of the challenges in studying social learning (as highlighted in chapter 10) is to combine an analysis of its impact on effectiveness and on the normative legitimacy of the adopted rules, especially in situations of rapidly changing social and ecological systems. Therefore, this case study focuses in particular on three mechanisms of social learning that have been widely used in the management of social-ecological systems: (1) the recourse to monitoring based on sustainability criteria and indicators as an open-ended learning device, allowing for redefinition of the current beliefs around sustainable development; (2) the experimentation with disruptive action strategies to put the new beliefs into practice; and (3) the involvement of new stakeholders and users in the learning process with the view toward building new forms of social cooperation around these new beliefs and practices. The hypothesis behind this analysis is that a combination of cognitive and social mechanisms of social learning is needed to generate effective and legitimate institutional change.

Theoretical Perspectives on Institutional Dynamics and Social Learning

The conditions for organizing social learning through a mechanism of monitoring have been studied in more detail by Charles Sabel (1994), both in the context of firm behavior (in the “non-standard firm”), and in the context of public policy (in “deliberative polyarchies”). Because our interest is in social learning among private forest owners, we will mainly focus here on the theory of the non-standard firm. In his approach, Sabel highlights two conditions for open-ended learning: first, the role of practical incentives for promoting the exploration of “disruptive possibilities” (Dorf and Sabel 1998, 286) and, second, a set of institutional rules that define the engagement in the cooperative enterprise. First, to establish initial product designs and production methods, firms turn to benchmarking: an exacting survey of current or promising products and processes that identifies products and processes superior to those the company presently uses, but which are within its capacity to emulate and eventually surpass. Benchmarking thus allows a comparative evaluation with possible improvements, and, as such, provides an incentive to disrupt the current routines and representations of possible outcomes. Further incentives for promoting the exploration of disruptive possibilities are simultaneous engineering based on the initial benchmarking and correction of errors revealed by the new action possibilities. Second,

beyond these practical incentives, generating collaboration and change in the non-standard firm also depends on an institutional context that defines a set of rules of engagement of the actors in the joint enterprise. These rules require mutual monitoring of each participant’s contribution, information sharing and the mutual assessment of each participant’s reliability in relation to the joint activity.

Based on these two conditions, the practical incentives and the rules of engagement, we can expect increased productive learning in the forest groups to occur when the monitoring process generates: (1) a process of joint investigation and comparative evaluation of disruptive possibilities, and (2) a process of mutual comparison to verify the reliability of the outcomes proposed by different groups. In the cases in which these conditions are realized, one expects a broadening of the set of possible productive action strategies beyond the current routines and representations of the organization.

The institutional dynamics, in situations of open-ended learning on sustainable forestry, does not only depend however on the opening of new perspectives within the forest groups through the mechanisms highlighted by Sabel. It also depends on the interaction with stakeholders and users in the broader social and political environment, who can be mutually supportive, neutral, or antagonistic. In particular, the concept of multifunctional forest management implies taking into account important components that impact on the broader user communities of the forest ecosystems services.

From the point of view of governance theory, the contribution of the interaction with the broader user communities to forest governance can be modeled as a situation in which cooperation is built through a combination of instrumental trust, based on reciprocity and enforced by increased transparency and means of verification, and social trust, based on symbols (e.g., languages, rituals, and gestures) and enforced by creating respect and esteem (Tyler 1998). Indeed lack of trust in one of the major challenges that forest policy has to face in building cooperation; private forest owners do not trust the government, and there exists a lack of trust among different categories of forest owners as well. As demonstrated through an extensive survey in Flanders, the forest owners show a high degree of distrust in the government and place the highest trust in technical engineers from the forest administration. To build trust with the government and among the forest owners, the forest groups have focused on both instrumental and social trust; the former by enhancing transparency and mutual monitoring through the criteria and indicator

(C&I) process, and the latter by enforcing the social identities of the forest owners—generating respect for the owners' ideas and interests and bringing owners back to their forest and stimulating a sense of forest stewardship (Bosgroepen 2005).

Multi-Stakeholder Coordination for Governing Managed Forest Landscapes

In Europe, forests have all been altered by man to some extent, with the exception of the boreal zone on the European side of the Russian Federation and some scattered relics in mountainous areas of the Balkan, Alpine, and Carpathian regions (Frank et al. 2005, 378). Moreover, the majority of forest owners own small or fragmented forests, and hence small-scale forest owners are an important target group for any forest policy in Europe. This typical patchwork of forests has some peculiar characteristics such as low commercial value of the wood, diverse collective preferences, and levels of understanding of sustainability and high transaction costs in the monitoring of the management practices of the different actors. In these managed forest landscapes, collaborative management organizations such as the forest groups play an important role in the provision of forest-related services. Through social learning, forest owners and users can compromise and build consensus on common objectives and collectively manage services such as selling of wood in a cost-effective manner.

Forest Groups as New Policy Instruments in Multifunctional Forest Management

In densely populated regions such as Flanders, multifunctional forest management appears to be the most direct means of extending the forest-related services. Because non-industrial private forest (NIPF) owners in Europe and the United States own more than half of the forests (up to 70 percent in Flanders), the promotion of multifunctional management depends strongly on the cooperation of NIPF owners. To encourage NIPF owners to adopt the government policy of multifunctional forest management, policy makers have used a wide range of regulatory, economic, and informational instruments. The NIPF owners mostly do not support these instruments because the underlying ideas conflict with their opinions, harvest rights are not protected, and there is too much interference from the federal government (Brunson et al. 1996). More successful

instruments should inform and educate forest owners, allow wood trade, involve the owners of neighboring forests, and be independent of government. Forest groups (forest cooperatives, forest owner associations, or cooperative forest management arrangements) exhibit these characteristics and are used in more than fifteen European countries (Kittredge 2005).

In the case of Flanders, the creation of forest groups led to quite impressive outcomes in a relatively short period. The overall region that is covered by the forest groups recognized in 2006 is an estimated 100 hectares, which amounts for 75 percent of the forest cover in Flanders. Each of the forest groups (called *bosgroepen*) focuses on sub-areas within these regions, where forest degradation is progressing most rapidly or where dispersed ownership is highest. (Forest groups do not deal with big public forests or, in principle, with private forests above 5 hectares.) In the focus sub-areas the forest groups have been able to involve private forest owners in extensive coordination on forest management and in common stewardship for the various values of the forest landscape.

Why is this innovative scheme successful in a policy field in which the regulatory and economic incentive policies, already in place from 1990 to 1996, were not able to convince the private forest owners and produce the expected outcomes? The failure of the transition to sustainable forest management in this first phase of implementation of the 1990 Forest Decree cannot be explained by an insufficient level of economic incentives such as cost-share policies (Serbruyns and Luysaert 2006). For example, as pointed out by an in-depth study of forest conversion that includes the Bosgroep Zuiderkempen (BZK) working area, the economic incentive scheme covers more than the lost revenue of forest conversion to the forest owner (Verheyen et al. 2006, 73). The lost revenue is estimated to be between €45 and €96 per hectare annually for conversion from a Corsican pine stand to pedunculate oak under a rotation period of 77 years (Verheyen et al. 2006, 71), while the direct subsidies are around €150 per hectare yearly. Nevertheless, between 1990 and 1999 only 200 to 250 owners per year applied and received the reforestation subsidy, while owners of only 317 hectares applied and received the subsidy for forest management plans and owners of 317 hectares for opening up their land for private use (Serbruyns and Luysaerts 2006, 287). From an ecological point of view, the 1990 Forest Decree was already based on the detailed set of criteria and indicators for multifunctional forest use and management, which had been agreed upon in the Pan-European Forestry Process, in which both forest interests and nature

movements were represented (Ministerial Conference on the Protection of Forests in Europe 1998). Hence, it seems that the issue at stake here is not the lack of economic incentive policies or inappropriate legal concepts from an ecological point of view.

The main innovation introduced from 1996 on, through the progressive creation of the forest groups, is the explicit organization of processes of social learning among the forest owners and stakeholders. Even if other factors more generally contributed to raising awareness on sustainable forest management in the same period, such as the introduction of forest certification and civil society/market pressures, none of these trends had any direct significant influence on small-scale forest owners. That is why learning new social preferences, or “crowding in” (in the language of chapter 4), through combining the economic incentive politics with mechanisms of social learning seemed an appropriate way forward.

The forest groups introduce elements of joint information processing and social learning both between the forest owners and the government officials and among the forest owners and the various stakeholders. The main decision-making body of the forest group is the general assembly of forest owners, assisted by a forest group coordinator and one administrative staff member. All decisions on forest management, felling, and negotiations with user organizations are taken by the general assembly, on the basis of “one man, one vote,” independent of the forest surface of the owner. The forest groups also strive to achieve a balanced membership among small public and private forest owners, requiring a majority of private forest owners in the general assembly. The drafting of the forest management plans is realized through the help of the forest group coordinator, whose main role is to involve the owners in the organization of the information coming from the different forest plots. The general assembly of forest owners discusses and approves the specific organization of wood selling and intervention in the forest landscapes, based on the common knowledge base that is built for the specific forest landscape that is managed by the group.

The Bosgroep Zuiderkempen (BZK), a well-established forest group, illustrates the results of combining the incentive and regulatory policy tools with tools for organizing social learning. This forest group operates in a landscape containing about 8000 hectares of forest. Within this landscape a priority working area of 1,134 hectares of highly scattered forests has been selected for building cooperative forest services in the period 2003–2006, with the management plan for 2007–2010 calling for

another 801 hectares to be added. In the working area, meetings with forest owners are organized, membership to the Forest Group proposed, and forest management plans discussed. As a result of this process, a 513-hectare private forest has been integrated into detailed common forest management plans (45 percent of the working area), involving a total of 462 different small private forest owners (an estimated 30 percent of the total number of owners in the working area). Moreover, through the negotiation of access plans among the forest group, user representatives, and the local authorities, a total area of 342 hectares of private forest has been opened up to different user groups (30 percent of the working area). If similar results could be accomplished in the other forest groups in Flanders, then an expected total area of 5,909 hectares could be opened up for walking and recreation in the nearby future, which is more than the total area of the largest remaining public forest in Flanders.

Social Learning through the Use of Sustainability Criteria and Indicators

The methodology for the organization of social learning adopted by the forest groups in Flanders is based on a process of gradual change in understanding by the different stakeholders—from the opposition between nature conservation and timber interests to an ecosystem services approach that broadens the debate to the overall determinants of the sustainability of the forest ecosystem (Hassan, Scholes, and Ash 2005, 29; Perrings and Touza-Montero 2004, 16). Three components are central to this process as it is described in the vision document of the forest groups. First, the project starts from the interests and needs of the forest owners, rather than from their position and discourse in regard to nature conservation. Second, the forest group organizes a learning process on the definition of the sustainability targets. Third, the design of the learning process itself is evaluated at regular intervals by the participants to adapt it to the local circumstances and stakes at hand.

The use of indicators by the forest group provides a useful yardstick to measure the progress of the learning process. Indeed, we can compare these indicators, which are the result of a social learning process within the organization, to the set of formal targets in the legislation on “criteria for sustainable forest management” (CSFM). The formal targets, which came out of the Pan-European Forestry Process and have been adopted by the Flemish government, are compulsory—wherever relevant—for all

private forests that are more than 5 hectares, and for all public forests and all forests in the Flemish ecological network. Their adoption is voluntary for the private forests that are less than 5 hectares, but they are considered to be the official reference standards to be used by the forest groups. In practice, however, both for the public and private forests, compliance with the CSFM criteria is still extremely weak (Dumortier et al. 2006, 30).

The forest group has been conceived by its initiators as a process in which: management objectives are confronted by the perceptions of opportunities by forest owners, and the generated information is used to adapt the operational objectives of the forest group. The forest group receives support by the government, as long as the operational objectives, formulated through a clear set of indicators, are met and if the indicators show a progress in moving toward the government targets.

The CSFM are a clear expression of what the concept of multifunctional forest management would look like in the ideal case. It defines clear targets organized around six main sets of criteria of sustainable forestry. Each set of criteria is measured through a set of legally specified indicators, leading to a total set of twenty-four criteria and fifty-two indicators. The six main sets of criteria cover:

1. Implementation of the existing legislation
2. Maintenance of the social and cultural functions of the forest
3. Maintenance of the economic and productive functions of the forest
4. Contribution to the protection of the environment
5. Contribution to biodiversity conservation
6. Monitoring and planning the forest management

To analyze the gap between these sets of legal criteria and the indicators and targets elaborated in the forest group, we can use the available data of the BZK, considered a reference case by the Flemish government one in which the learning process for the translation of the CSFM criteria has already been going on for a fairly long period (from 1999 to 2006). The subsidies to the forest group by the Flemish government are conditioned by the adoption, at regular periods in time, of a management plan with clear indicators. Once adopted by the forest group, these operational targets have to be implemented within the time frame of the management plan. The comparison between the legal criteria and indicators and the operational targets results in a matrix of correspondences and gaps. Below, we will use this matrix to analyze: (a) what has been

learned in the forest group (self-evaluation), and (b) what are the remaining challenges in the learning process. We use here the indicators and targets adopted by the General Assembly of BZK for their operational management plan for 2007–2012.

The main lessons drawn from this matrix are:

- Correspondences between CSFM and BZK: mainly within the criteria set 2 (social and cultural functions) and 6 (monitoring and planning); some indicators of criteria set 3 (economic functions) and 5 (forest diversity)
- Gaps between CSFM and BZK: no clear reference in BZK to criteria set 4 (environmental services) and very few to criteria set 5 (forest diversity)

The main sustainability indicators and targets that have been adopted by the forest owners' organization concern the social and cultural functions of the forests and the protection of habitat (forest borders and heath landscapes). A clear target of 690 hectares of forest area with selective access of the population to the forest (35 percent of the extended working area) and an information and reporting system of the local population's wishes have been put into place (target audience of 350 persons filing questions and complaints per year). Forest management measures for fragile or biodiversity rich habitats have been planned with the use of detailed geographic information system (GIS) maps for an area of 150 hectares per year. Further action for combating invasive species (e.g., *prunus serotina*—the American black cherry) will be pursued in the priority working area. These sustainability targets set by the forest owners are the result of awareness building and discussion and negotiation around experimental test cases.

The comparison also reveals some important gaps. For instance, it is interesting to see that the diversity of tree species as such is not taken over as an explicit measure of sustainability by the forest owners. Beyond the habitat protection mentioned previously, most of the indicators within the forest biodiversity category (criteria 5) are not taken into account. Also the indicators for contribution to environmental protection (criteria 4) do not appear in the targets of the management plan.

What kind of limitations does this comparison reveal from a dynamic institutional perspective? First, from the ecological perspective, the forest group has clearly shown a gap between the expert-built criteria for sustainable forestry and the way that these criteria can be coherently applied

in concrete action settings. This gap is shown to be a permanent critical challenge for the forest group. The decentralization of the decision-making power on the real management decisions has allowed for building an effective context for the translation of some of the sustainability indicators. The selling of timber, resulting from the joint management, is of course an important driver for the activities of the forest groups—albeit with direct impact on more healthy forests—but this is balanced with a concern for other eco-services such as clear targets for access agreements and combating invasive species.

Second, the comparison shows some of the remaining challenges to be tackled by the forestry group. In particular, the conservation of tree species diversity remains a difficult issue. A pilot project started in 2009 aims to develop a different methodology for “limited sustainable forest management plans,” which includes a concern for tree diversity. The forest legislation has created a frame for the development of these plans, but, again, very few of these have been implemented. The pilot project will reconsider the basic concepts of these plans with the stakeholders in the field.

In summary, the use of indicators allows for the creation of a flexible framework for implementing the forest legislation and for coordinating and monitoring the use of different subsidy and economic incentives from different authorities (both regional and European). The legal framework leaves the different forest groups room to build their own operational management plan by selecting the set of indicators that they consider most relevant for their own forest landscape. As such, the use of indicators allows a process of internal self-evaluation around feasible and evolving targets in the collective management organization and a process of feedback to the government, leading to the design of new incentives schemes or adjustment of its policy.

Learning by Mutual Monitoring

The decentralized implementation of the Forest Decree through the creation of the collective management organizations has proved to be an effective tool in fostering social learning. However, important aspects of sustainable forestry, such as access to private forests in Flanders and biodiversity conservation, still remain underrepresented in this learning process. Moreover broadening the scope of the representation of forest owners in the forest groups, which are based on voluntary membership, remains an important challenge to be addressed.

A second mechanism of social learning in the forest groups focuses on the social learning generated by the interaction of different subgroups within the organization. This latter mechanism has played an important role in overcoming some of the obstacles related to experimenting with forest access management plans in private forests and is expected to help to foster learning on new issues, such as biodiversity. The main difference with the previous mechanism is that learning by monitoring is especially appropriate for more experimental forms of learning, so-called disruptive forms of learning (Sabel 1994). Disruptive learning processes lead to actions that cannot be framed within the current representations of the forest groups. If these experiments lead to successful outcomes, they provide, in turn, an incentive for the revision of the current representations.

An example of incremental learning in the forest management regime is the increase in the level of direct and indirect subsidies to the forest owners in the implementation of the 1990 Forest Decree. This adjustment of the strategies for implementation was based on extensive socio-economic research, but did not reconsidering the basic premises of the economic incentive politics that prevailed in the first phase of the implementation of the Decree. An example of disruptive learning can be found within the first 1996 pilot forest group. Here, the learning has led to new strategies and a new representation of the priorities to be addressed in sustainable forest management.

Within BZK, the learning that has led to the adoption of the quinquennial management plan in 2006 can be qualified as incremental learning. The main belief is the same that of the 1996 pilot project—the need for organizing cooperative learning among private forest owners. For example, incremental learning within the frame of this belief played a role in the definition of the operational targets in terms of the criteria and indicators that were discussed previously. However, this incremental process failed to generate progress on important remaining challenges, such as the access of hikers and cyclers to private forests and forest conversion from planted pine forests to mixed broad-leaf forests.

One of the main reasons for poor progress on these issues is the lack of consensus among the different subgroups that compose the forest group and the different constraints faced by small, medium, and larger forest owners. Consequently, in 2006, an experiment was organized within a subgroup that outsourced the drafting of the management plan to an independent consultant in the case of larger forest owners

(Bosgroep Zuiderkempen 2006). This experiment produced some positive outcomes, and further experiments will be organized to improve partnerships with independent consultants for dealing with large private forest owners. However, the current sustainable forest management plans are probably too demanding for small forest owners and are often not considered to be a legitimate objective for small private forest owners. In particular, the conservation of tree species diversity, beyond the direct social, cultural, and economic roles of the forest, remains a difficult issue. The pilot project that started in 2009, which works with some specific subgroups to develop a specific methodology adapted to small forest owners, includes a discussion on the owners' understanding of forest diversity. The explicit goal of the pilot project is to reconsider the basic concepts of these plans with the stakeholders in the field and to foster the development of new initiatives that do not directly fall under the current conceptions of sustainable forest management. These and other experiments illustrate the organization of open-ended initiatives by some subgroups, in an attempt to go beyond the insufficiencies of the incremental learning by questioning the legitimacy of the current conceptions of sustainable forestry in the forest groups.

The learning processes in the forest groups have been able to generate both innovation in strategies and diversification of representation within and between the forest groups. Some of these experiments have led to a change in action strategies and operational targets approved by the general assembly. Others resulted in the rejection of the new proposed action strategies, because they did not lead to improved outcomes. All these changes were the result not only of the communication process in the context of existing beliefs, but also of a process of experimentation that aims to broaden the set of workable strategies and objectives considered by the forest group.

The Institutional Dynamics of Change in Social Norms

The third mechanism for organizing social learning in the forest groups goes beyond the learning within the groups. It addresses the second condition for generating institutional change, which is the social embedding of the new proposed institutional rules and policies. Its main focus is on building trust between different categories of forest owners to broaden the membership of the forest groups, and on building trust between the members of the forest groups and other stakeholders—primarily the various forest user groups.

Progress in building new norms of cooperation has been achieved mainly in the involvement of passive forest owners in the forest group. The three main divisions among social groups, as revealed by sociological analysis among forest owners in Flanders, are: active exploitation (owners involved in use and management), active use (owners involved only in use, not management), and passive ownership (ownership only for investment or from heritage) of the forest (Verheyen et al. 2006). Owners in the active exploitation category are the most concerned about their forests and inclined to participate in the forest management plans; the passive owners are the least involved.

Among the passive forest owners only between 3 percent and 13 percent initially had a positive attitude toward collaborative forest management. This situation corresponds to the one that prevailed between 1990 and 1999, when no joint forest management organization existed (except for the 1996 pilot project). Self-organized forest groupings could already apply for subsidies, but with very low success rates (with subsidies going mainly to the environmentalists and the active forest owners). Without social learning, the forest group would at best represent the active forest exploiters and some public forest owners who own small forests, which would mean a membership rate of around 10 percent in the BZK priority areas. Since the creation of the forest groups, the average involvement rate has been between 17 percent and 34 percent (in the initial phase) and 41 percent and 76 percent (after some years) in the selected focus working areas (*boscomplexen*). Hence, the BZK organization was able to involve part of the active users and passive owners in the activities of the joint forest management.

A second case in which cooperative learning has been built around the forest groups is demonstrated by the creation of cooperation between nature associations and forest owners. These two groups traditionally have very different positions, the first favoring such strategies as buy-back policies of forest to nonprofit organizations or to government, allowing implementation of a strict biodiversity protection policy, and the second favoring economic incentives and market mechanisms. However, through building collaborative dialogue around issues of common concern in adjacent forest areas, trust and increasing levels of cooperation have been established in the core working areas of the BZK forest group.

The main characteristic of the methodology used in the forest group for rebuilding trust is that all the actors are considered and treated from the perspective of forest owners and forest managers. Indeed, that is the

common thread in the way in which nature associations and private owners are brought together and the way cooperation is built between active forest owners and recreationists. However, in these activities, no new action identity is built by the different owners around the concept of multifunctional management. Instead, the old identities are simply reproduced within the new framework. Hence, the limit of this methodology for building social trust stems from the fact that it is incapable of identifying the need for a more profound transformation of the identity of the forest groups, in relation to the remaining challenges for addressing the issues raised by users of the forest related ecosystems services and the building of cooperation with local communities.

Within the forest groups, there is also a second approach, which takes into account the limits of this first approach and attempts to address the challenge of broadening cooperative learning with the users as a third party, without subordinating this cooperation to the current identity of the forest groups understood as representing forest managers. Indications for such a second approach are clearly present in initiatives such as the experiment with the access negotiations in the *Bosgroep Zuiderkempen* and the integration of the complaints of the local population in the workings of the forest groups (*Bosgroepen Zuiderkempen 2006*). This is also reflected in some position statements by the forest groups on the cultural and social values of the forests, and the concern frequently expressed about the remaining gap between the interests of the nature associations on one hand and the inhabitants and the forest owners on the other (*Bosgroep Zuiderkempen 2006; Bosgroepen 2005*). Hence, instead of the reproduction of the old social identities, within the context of a new cognitive frame, as is the case in the first approach, this second approach points to a more profound transformation that is going on at the same time, which is a more fundamental transformation of the identity of the forest group as the basis of the cooperative orientation that promotes further productive learning.

By addressing the reconstruction of the collective identity of the forest groups, through experimenting with the association of the forest user groups to its activities, BZK has been able to address the failure of the cognitive approach to social learning; that is, its incapacity to take into account the interaction with the changes in the social domain. BZK has been one of the few forest groups to explicitly design experiments for developing new methodologies beyond the issues identified within the forest owner groups. Based on the success of this limited test, BZK launched a second experiment (which runs from 2007 to 2012) to

develop a methodology for addressing the problem of increasing the species richness in the overall structure of the forest landscape (*Perrings and Touza-Montero 2004*), an issue that has also led to defensive reactions from both the forest owners and the inhabitants (Interview with W. De Maeyer, Agentschap voor Natuur en Bos [Agency for Nature and Forest], Brussels, 2007).

The Role of the Forest Group Coordinator in the Process of Change

In hypothesizing that joint forest management can address some of the collective action problems that are encountered in the management of forest complexes with multiple small owners, we have reviewed two types of collective action problems: coordination in providing ecosystem services and cooperation between owners and intermediaries in building a market for products of small-scale forestry. The various explanations of the role of the forest groups in addressing these problems point to the existence of different potential roles of the forest group coordinator in managing the process of transitioning to sustainable forest management. This section draws some implications of this analysis for the evaluation of the role of the forest group coordinator and the members of the forest groups in the process of change.

The analysis of the mechanisms of social learning in this chapter leads to distinguishing three different models of the role of the forest group: first, gathering information and coordinating plans; second, generating change in beliefs; and third, generating change in social norms. In the first model, the role of the forest coordinator can be understood as an external monitor of teamwork, as developed in several game-theory approaches to free riding in teams (*Alchian and Demsetz 1972; Holmstrom 1982*). Indeed, in this first model, the operation of the forest groups is characterized by organizing joint information processing between the owners and the forest administration on one hand and among the forest owners on the other. The role of the forest group coordinator is to organize these joint processes in an efficient way, especially through drafting the joint forest management plans and coordinating wood-selling activities. In this first model, the role of the forest group members is restricted to their contribution of information to the management and coordination process.

Because of the important role of the forest groups in organizing the process of change in beliefs and norms, the forest group coordinator also has to go beyond the role of monitoring the work of the team—taking

on two other important roles: as a political entrepreneur who organizes the process of experimenting with new beliefs, and as a trusted intermediary.

Political entrepreneurship has been at the heart of the forest groups from their beginning. The 1996 pilot project received early recognition for experimenting with new ways of dealing with forest management. In a demonstration of political entrepreneurship, the first forest group coordinator showed the feasibility of combining economic and environmental objectives, by organizing collective selling of the wood that had been generated through management activities. Hence, the coordinator has played a key role in initiating strategies for building a market in small-scale forest products, going well beyond the original intent of the 1990 Forest Decree on multifunctional forestry and taking on responsibilities that did not exist before the operation of the forest groups. The new 1999 forest law was inspired mainly by the lessons that were learned from the 1996 pilot project. This sequence of experimentation and change in the policy framework has been reiterated in the subsequent development of the forest groups.

Finally, the case of the forest groups also establishes the role of the forest coordinator as a non-state actor who plays the role of a trusted intermediary in building the renewed confidence of forest owners in the government's forest policy. Indeed, throughout the process of change, a clear division of tasks was established: the control function of compliance with government regulation remained with the executive bodies (e.g., the forest administration, the forest rangers, and the local authorities), while social learning was the specific task of the forest group.

Possible Governance Frameworks for Collaborative Natural Resource Management

The case of the forest groups provides an important example of how decentralized networks can work in environmental governance. The emerging networks of state and non-state actors offer innovative answers to the present difficulties of the multilateral environmental governance system (Kanie and Haas 2004; Delmas and Young 2009). These new forms of governance can be characterized by an attempt to take into account the increasing importance of non-hierarchical forms of governance based on the negotiated interaction between a plurality of public, semi-public, and private actors (Sørensen and Torfing 2007). In this context the state is increasingly evolving into a role by which it steers

autonomous network dynamics (Ibid.). The aim of network governance is to create a synergy between different competences and sources of knowledge to deal with complex and interlinked problems. This section draws some implications about decentralized forest management in forest groups in the broader context of natural resources governance.

Recent reforms in environmental governance worldwide show some important efforts that recognize the need for transferring decision making to new actor networks and a correlative need for state authorities to support social learning processes and build adaptive competences, beyond their traditional role in regulating network externalities. This approach seems especially appropriate in governance of local environmental goods, which has both local and global impacts, but where mechanisms to deal with global ecological interdependencies are often lacking. In those cases the mobilization of new types of non-state collective actors in different functions of governance has proven to be a necessary complement to the state's regulation and economic incentive politics.

In the field of natural resource management in human-dominated ecological landscapes, two forms of network governance have emerged. The first is based on the creation of new collective management entities, while the second is based on the decentralized coordination between existing constituencies. To situate the case of the forest groups in the broader discussion on new modes of governance, this section briefly gives some salient examples of each of these forms.

The new regional natural resource management approach in Australia exemplifies the first approach, with important similarities to the forest groups in Flanders. In this ambitious new governance experiment, fifty-six regional natural resource management bodies have been created (see chapter 5). These bodies generally include a mix of community, rural, and other stakeholders and have formal office holders and responsibility for planning and setting priority. In this approach, each region develops its own regional plan and regional investment strategy for addressing management challenges within parameters set nationally. These activities are coupled with monitoring, evaluation, and oversight by the regional bodies themselves and by state-led steering committees. Crucially, these bodies are aware that should they depart substantially from the parameters laid down by the federal government, they risk losing their funding, dissolution, and replacement by a new entity.

A more far-reaching example of this first type of network governance can be found in cases in which the history of state intervention is less prominent. A clear-cut example concerns groundwater management in

the Los Angeles metropolitan area (Ostrom 2008), where a water association composed of cities, industrial users, and farmers was able to gradually build a local public economy around the allocation and management of groundwater rights. Similar to the cases of new environmental governance, this process received support from the government to facilitate the interaction among the different water producers. Indeed, the appointment of a watermaster played an important role in making reliable information available, and also led to the establishment of new regional entity, the Water Replenishment District of Southern Los Angeles County.

The second approach to network governance focuses on the coordination and cooperation between existing constituencies, without delegating new decision-making powers on resource management to regional collective entities. Illustrating this approach in the field of small-scale forestry, the New Forest in southern England (Rydin and Matar 2006) presents an interesting case history. With a landscape of 37,500 hectares, the New Forest includes a mixture of forest and heathland surrounded by large urban areas. Two networks for establishing collective action in this area have been created: the first a consultative panel, with seventy member organizations, including town and parish councils, NGOs, government agencies and local interest groups; and the second, the more formal New Forest Committee, with nine member organizations, all of which have an already-existing statutory role in the management of the New Forest. The consultative panel has performed a useful function in bringing new issues to public attention, such as the declining economic viability of grazing in the heathland and the conflict between landscape conservation by the "commoners"—farmers with common grazing rights on the heathland—and timber and tourism interests. However, the New Forest Committee has been the key network for promoting collective action. The committee has been able to establish concrete projects based on partnerships between the different actors, such as developing a Forest Friendly Farming Accreditation Scheme and drafting a New Forest Strategy published in 2003 based on intensive public consultation.

These examples are, of course, brief illustrations among many, showing the wide variety of potential forms of network governance in the management of human-dominated ecological landscapes. However, they all point to the importance of mechanisms of social learning in the networks creating normative and cognitive change and the new role of the government in facilitating the network dynamics. Developing more empirical research remains a crucial issue, because such research would allow

specifying the conditions under which different forms of network governance may succeed in accomplishing these functions and whether such conditions can be affirmatively created.

Conclusion

Based on an in-depth case study and insights from theories of governance, this chapter established the contribution of three different mechanisms to foster social learning on sustainable forest management, respectively through: (1) the use of sustainability criteria and indicators as an open-ended learning device, (2) experimentation with disruptive action strategies to put new beliefs into practice and (3) building new forms of social cooperation around these new beliefs and practices.

The main finding of the chapter is the need to combine different mechanisms of social learning, including both mechanisms based on in-group learning processes and learning processes with external stakeholders. It is only by combining these different mechanisms that it is possible to go beyond the resistance to of the new regulatory and economic incentive policies of the first years of implementation of the new 1990 Forest Decree in Flanders. Indeed, the case study on forest groups has shown that, in the absence of these mechanisms, the learning process was restricted by concerns over timber exploitation and independence from government intervention.

From the point of view of the contribution to the provision of global and local ecosystems services, the case study on joint forest management has also shown the effective contribution of this governance mechanism to more integrated ecosystems-based management. In particular, the case study has demonstrated that open-ended and disruptive learning in the forest groups allowed to integrate important non-market values such as the landscape diversity, spatial externalities (through the joint forest management plans), and some concern for species diversity (through combating invasive species), in the forest management practices. However, the adaptation to new social demands such as recreation in private forests or conservation of tree species diversity as such remains a difficult issue in the small-scale nonindustrial forest landscapes in Flanders.

Note

This chapter draws in part upon the case study discussed in Dedeurwaerdere, T. 2009. Social learning as a basis for cooperative small-scale forest management. *Small-Scale Forestry* 8:193–209.