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This article analyzes the influence of the preexisting institutional basis on designing and implementing new biodiversity and ecosystem services policies. The way that regulative, normative, and cultural-cognitive institutions condition the currently popular payments for ecosystem services (PES) is analyzed by exploring the evolution of a championed forest biodiversity PES scheme in Finland. Our analysis of the evolution of the PES demonstrates several constraints on new policies. Based on policy documents and secondary material, we show how the policies that seemingly take effect through regulative institutional changes are conditioned by normative and cultural-cognitive institutions. Administrative and professional rigidities can be broken with a light policy experiment but for longer term governance development, radical institutional changes are necessary. The applied institutional framework demonstrates the analytical opportunities that attention to institutions generates for deepening the generally outcome-oriented evaluations of payments for ecosystem services policies.

Keywords biodiversity conservation, ecosystem services, governance, institutional analysis, policy evolution

Payments for environmental or ecosystem services (PES) have become popular because they harness the idea of identifying the value of nature and changing the incentive structure to meet social goals (e.g., Farley and Costanza 2010). Policymakers, academics, and practitioners place increasing weight on efficiency and effectiveness arguments in policy design and evaluation (Kumar 2010). The enthusiasm

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spans to those who design policy and analyze the feasibility of conservation of biological diversity in nonindustrial private forests. The constraints on the cost-effectiveness of market-based arrangements in producing conservation outcomes—and also their distributional effects—have been associated with the governance and institutional arrangements that shape the design and implementation of the PES (Norgaard 2010; Muradian et al. 2010; Vatn 2010). As there is political and academic momentum for the PES, the often superficially analyzed institutions require rigorous attention, to add to the realism of both the assumptions and the expectations. This article presents an analysis of the influence of the regulative, normative, and cultural-cognitive institutions on the design and implementation of a PES scheme in Finland. Finland represents a wealthy country with significant tensions between the various uses of forest ecosystems and the values placed on the services that these ecosystems produce.

As a response to an acute need for increasing nature conservation and a strong resistance against traditional coercive establishment of conservation areas on lands that were privately owned, Finland developed an interesting application of PES. This competitive PES, called "nature values trading," was piloted during a 6-year period, ending in 2007, after which it was amalgamated into preexisting governance mechanisms for forestry and nature conservation. Why was the competitive PES discontinued? Legitimacy or financial explanations fall short, as the pilot had been very popular (Syrjänen et al. 2006), and the follow-up program received generous financing, totaling over 1.8 million euros (METSO 2008). This article describes the evolution of the payments for nature values and analyzes the institutional mechanisms conditioning this evolution.

PES as a policy instrument rests on the idea that the natural environment consists of ecosystems that can be considered stocks producing a flow of services (Costanza et al. 1997; Millennium Ecosystem Assessment 2005). The actors that depend on and benefit from the ecosystem services are often different from those that harness the natural environment or forgo some uses of the natural resource for the benefit of others. The idea is that the natural resource managing actors who supply the ecosystem services can be compensated by actors benefiting from ecosystem services in a fashion that efficiently allocates the scarce resources for compensations (Pagiola et al. 2002; Wunder et al. 2008). The assumptions and ideas of market-like efficient welfare allocation institutions permeating the PES have been criticized for a lack of realism and the moral and sustainability consequences of their use (Norgaard 2010; Farley and Costanza 2010; Muradian et al. 2010). However, an efficient allocation of scarce resources is one important motivation for PES.

Even in the market-like reallocation of benefits derived from ecosystems, the PES requires governance and administrative resources (Corbera et al. 2009; Vatn 2010). Additionally, the introduction of PES is importantly conditioned by the distribution of formal of rights and benefits, by the organization of coordination and power structures, and by social and motivational factors (Muradian et al. 2010; Vatn 2010; Pascual et al. 2010). Although these factors, generally referred to as institutions, have been identified to influence the design and implementation of PES, the evaluation of PES is generally not focused on institutions, with the exception of what can be called economic institutions, that is, property rights and PES conditions (Farley and Costanza 2010). The undervalued findings regarding the influence of governance and administrative institutions on PES have thus far not been placed in a systematic institutional framework.

A framework for analyzing institutions developed by Richard W. Scott (2001) identifies regulative, normative, and cultural-cognitive explanations for the behavior of different actors. The framework has been applied to analyses of institutions in innovation and greening in private-sector corporations (Geels 2004; Bessire and Onnée 2010) and to studies of environmental governance (Pahl-Wostl 2009; Torre-Castro and Linström 2010). Although the framework can effectively inform researchers and policymakers about the different opportunities and constraints that institutions place on new policy instruments, it has not been applied in the analysis of PES. We utilize the framework in our analysis with the aim of disclosing the institutional constraints encountered when establishing a new instrument.

We start by introducing the framework and its association with analyses of PES in the second section. After presenting the materials and methods in the third section, we use them to describe the evolution from traditional conservation via a competitive PES to and administrative PES in Finland in the fourth section. In the fifth section we place the evolution in the institutional framework, and in the sixth section we discuss our findings in the light of general assumptions about PES and policy change. Finally, we draw conclusions about policy evolution and the analytical feasibility of the institutional framework in the last section.

Theory: Three "Pillars" of Institutions

Scott (2001) has developed a framework for analyzing institutions and their evolution, persistence, and influence. Framing these analyses, Scott distinguishes three categories, or what he calls "pillars," namely, regulative, normative, and cultural-cognitive institutions (Table 1). The three pillars demonstrate different ways that

Table 1. Three pillars of institutions (Scott 2001, 52, 77)

Components	Regulative	Normative	Cultural-cognitive
Basis of compliance	Expedience	Social obligation	Shared understanding
Basis of order	Regulative rules	Binding expectations	Constitutive schema
Mechanisms	Coercive	Normative	Mimetic
Logic	Instrumentality	Appropriateness	Orthodoxy
Indicators	Rules, laws, sanctions	Certification, accreditation	Common beliefs, shared logics of action
Basis of legitimacy	Legally sanctioned	Morally governed	Comprehensible, recognizable, culturally supported
Symbolic systems	Rules, laws	Values, expectations	Categories, typifications, schema
Relational systems	Governance systems, power systems	Regimes, authority systems	Structural isomorphism, identities
Routines	Protocols, standard procedures	Jobs, roles, obedience to duty	Scripts

institutions can be assumed to shape the design of new policies, as well as their implementation and friction in this implementation. They are useful for analyzing change as a learning process or as a target of strategic action as well as for understanding inertia and constraints on change and learning.

The regulative, normative, and cultural-cognitive pillars can be seen to represent different analytical approaches, as they are based on different assumptions and place emphasis on different mechanisms as decisive in explaining the behavior of actors. The differences in bases of order, compliance, and legitimacy, as well as in the logics, indicators, symbolic systems, relational systems, and routines, illustrate framings of divergent approaches to institutions (Table 1).

The regulative pillar takes institutions to be set up or to evolve for particular purposes, and to be enforced formally (Scott 2001, 51–53). These kinds of "rules," sometimes also called terms or conditions, coincide with economic institutions. They are recognized by institutional economists and natural resource economists (North 1990; Ostrom 1990; 2007; Vatn 2010; Brouwer et al. 2011). Falling under this pillar, particularly property rights and governance systems are dealt with by economists studying PES. Sometimes these analyses contrast PES with markets (e.g., Pagiola et al., 2002), and at other times they address changes required for introducing PES (Vatn 2010; Farley and Costanza 2010; Muradian et al. 2010). Perhaps this pillar represents most contemporary institutional considerations of PES, as the design of PES tends to rely on an instrumental rationality, assuming that actors would have distinct targets and preferences and be able to compare the benefits and costs of resource use and conservation of ecosystems.

Others who have studied and surveyed practical applications of PES pay attention to other rights than those defined in laws or formal PES terms. They highlight the importance of operational, administrative, or professional norms in influencing resource use and governance (Muradian et al. 2010; Vatn 2010; Pascual et al. 2010). These more local, less formal institutions fall under the normative pillar (Table 1). Normative institutions are less explicitly identifiable than the regulative ones, as they rest on local social and professional expectations and standards, and guide behavior based on logic of appropriateness, rather than a rational calculus (Ostrom 1990; March 1994; Scott 2001; Primmer and Karppinen 2010; Primmer 2011a). Normative institutions include the communication and management practices among landowners and between landowners and authorities. Importantly, they shape also the behavior of other resource users, managers, and administration (Primmer 2011a; 2011b). These actors are "intermediaries" to the PES scheme (Vatn 2010), and function as crucial carriers of normative institutions.

Finally, even more distanced from instrumental or rational assumptions about behavior is a view of institutions as shared beliefs and conceptions as well as culturally embedded framings (Douglas 1986). These fall under the cultural-cognitive pillar (Scott 2001, Table 1). Local belief systems are often mentioned as contextual challenges in PES application, but they have been less of a target of explicit analysis in PES applications, at least of economic analyses. Recently, however, the importance of motivation structure and local community commitment has been highlighted as potentially shaping or even conditioning the success of PES applications (Corbera et al. 2009; Muradian et al. 2010; Vatn 2010; Pascual et al. 2010).

We explore the relevance of this analytical framework distinguishing regulative, normative, and cultural-cognitive institutions by analyzing the evolution of Finnish

forest biodiversity conservation policies. In particular, we ask how the different institutions have conditioned the design and implementation of a PES scheme.

Material and Methods

We analyze the laws regulating forest biodiversity conservation and the policy documents of the Southern Finland Forest biodiversity Programme (METSO 2002; METSO 2008), and use abundant secondary material reporting analyses of this voluntary PES scheme and related forest biodiversity policies. Combining the document analysis and the review of published reports, we construct the historical evolution of forest biodiversity conservation policies culminating in the development of a PES scheme and then place it in the institutional framework of Scott (2001, Table 1). The novelty of the analysis lies in this comprehensive scrutiny of institutions that can constrain or enable policy change.

Evolution of Forest Biodiversity PES

To understand the development of first designing a competitive PES approach and then incorporating it into preexisting administrative and financing mechanisms, we describe the evolution of the instrument from the time before the PES (traditional conservation), via the PES piloting (competitive PES) to the institutionalized practice (administrative PES).

Traditional Conservation

Toward the end of last century, Finnish nature conservation was carried out dominantly under targeted conservation programs that were established with a statute (Nature Conservation Act 1923; Nature Conservation Act 1996). They were based on inventories of certain habitat types, for example, fertile herb-rich forests or old-growth forests (Vuorisalo and Laihonen 2000; Reunanen 2006). Implementation of these programs was partly overlapping and partly followed by the Natura 2000 network implementation after Finland joined the European Union in 1995 (Nature Conservation Act 1996; Hiedanpää 2002). The nature conservation programs, often categorized as traditional top-down instruments (Fromond et al. 2009), targeted habitats also on the private lands. Therefore, their implementation entailed environmental administration-initiated negotiation and typically purchase of the land by the state, which in some cases led to fierce resistance and law-enforced takings. It was also possible to establish private protected areas, the ownership of which would remain with the private landowner, but these were also opposed by the landowners (Hiedanpää 2002; Tikka 2003). Generally, there was strong polarization between those who were for conservation and those who defended economic utilization of forests (Hellström 2001; Rantala and Primmer 2003). Particularly the Natura 2000 implementation raised conflicts (Hiedanpää 2002).

In the 1990s, biodiversity conservation was integrated also with conventional management of forests. This was done through an obligation to conserve particular small-sized habitats defined in the Forest Act (1996), coupled with extension and planning services (Tikka 2003; Wolf and Primmer 2006; Primmer and Karppinen 2010). Economic loss from conservation of the habitats was compensated, from

the budget targeted to forestry, if the loss was considerable (Act on Financing Sustainable Forestry 1996).

Competitive PES

The need to conserve forest biodiversity in Southern Finland became acute along with the recognition of insufficient preservation in southern parts of the country toward the end of the 1990s. With less than 2% of the forests preserved in this area, the need for increasing conservation was obvious (Ministry of the Environment 2000). However, because of small-scale private landownership dominating in the area, and the earlier experienced conflicts, the program that was drafted to address biodiversity conservation in Southern Finland introduced unprecedented instruments that relied on voluntariness of landowners (METSO 2002). A competitive PES scheme called "payments for nature values" was piloted by landowners, natural resource managers, and decision makers during the following 6 years.

The competitive PES was carried out in a region where many of the PES ideas had originally emerged (Hiedanpää 2005; Paloniemi and Varho 2009). The scheme used a set of ecological criteria, defined specifically under the pilot program ("Conservation biological" 2003). Compensating for timber income loss and ecological characteristics on the site, the payment principles were further operationalized during the implementation, to account for certain euros per hectare per year payment levels (Paloniemi and Varho 2009). The eligibility of the sites was to be considered on a competitive basis, allowing comparing sites and landowner offers, after which the payment was negotiated between the landowner and the administration: "The environmental and forestry authorities will consider proposals..." (METSO 2002, 4). Notably, the implementation was carried out jointly by the environmental and forestry administrations.

The pilot shifted the attention from hectares of certain habitat types, to conservation of voluntarily offered sites that would meet some of the prioritized characteristics and would be selected on a competitive basis (Paloniemi and Varho 2009). Instead of hectares, the quantitative overall targets of the competitive PES pilot were defined in terms of financial resources to be allocated: "The total need for allocations in 2003–2007 will be EUR 2 million" (METSO 2002, 4). Although not directly stated in the program, economic efficiency arguments were often used when justifying the new PES instrument. Voluntary conservation would yield contracts without cumbersome negotiations, and comparison across sites would allocate funds to the most valuable ones (Horne 2006; Fromond et al. 2009).

The landowners excitedly greeted the new emphasis on voluntariness and the opportunity to make fixed-term contracts (mostly 10 years), as well as the involvement of the forestry administration in implementing conservation. The landowners felt their views were acknowledged and actually integrated into conservation decision making (Hiedanpää 2005; Paloniemi and Varho 2009; Paloniemi and Vainio 2011). The landowners' acceptance of the new governance system spurred a favorable operating atmosphere in the entire implementation process. The governance system of the PES with the joint implementation was evaluated positively. Although the newly acquired sites were considered to remain too fragmented to form ecologically meaningful entities (Syrjänen et al. 2006), the contracted sites were ecologically justified (Mönkkönen et al. 2009), which signaled that the competitive PES had some small positive ecological effects. Cost savings as compared to traditional state-driven permanent conservation

instruments were not as high as expected, as the implementation process did not attract landowners to conserve at payment levels notably lower than their economic loss from giving up timber production on the site (Juutinen et al. 2008; Mäntymaa et al. 2009). The value that the participating landowners placed on conservation—or timber production—was, however, reflected in the achieved contracts to some degree (Juutinen and Ollikainen 2010). Favorable attitudes toward ecological goals lowered the payment requests (Mäntymaa et al. 2009).

Administrative PES

The regionally piloted competitive PES was followed by another program for the years 2008–2016 (METSO 2008). This program that would cover the entire southern Finland developed the PES to be administrative, rather than competitive. Payments were acknowledged under two action points. First, "Environmental and natural value support" (METSO 2008, 5) incorporated the payments into the environmental support for forestry that had already existed under the Act on Financing of Sustainable Forestry (1996) prior to the PES pilot (Tikka 2003). This financial subsidy was targeted to compensating for economic loss from conserving both protected Forest Act habitats and the new habitat types defined under the program. Hence, implementation focused on areas around the already protected sites. The payment level was not influenced by the ecological characteristics on the site anymore. Rather, the payment was solely meant to fully compensate the economic loss: "Forest owners will be fully compensated for the costs of such measures and any consequent loss of income" (METSO 2008, 3). As the income loss calculation was not a comparative procedure, it was carried out based on a first-come, first-served basis. Recently, the compensation level has been evaluated to overcompensate timber sales income loss under realistic interest rate assumptions (Suihkonen et al. 2011).

The administrative PES listed the targeted habitat types and was complemented with a guideline on habitat criteria application (Ympäristöministeriö 2008). The criteria and their application were standardized through a number of training courses for managers in the administration and forestry organizations (Koskela et al. 2010). In addition to formal criteria application, these courses allowed sharing peer experience in identifying ecological characteristics and dealing with landowners. The administration was focused on the eligibility of the sites as well as searching the sites and marketing the opportunity to conserve areas meeting the set criteria (Paloniemi et al. 2010). To improve the coverage of the network of protected areas, the administrative PES also included hectare targets: "a total of 96,000 ha of areas voluntarily offered by landowners shall be established as private nature reserves or acquired by the State by 2016" (METSO 2008, 4).

During the preparation of the administrative PES, the European Commission (the Commission) had been notified of the scheme as state aid regulation and the Commission had paid attention to the competition distorting impacts of forest financing in Finland. Supporting forestry on other grounds than economic loss was considered to possibly distort markets (EC 2006). As particularly the payment for ecological characteristics was considered problematic, the Commission's interpretation contributed to a shift in focus from payments to compensations (Raitanen et al. 2013).

The second action point that incorporated nature values trading in the administrative PES highlighted landowner initiated offers of sites that would be compared

before making contracts: ''The Environment and Forestry Centres draw up, on an annual basis, a joint invitation to tender for natural values based on the ecological selection criteria'' (METSO 2008, 7). However, this activity was also incorporated into the general governance system for permanent protection; landowners were generally attracted to offer sites that would fulfill the habitat criteria, and negotiations would be primarily based on the quality of each habitat, rather than on a comparison across habitats (Paloniemi et al. 2010).

In the administrative PES, the distinct implementation responsibilities were placed on the forestry and environmental administration, with an aim to advance collaboration between these sector organizations. Collaboration has improved or stabilized, despite the clearer role division between the two sector administrations, as compared to the competitive PES. However, administrative collaboration has possibly developed even at the cost of different forms of landowner collaboration and reaching new landowner groups (Paloniemi et al. 2010; Primmer 2011b; Borg and Paloniemi 2012).

Institutional Mechanisms Influencing Change

The Finnish forest biodiversity PES evolved from a traditional top-down implementation of nature conservation programs that had caused polarization between landowners and environmental administration with an innovative piloting of a competitive PES. After the pilot, the PES was amalgamated with the preexisting administrative and funding structures, establishing protected areas and compensating for timber income loss in the administrative PES. This currently ongoing governance arrangement differs only slightly from the traditional conservation governance arrangements prior to the PES. The evolution is an illustrative example of institutional constraints influencing the introduction of new policy instruments. What were the factors that contributed to the incorporation of payments for nature values into the preexisting systems?

Regulative Mechanisms

The regulative institutional explanations draw attention to the rights and responsibilities of different actors (Table 2). The new PES instrument piloted after an era of centrally led governance respected the landowners' property rights. It made conservation a partial responsibility of the forest sector administration that had historically been responsible for advancing resource utilization. The environmental administration traditionally responsible for conservation lost its position as a sole authority negotiating about conservation with the landowners. The instrumental arguments used for the payments were important; the competitive payments were expected to bring about efficiency improvements. The focus shifted away from coerciveness and attaining certain numbers of hectares to designing the contract terms on a voluntary and competitive basis.

The amalgamation of the piloted PES into preexisting administrative and financing systems was reinforced by standardization and incorporation into to existing policies and laws. Potential regulative institutional explanations for this include the difficulty in restructuring the legal basis and the administrative structure for governing the payments. Having said this, there were no obvious legal obstacles, other than the European Commission statements about distorting competition. The

Table 2. Institutional mechanisms at place in the evolution of Finnish forest biodiversity conservation and PES

Regulative	Normative	Cultural-cognitive
Traditional conservation:		
Coercive conservation of defined areas with focus on meeting targets by environmental administration	Environmental administration focused on protecting areas defined as endangered	Protected areas providing the solution to biodiversity degradation
Forestry administration focusing on timber production, but with an obligation to delineate small-sized Forest Act habitats	Forestry administration focused on timber production and sustainable forest management	Conservation an obligation placed externally on the forest sector
Some funding to compensate economic loss from habitat conservation	Conservation considered a constraint on economic use of forests	
Competitive PES:		
Attention to landowner rights instead of coercive implementation	Environmental and forestry administration jointly operationalising and implementing the PES	Conservation governance relying on and making use of landowners' willingness to conserve ecologically valuable areas
Control of contracts and negotiation terms with loose targets and a budget	Conservation integrated to forestry as a legitimate alternative among other uses of forests	Conservation an attractive economic alternative on a voluntarily basis
Conservation responsibility and authority shared between environmental and forestry administration		
Administrative PES:		
Meeting targets and uniform standard procedures, application of criteria equal to all landowners	Streamlining practices with guidelines and training	Conservation as an economic sacrifice with timber production as the social norm
Traditional responsibilities on forest and environmental administration	Environmental administration focused on protecting ecologically most valuable areas	Compensation for income loss
Meeting EU state aid rules and competition law requiring restraining payments to compensations	Forestry administration providing conservation alternative for ecologically valuable sites among other uses of forests	Conservation of sites to contribute to the protected area network
	Emphasis on equal treatment of landowners, as well as legitimacy, standardized and transparent eligibility criteria and procedures	

European Union (EU) regulations on competition can be considered a high-level regulatory constraint that could not be easily overcome by a national attempt to introduce new instruments.

It is possible that utilizing the already existing administrative structure was done simply to avoid costs of adapting the structures in the large-scale application. A higher level regulative institutional barrier for broader application of the a competitive PES and joint administration was the reorganization of Finland's state administration during the first two years of the administrative PES, which was a part of a large governance change in the country. The restructuring maintained the administrative boundaries between forestry and nature conservation. Additionally, equal treatment of landowners was yet another challenge that could be considered a regulative one, as it is stated in Finland's Constitution.

Normative Mechanisms

The normative institutional interpretation of the success of the competitive PES underscores the ability of the forestry administration to communicate with landowners in a manner that was considerate of their needs. This was backed up by the attention drawn to the economic opportunity that conserving for a PES would bring about, which was a customary approach among the forestry actors. During the administrative PES, implemented as compensation rather than a payment for ecosystem service provision, the normative institutional mechanisms converged on norms regarding landownership interpreted by the administration. Also, the landowners' rights to choose among many forest use alternatives was considered to be backed up particularly by the forestry administration. Economic use of forests was the normative status quo, and economic sacrifice from that would be compensated for in a fashion that treated landowners equally.

It is possible that also the environmental administration was in favor of standard compensations and against the most ecologically valuable sites requiring the highest payments because of crowding-out risks; as payments supported avoiding forestry operations, some landowners who were inactive in any case might not choose inaction without a high-level compensation. The environmental administration was used to dealing with a budgetary constraint. The traditional normative goals in the environmental administration related to systematic preservation of ecologically valuable sites.

The professional systems geared toward biodiversity protection and forest management were separate. The strict standardization in this later phase served the administration by clarifying role division as well as establishing structures and standard procedures. The reasons for reverting to structures existing prior to the competitive PES could lie in the inability of the administration to genuinely merge conservation and economic use of forests.

Cultural-Cognitive Mechanisms

An explanation for the popularity of the competitive PES could be the novel way of introducing conservation as a part of a portfolio of economic opportunities to the landowners. Voluntariness and landowner initiative were important in this framing. Even more profoundly, however, the competitive PES allowed developing a shared understanding of why and how conservation was expected. It changed the ideas

about the different actors' roles in conducting conservation and broke the boundaries between forest use and conservation. Particularly the landowner's role changed from a target of policy to a more active actor. In the administrative PES, the actors representing administration reverted back to some of their orthodox cultural-cognitive framings. The idea that conservation efforts should serve developing a well-connected protected area network, advocated by the environmental administration, was coupled with the forestry actors' idea that conservation could become an income source. They considered that conservation should be integrated into forestry, which required implementation through forest policy instruments, and compensation for income loss.

Discussion

The establishment of new policy instruments, even if they are economic ones, generally entails changes in the formal legal system (Corbera et al. 2009; Fromond et al. 2009; Muradian et al. 2010; Vatn 2010). The Finnish case demonstrates that only small incremental changes in legislation and administrative responsibilities might seem feasible, despite a successful pilot project, when normative and cultural-cognitive institutions constrain longer term, larger scale changes in governance. A short-term, project form of governance has been found to allow learning and innovation, but runs the risk of temporariness and decreasing commitment (Pannell et al. 2006; Sjöblom 2009; Primmer 2011b). It has been found that for longer term systemic changes to occur, new policies must be backed with changes in normative practices and cultural-cognitive framings (Geels 2004; Kivimaa and Mickwitz 2011). Resonating with these findings, our analysis demonstrates that the friction in implementing PES ideas that appears to be of a regulatory institutional character is strongly related to normative and cultural-cognitive institutions.

Administrative and professional practices are often undervalued as an institutional constraint for introducing new policies. Actually, policies are generally considered to directly target the users of the natural resource; and influence their behavior. Assuming that the interaction takes place directly between service providers and service users or payers, analyses of PES generally pay attention to these actors (Pagiola et al. 2002; Wunder et al. 2008; Brouwer et al. 2011). Focused analyses of the implementation practices from the landowner perspective pay attention to the legitimacy and acceptability of the authorities (Horne 2006; Paloniemi and Tikka 2008). When the analytical angle is that of the policy designer, the implementation challenges are often framed as transaction costs (Coggan et al. 2010). But the administration and professional managers influencing the landowner decisions have a crucial role in shaping the policy and interpreting it to the targeted landowners (Primmer and Karppinen 2010; Primmer 2011a). In this way, normative considerations must cover the administration influencing the landowner behavior and interpreting the formal terms. Some analyses have elaborated on PES feasibility and implementation in different countries, and consistently found the range of actors engaged in the PES to importantly shape implementation (Corbera et al. 2009; Muradian et al. 2010; Vatn 2010; Pannell et al. 2012; Coggan et al. 2013).

Our analysis of the Finnish METSO PES points to a very strong administrative role division relying on organizational goals and professional skills that has the potential to be altered if joint implementation is explicitly targeted. In Finland, an important normative basis is embedded in the long history and strong power of

the forest sector focusing on silviculture and timber production (Ollonqvist 1998; Siiskonen 2007). The very uniform approach and standardized practice of forest management in nonindustrial private forests is closely tied to these professional norms and management systems, including integrated biodiversity conservation in managed forests (Jokinen 2006; Primmer 2011a). These standardized silviculture-driven practices that have also influenced Finland's certification (Cashore et al. 2007) are likely to permeate implementation of PES in forest conservation. This is demonstrated by the significant effort put into standardizing the use of the habitat criteria during the administrative PES.

The second important normative basis that frames biodiversity conservation has been the administrative and professional practice focused on certain endangered and ecologically valuable sites and features, and increasingly on ecological inventories and research (Vuorisalo and Laihonen 2000; Reunanen 2006; Lehtomäki et al. 2009). When this spatially accurate ecological implementation practice encounters the landowners, it clearly benefits from the experience that the forestry administration has with landowner engagement. The Finnish case demonstrates how joint implementation in the competitive PES has had potential for readjusting normative framings. However, the large-scale implementation as an administrative PES has not overcome the role division or the segregated logics in the administrations.

The cultural-cognitive framings about the autonomy of landowners and income generation from using the natural resource (Horne 2006; Vainio and Paloniemi 2012) can potentially lie deeper behind the professional practices. An interesting cultural-cognitive aspect could relate to whether there is a social obligation either to utilize the forest or to conserve biodiversity. In case payments were to increase attention to conservation and valuing nature, they would lead to "crowding in" and social coercion to conservation. In case nature conservation was considered a moral obligation prior to the introduction of the payments, the payments would lead to "crowding out" as payments as the sole or main motivation for conservation might not attract service suppliers (Oksanen and Kumpula 2008; Vatn 2010). The popularity of the competitive PES pilot, and the landowner behavior during it (Mäntymaa et al. 2009), can be interpreted from either angle, and require further attention. Maintaining status quo is frequently considered a reference point for payment levels, particularly in countries where landowners are not considered socially or economically deprived (Vatn 2010). However, in reality, various references are often used in a mixed fashion (Pascual et al. 2010). The Finnish payment initially included a value placed on the ecological characteristics ("actual provision" in Pascual et al. 2010), and was then shifted to a compensation partially aiming to maintain a status quo. This difference is important when defining the rights and responsibilities that the policy influences, and when analyzing the ways that the rights and responsibilities are interpreted in practice. Notably, highlighting landowner autonomy appears to reflect the strong rights of landowners in Finland (Ollonqvist 1998), rather than the frequently asserted poor position prompting fairness and equity concerns in many parts of the world with PES experiences (Corbera et al. 2009; Pascual et al. 2010; Porras et al. 2012).

The competitive PES has been a response to heated conflicts about centrally driven conservation program implementation, but it seems that such political pressure has eased by the time of the broader application in administrative PES. The role of external pressure has perhaps been more important in societies relying on external funding (e.g., Barton et al. 2009; Rodriguéz et al. 2011), making the demand and supply arguments more relevant. For example, broad and well-reported experience

with developing and applying PES in Costa Rica has been a response to mounting international and domestic resistance to forestry policies leading to a world's highest deforestation rate by the late 1980s. Costa Rica's PES program resembles the administrative PES in Finland and it is a model that has persisted since its creation 15 years ago. The sustained effort of the Costa Rican PES program has many explanations. Initially, the debt default in the early 1980s leading to abandonment of forestry subsidies because of International Monetary Fund (IMF) conditions is a regulatory explanation. The rising incomes, abandonment of agriculture, and lower cattle prices had led to significantly lower deforestation rates already before the introduction of PES in 1997 (Daniels et al. 2010; LeCoq et al. 2010). These developments have made the PES an attractive alternative and easy to promote. It has also been suggested that Costa Rican PES has been part of a negotiated political "solution" with the forestry sector for accepting a ban on forest land use change introduced in the fourth national forestry law of 1996 (Pagiola 2008). In this context PES has become a central instrument in the forestry law, making it hard to scale back (Pagiola 2008). Over time PES modalities and priority-setting criteria have also been adapted to changing forest conservation priorities without changes needed to the basic objectives laid out in the forestry law (Porras et al. 2012).

Although the Finnish experience has coincided with state administration restructuring, and also an economic downturn with budget cuts, it has received less direct external attention. Even the background pressure on greening forest industries in the international markets has not appeared acute enough to prompt radical governance changes in conservation on private lands (Primmer 2011a). The market pressure reflected through, for example, forest certification has not translated into increased conservation efforts but rather led to standard fine-tuning and industry rearrangements (Cashore et al. 2007; Sarkki and Rönkä 2012), which is not an uncommon outcome of ecocertification (Blackman and Rivera 2012). Finland's experience resonates with, for example, Australia, where landowners have a strong status and the pressure and learning processes have been domestic (Hajkowicz 2009).

In fact, the EU competition law is the only identifiable direct external factor influencing the administrative PES. Although the European Union has in principle favored market-based instruments (Jordan et al. 2003), ruling out "actual provision" as a basis of payment appears strict (Raitanen et al. 2013). By confining the payments for ecological values to market distorting features, the EU has provided a regulatory reason for reverting to traditional conservation administration and instruments.

Conclusion

Our article demonstrates the complexity of institutional constraints and the different ways they shape the introduction of a new policy instrument. By placing the sequence of Finnish forest biodiversity conservation policies in an institutional framework we illustrate the analytical opportunities that attention to regulative, normative, and cultural-cognitive institutions can have for deepening the outcome-oriented evaluations of payments for ecosystem services policies.

Our analysis of a traditional conservation governance being replaced by a competitive PES that later was amalgamated to the preexisting governance structures shows how the impact and evolution of policies that take effect through seemingly regulative institutional changes is importantly constrained by normative and cultural-cognitive institutions. The regulative institutions have a role in defining

the formal rights and responsibilities and can in this way importantly frame both forest use and biodiversity conservation. However, the generally superficially analyzed administrative roles and practices play a crucial role in implementing a policy. For example, equal treatment of landowners, and forest use for income generation, are principles stated in the law, but their interpretation is a normatively loaded administrative procedure and the importance placed on this kind of principles falls under the cultural cognitive framings.

Our analysis uncovers the institutions as they appear in a temporal sequence of PES, and demonstrates the power of the framework in analyzing policy evolution. The analysis has focused on explicating the regulative, normative, and cultural-cognitive institutions and has only taken initial steps uncovering the interplay between the different institutional mechanisms. Future applications of the framework should aim at analyzing also the interplay between different institutional mechanisms, particularly in empirical settings where the focus is on contemporary policy instruments or instrument mixes. Analyses of contemporary PES applications should supplement documents and secondary material with additional sources of data, such as interviews.

Our results suggest that although light policy experiments can break the institutional rigidities, long-term governance changes would require radical changes in formal regulations backed up by administration and professional standards.

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