

# Protective Forests in Alpine Countries: From Commons to the Welfare State<sup>1)</sup>

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## 1 Introduction

The analysis presented here is based on my Ph.D. thesis, titled "The Evaluation of Policy Means for Natural Hazards Protection". My dissertation has been elaborated in the course of a four-year research project on "The Evaluation of Mountain Forest Policy in Austria", funded by the Austrian Ministry of Agriculture. Now I am working on a project funded by the Austrian Science Funds, titled "The Evaluation of Sustainable Forest Management Policy in Austria". The analysis employs a framework for researching forest policy which was used in my last project on mountain forest policy and on which I am following up in my current studies on sustainable forest management policy. My paper reflects the theoretical and empirical knowledge from both of these policy evaluation studies. In the first part, I will describe the research framework applied. In the second part, I will present findings on mountain forest management policies in the era of the commons, the era of the sovereignties, and the era of the constitutional state. Conclusions will be drawn on questions about the role of institutions in the management of protective forests. In this paper I am talking about forests on steep slopes which protect settlements and traffic lines against avalanches, rock-fall, etc.<sup>2</sup> The major part of Austria's territory is mountainous and densely populated.

My personal motivation for studying forest history was to review the traditional forest history from a political perspective. The questions I am dealing with in my evaluation study of present forest politics are among others: Why are these particular policies chosen? Why these instruments? Why this kind of forest management?

Many policy instruments were actually drawn up a hundred or more years ago. It is the question if they are still appropriate today. Furthermore, we know that foresters belong to a professional community with a distinct group-think which has developed in the past. It is obvious that the forest authority plays a prominent role in forest policy. The administrative

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<sup>2)</sup> Gerhard Weiss, with a degree in forestry, is right now finishing his Ph.D. in political sciences.

<sup>2</sup> In German the rather unspecific term *Schutzwald* (protection forest) is used for both forests *protecting* against natural hazards etc., and forests to be *protected* against improper use. Although the Austrian Forest Act defines protection forests as forests benefiting from a specific protected status, I use the definition as forests protecting against natural hazards (protective forest) because this is the meaning usually associated with in colloquial usage (PREGERNIG/WEISS 1998; WEISS 1998).

agencies are important factors in both the development and the implementation of policies. Existing policies are often justified by their historical background with phrases like: "Even then people realized the importance of ..." But why and how were these policies really developed? Whose interests have been influential in this process? Moreover: In which way has forest policy contributed to the sustainable development of forests in general, and, as in our case, to the protection of stable mountain forests?

## 2 Theoretical Framework

The same theoretical framework used for the political analysis of today's forest policy is also used for historical forest policy analysis. Political science analyzes how political actors pursue their interests. Public and private actors are active in a policy field. The distribution of power within the policy-making system determines which competing interests will be successful in the policy-making process. Policy network analysis researches the relationship between political actors. "Policy networks" are interacting participants in the policy-making process. The underlying model is that the state and the society are not clearly separated but interacting. It refrains from the idea that the society only reacts to state decisions (MAYNTZ 1993: 41). For achieving its goals, the state is to a certain extent dependent on the voluntary cooperation with large organizations. The participants are provided with resources which are valuable for others and therefore, they are relatively autonomous even if they are part of a hierarchical organization (SCHARPF 1993: 67).

This policy research framework allows to combine hypotheses based on various theoretical approaches which explain the formation of policy networks, the interaction of participants and the actions of policy networks at each stage (HÉRITIER ET AL. 1994:8). Instead of a hierarchy-oriented model of policy instruments, horizontal coordination and societal self-organization are used as analytical models for policy research (MAYNTZ/SCHNEIDER 1995: 92; WINDHOFF-HÉRITIER 1993). Important theories derive from implementation research (PRESSMANN/WILDAVSKY 1973), bureaucracy studies (DOWNS 1967; PETERS 1984), and institutional research (SCHARPF 1997; OSTROM 1990).

In the confrontation of "economic" and "sociological" theories, action-theoretic and institutionalist paradigms are conventionally treated as mutually exclusive (SCHARPF 1997: 36). In this case, however, they are integrated. By restricting oneself to single theories, other sources of empirical variation are ignored. This is an inadmissible negligence which we cannot accept in empirical policy research. Such integrated concepts have been presented e.g. by Fritz Scharpf and collaborators under the title of "actor-centered institutionalism" (MAYNTZ/SCHARPF 1995, SCHARPF 1997), or Elinor Ostrom and collaborators, who employ a framework of "institutional analysis and development" (OSTROM 1990, OSTROM/GARDNER/WALKER 1994). Additionally to these integrative approaches of rational-choice and structuralist paradigms, other authors emphasize ideas and beliefs as further important factors in policy-making (MAJONE 1991; SABATIER 1986; BRAUN 1998). Summarizing, the following three important theoretical approaches are used for explanation (HÉRITIER ET AL. 1994: 7f): a rational-choice approach, a value system approach, and an institutional approach.

- The *rational-choice approach* explains the behavior of actors on the basis of a rational utility oriented exchange of resources (WOLFF/NEUBURGER 1995). These material or immaterial resources are exchanged in bargaining processes among the participants of the

policy network. The influence of an actor depends on important resources under his control which are of crucial importance for others.

- The *value system approach* explains to what extent actions are determined by the prevailing principles of problem solving which reflect the general consensus about a common value system. The stability of a policy network is also defined by common problem perceptions based on shared "belief systems" (SABATIER 1993; DÖHLER 1990: 31). They are ideological guidelines and convictions which change only slowly over time. "Symbolic values" may strengthen or weaken the perceptions of problems according to their contents (EDELMAAN 1976).
- The *institutional approach* explains the bargaining processes among participants with the help of the institutional framework, e.g. existing organizational structures, legal regulations etc. Institutional structures do not determine the actions of participants but restrict them in a certain way. On the other hand they also open options of potential actions which can be used (SCHARPF/BROCKMANN 1983: 14). Whether this is done or not depends on cost-benefit calculations, strategic considerations and the prevailing value systems of the participants.

Methodologically this study is restricted to a critical re-analysis and re-evaluation of existing literature on forest history. Renunciation of primary data collection can be justified by the fact that extensive material on forest history of Austria has already been gathered by forest historians. These authors have often been passionate collectors of historical data, but not professional historians. Therefore a lot of data is available, but only few theoretical analyses have been carried out. Especially analyses from a social science perspective are almost non-existent. However, a number of very good analyses from environmental historians do exist for Europe, including social science and interdisciplinary approaches.<sup>3</sup> Yet, they do not refer to Austria. For mountain forest history no comprehensive study has been carried out to date. Therefore, my analysis gathers knowledge and facts about historical forest policy in the mountain regions of Austria and reviews it in the light of political and sociological theories.<sup>4</sup>

### 3 The Policy of Protective Forests – For Whose Sake?

#### 3.1 Questions

The Austrian Forest Act of 1975, which is applied to all public and private forests, states four "positive effects" of forests for society which have to be protected: timber production, natural hazards protection, welfare in terms of positive impacts on the environment, and effects for recreational uses. Forest Management in Austria is strongly regulated, especially in the mountain regions. The Empire's Forest Act was established in 1852, and ever since then, the Forest Acts have provided that forests must not be cleared for any other uses but forestry. Large clear cuts are prohibited. Additionally to that, in the mountainous provinces of Austria every tree to be felled has to be marked by the forest authority. It seems that forest supervision is primarily oriented at the maintenance of the protective effects of the forests. Over the last

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<sup>3</sup> E.g., SIEFERLE (1982); RADKAU (1986); PFISTER (1995).

<sup>4</sup> General literature on forest history from different perspectives: RUBNER (1967); SIEFERLE (1982); RADKAU (1986); ALLMANN (1989); SCHÄFER (1991); SELTER (1993); SCHENK (1996). For the Austrian case see WOPFNER (1906); OBERRAUCH (1952); JOHANN (1968); KOLLER (1954; 1975); HAFNER (1979); KILLIAN (1994).

decade public expenditures for measures to restore protective forests have increased rapidly. These subsidies are paid to private forest owners to maintain stable forest conditions. Most forest owners in the mountain regions of Austria are small farm forest holders, community forest properties or forest cooperatives. However, are all these measures necessary for maintaining the forest? If not managed, would the forests break down and torrents and avalanches destroy the land?

Foresters strive for intensive forest management and they justify this with the protective functions of forests against rock-fall, erosion, avalanches etc. If you ask the foresters, they say that the strict regulation of forest management and the well-staffed forest authorities in the mountainous provinces are necessary for the protection of the mountain forests. In their opinion, the forest laws are wise regulations and were established for this single purpose. Even forestry scientists argue that the Empire's Forest Act of 1852 was enacted to ensure the protective functions of the forest. MAYER AND ECKHART (1983) give the following reason for that: the Empire's Forest Act followed one year after flood catastrophes in Austria. But is this true? What were the motivations for the forest laws? When did people/science/governments discover the protective effects of the forest? When, why and how were they regulated? Who benefited from these regulations and in what way? In other words: Who were the main actors of protective forest policy and what were their interests? Whose interests succeeded in the regulation of forest management? And which role did institutions<sup>5</sup> play in regulating forest management?

### 3.2 *Hypotheses*

There are others than foresters' interpretations of the development of forest laws. While foresters argue that the purpose of the forest laws has been the protection and the sustainable management of forests, some historians claim that the forest laws first of all served the interests of the sovereign.<sup>6</sup> While foresters consider state regulations necessary for preventing the depletion and the destruction of forests, some authors assume that the market would be able to control the wood production as well,<sup>8</sup> or that people depending on the forests would be able to regulate the use of the forests themselves – without the intervention of a central state (OSTROM 1990).

Following a critical theory approach to land use allocation, the distribution of land and land-use reflects the distribution of power within society (SOJA 1989). The definition of policy goals and the choice of policy instruments can be regarded as a reflection of power structures within a society (OTTITSCH/WEISS 1998). Where a strong lobby of land owners exists, they may be capable of allocating large funds for subsidies (GLÜCK 1976). Institutionalism suggests that the existence of a powerful bureaucracy itself is an explanatory factor for the existence of political programs, because these programs are in the self-interest of the implementing institutions (KROTT 1990). The following analysis is intended to clarify above all the role of institutions in regulating forest management.

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<sup>5</sup> The term "institutions" is used in this context for "systems of rules that structure the courses of actions that a set of actors may choose" (SCHARPF 1997:38). This concept includes formal legal rules as well as social norms. The institution of property, for example, is not only constituted by the legal system but rather socially constructed (STEINBERG 1995).

<sup>6</sup> RADKAU (1986); ALLMANN (1989); SCHÄFER (1991); SELTER (1993).

<sup>8</sup> SIEFERLE (1982); RADKAU (1986).



## 4 The History of Protective Forest Policy: Institutional Changes in Three Eras

Looking at forest history in Austria, three main political eras can be distinguished:

1. **The era of the commons**  
Prehistoric times before sovereignties were established (until 14<sup>th</sup> century)
2. **The era of the sovereignties**  
Middle-Ages (15<sup>th</sup> to 18<sup>th</sup> century)
3. **The era of the constitutional state**  
Modern times (since the 19<sup>th</sup> century)

The different systems of government in these eras constitute different institutional settings for pursuing group interests, e.g. the interest in the protective effects of forests. The transition periods between these eras are of specific interest, because institutions do not change easily: How do institutions change? And in what way do these changes influence policy fields?

### 4.1 Commons

From stone-age on (Neolithic: 4,000 years BC) settlers started to clear woodlands for agricultural use. The settlement in alpine areas started gradually only a short time before the Middle-Ages. In the early Middle-Ages, alpine forests were managed as common property and regulated by the *local communities*.<sup>9</sup> The settlers developed land for farming. Natural forests were converted into farmland where possible or were managed in an agro-forestry way for the grazing of pigs, sheep, goats or cattle, and for the production of fuel wood and timber. Distinct management systems were developed according to the varying local ecological conditions and to the farmers' needs. Foresters tend to think that the people in general overused the forests. No detailed data exist on early forest management, however, *a priori* there is no reason to assume these uses as non-sustainable forms of land management.<sup>10</sup> Land-use systems existed for generations.<sup>11</sup> Patzelt<sup>12</sup> assesses these early uses as an optimum utilization of the given resources according to the needs of the time. Locally, though, the extraction of biomass from forests, e.g. leaf and needle-litter collection, led to a degradation of the sites. Certain forest areas with a particularly high importance for the community benefited from a special protected status: the "forest ban" (*Waldbann*). Such "ban forests" (*Bannwälder*) were, e.g. forests on steep slopes which protected settlements against natural hazards like avalanches or rock-fall.<sup>13</sup>

There are no direct sources about the commons' regulation. The earliest documents date back to the period of territorial sovereignty. The old community regulations have been registered as "old men's records" (*Weistümer*). Yet, the interests of the sovereign had an impact on the contents of these records.<sup>14</sup> These records, however, show that the communities of the early

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<sup>9</sup> WOBST (1971); SIEFERLE (1982).

<sup>10</sup> SIEFERLE (1982); BÄTZING (1991: 25ff).

<sup>11</sup> OSTROM (1990).

<sup>12</sup> for the example of the Ötz-Valley (Tyrol, Austria); PATZELT (1996).

<sup>13</sup> SCHMIDERER/WEISS (1999)

<sup>14</sup> There are community law records from the Tyrol, that – according to sovereign doctrines (e.g. dating back to 1330, 1375) – already state that all commons belong to the sovereign (e.g. for the community of Pfunds,

Middle-Ages had already instruments for forest management regulation. They also show that the protection against natural hazards was one concern of the people among many other purposes of forest utilization.<sup>15</sup> There are also many indications for forest depletion but it seems that depletion only occurred at times when the rights of use in the forests became unclear.<sup>16</sup> As HARDIN (1968) writes in his famous article with the misleading title "The Tragedy of the Commons", non-regulated resources run the risk of being destroyed. What remains unmentioned here is the fact that commons were subject to strict regulations by the community.<sup>17</sup> The evolving struggle between local communities and the sovereign (or landlords, resp.) resulted in such a situation where the regulation of the forest resources was unclear.<sup>18</sup>

Over the centuries there were disagreements between the monarch, the sovereign, the landlords, and the local population about the definition of territorial rights (rights that were originally granted by the monarch, *Regalien*).<sup>19</sup> The sovereigns appropriated the power over regulating the commons, and later on they tried to acquire all rights of use as well. In the power struggle between the communities and the sovereign the latter tried to define his rights as ownership. The institution of property according to the Roman law was not known in the old German law, which was based on a concept of rights of use instead.<sup>21</sup>

## 4.2 Sovereignty

When territorial sovereignty evolved, the *sovereign* claimed all forests his own and enfeoffed aristocrats with the land. With the argument of "timber shortage" (*Holznot*), the sovereigns enacted forest laws and employed forest staff to preserve the forests from overuse. Many official documents from that time mention severe or imminent timber shortage. "By the generosity of the sovereign" the laws should prevent "timber famine".<sup>23</sup> Scholars interpreted this as a real threat, and described the situation as an ecological or an energy problem.<sup>24</sup> The

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1303, c.f. OBERRAUCH 1952: 22). In other records communities insist on their free will and right to "ban", i.e. regulate their forests (Steinach, Leiblfing, Silz, 16<sup>th</sup> and 17<sup>th</sup> century, c.f. OBERRAUCH 1952: 21-22).

<sup>15</sup> SABLONIER (1995: 592).

<sup>16</sup> SIEFERLE (1982: 102f); for the canton Bern, Switzerland: PFISTER (1995: 320).

<sup>17</sup> FEENY et al. (1990); OSTROM (1990; 1998); MCKEAN (1998: 30).

<sup>18</sup> In the Tyrol the fight between the communities and the state about the property rights in the former forest commons lasted 500 years until 1847 (OBERRAUCH 1952: 21). Another property struggle concerned forests that had been used by farmers near their homes ("home-forests", *Heimwalder*, e.g. in southern Tyrol, OBERRAUCH 1952: 251-252). The conflict here was between the state and the provincial administration (treasury and district authority). Eventually the forests were defined as private (*Waldpurifikationspatent* of 1847). Understandably, before that decision, the owners tried to sell all timber from the forest.

<sup>19</sup> E.g., in Styria in the 16<sup>th</sup> century (KILLIAN 1994: 269-270); in the Tyrol over centuries (OBERRAUCH 1952: 14, 22); milestones are: Investiturstreit 1158, Goldene Bulle 1356, the forging of the Privilegium Maius 1358/59 (WOPFNER 1906: 27).

<sup>21</sup> Literatur on the history of the commons and on the German and Roman law has to be read very critically, because the discussion of these is very value-laden. The interpretation of the very rare available data depends very much on the ideology of the author (see BAUER 1925: 4; WOBST 1971: 22ff and 32ff; SIEFERLE 1982: 100ff).

<sup>23</sup> E.g., the Tyrol: 1385, 1420, 1443, 1541, etc. (OBERRAUCH 1952).

<sup>24</sup> See SIEFERLE (1982); RADKAU (1986); SELTER (1993: 207f).

studies presumed that the forest laws aimed at preventing forest destruction and at providing a steady supply of wood for all people. But a closer look at the reports of "timber shortages" shows that, independently from economic developments and political measures, the "laments of timber shortage" (*Holznotklagen*) stayed the same over decades and the forest conditions did not change dramatically.<sup>25</sup> The concern of the sovereign was not the "household of nature" but the household of man.<sup>26</sup> There was no ecological crisis.<sup>27</sup> Furthermore, there was no crisis of supply in economic terms.<sup>28</sup> It was no actual shortage but a problem of distribution. No real market for wood products existed at that time; the use of wood was controlled by regulations: politics decided who had to suffer. The term "shortage" was defined politically. In this respect, the sovereign's interests were not so much supplying the common people with fuel wood and food, but hunting grounds and supporting the salt and ore mines.<sup>29</sup> The sovereigns had clear interests: they intended to strengthen their regimes. A national state has to rely on three pillars in order to be efficient: army, police and income (MATZNER 1982). At first, the sovereign had none of these things. It shows that the sovereign's most important actions in forest policy were motivated by fiscal considerations: Industries like saltworks and mines and the related trades constituted the most important source of income for the sovereign because he could levy lucrative tariffs and taxes only on these industrial goods. In this way, his policy was to secure the control over the wood resources for these industries and to keep the fuel prices low. The trade with and the export of wood were restricted. In regions where larger forest areas were property of the sovereign and when the ideas of market economy gained ground, he tended to pursue a high-price policy because the timber production itself meant income for him.<sup>30</sup>

Additionally to fiscal interests, also mere interests of stabilizing his power motivated the absolutist ruler to enact laws and to establish a forest administration.<sup>31</sup> Especially the enforcement of hunting rights, which were completely reserved to the aristocracy, was a symbol of the sovereign's absolute power and the subjection of the ordinary man. Even in times of real famine, a violation of the hunting law was prosecuted with draconian punishments; for shooting deer offenders were usually executed.<sup>32</sup>

In the early ages of manufacturing development, forest resources were considered unlimited. All forest land in the reach of the works was utilized. Trees were felled in huge clear-cuts and transported on rivers for distances of hundreds of kilometers. The formerly unlimited timber resources became a rare and therefore valuable good. The earliest order of the Tyrolean sovereign concerning forest management (1385) protects forests "which can be brought to the salt-works".<sup>34</sup> The forest staff had to enforce industrial demands against the demands of the

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<sup>25</sup> ALLMANN (1989: 43); RADKAU (1986: 28ff). For the Austrian case see: HAFNER (1979: 89ff) – Styria, JOHANN (1968: 168 etc.) – Carinthia.

<sup>26</sup> PFISTER (1995).

<sup>27</sup> SCHENK (1996: 215).

<sup>28</sup> RADKAU (1986: 7). However, there was a problem of transport: At that time a limiting factor for development was the transport of fuel to the industries (SIEFERLE 1982: 78ff).

<sup>29</sup> KILLIAN (1994). For the Tyrol: WOPFNER (1906: 32); OBERRAUCH (1952: 66); for Carinthia: JOHANN (1968: 196, 238).

<sup>30</sup> WOPFNER (1906: 32); OBERRAUCH (1952: 107); SCHÄFER (1991). Many authors emphasize the importance of fiscal interests for the sovereign's forest policy: RUBNER (1967: 89); RADKAU (1986: 31); SELTER (1993: 218); SCHENK (1996).

<sup>31</sup> SIEFERLE (1982: 98); ALLMANN (1989: 100); SELTER (1993: 368); for the Tyrol: WOPFNER (1906: 32).

<sup>32</sup> ALLMANN (1989: 84ff).

<sup>34</sup> Two orders for the same purpose followed in 1420 and 1443. The first mandate concerning hunting in the Tyrol was decreed in 1414 which prohibits subjects the shooting of deer.



people.<sup>35</sup> For example, the forest order of 1521 for the community of Taufers, Tyrol, reserved the rights of use for the benefit of the silver mine in Schwaz, except for the most urgent needs of the people. Only due to the complaints of the people, certain forest stands which protected against avalanches and land-slides were prevented from felling (WOPFNER 1906: 158-163). The communities had to defend their rights of use and the preservation of protective forests against the sovereign's interests.<sup>36</sup>

Instead of protecting forest resources, the sovereign supported their utilization. At first, forests were crucial for providing fuel wood for the salt and mining industries and later on for providing timber. The conflicts between the interests of the sovereign, the land-lords and the industries on one side and the interests of the local people on the other were not only in quantitative terms, but also concerning the qualitative methods and goals of forest management.<sup>37</sup> This was especially the case when mineral coal was discovered. Conflicting interests in forest use were not relieved by the availability of mineral coal. One popular interpretation why "modern" forest management became practicable in Europe is that mineral coal substituted wood in heating. But if the pressure on forest resources had really been relieved by the availability of coal, the state would not have had great interest in implementing strict forest laws. No lobbies are known at that time that would have demanded a preservation of forests like environmental groups do today. All examples prove that strong interests in forest utilization always got their way (KILLIAN 1994). And if no interests existed, why enforce laws to drive people and their cattle out of the forest? Governments even campaigned for using mineral coal instead of fuel wood: it seems that enough wood was available but people were reluctant to accept the new, "dirty" fuel (SIEFERLE 1982: 217ff). But who was interested in "relieving" the forests? The explanation is in the growing importance of timber. Timber was a crucial material in civil engineering and construction and was therefore extremely important in the further economic development of the countries.<sup>38</sup> "Modern" industry-oriented forest management, which is basically still the model of today's forest management, is oriented at timber production. The production of high-quality timber is not compatible with agricultural forest uses. Traditional farm-related forest management was oriented at sustaining a farm and included grazing and needle-litter collection. These practices, however, led to a reduced quality of the timber produced. The foresters developed forest management systems to ensure the efficient production of high-quality timber.<sup>39</sup> Although forest policy has never been very successful in driving out farm uses from the forest, this must be seen as an important reason for the further commitment of the sovereigns in forest regulation. Once established, the forest organization itself was interested in state supervision. At that time timber prices were already high, which supported this development.<sup>40</sup> In this light the successful implementation of "modern" forest management becomes understandable, but it also shifts the focus of the "wise regulation" from the interest of the public to the support of powerful group interests.

### 4.3 *Constitutional State*

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<sup>35</sup> E.g., OBERRAUCH (1952: 67).

<sup>36</sup> There were riots against the sovereigns intervention in the common land (WOPFNER 1906: 108-111).

<sup>37</sup> ALLMANN (1989: 122); SCHÄFER (1991); PFISTER (1995: 334).

<sup>38</sup> SIEFERLE (1982: 85); RADKAU (1986: 10); SCHÄFER (1991); PFISTER (1995: 313-316).

<sup>39</sup> MITSCHERLICH (1963: 15); SIEFERLE (1982: 217ff).

<sup>40</sup> RADKAU (1986: 10, 31); PFISTER (1995: 319-322).

After the revolution of 1848, the aristocrats' privileges and the serfdom of farmers under the land-lords were abolished. *Private farm and forest ownership* with full civil and property rights was established. Hunting became also a right associated with land ownership. The state's role in forest management was restricted to the administration of the forest law (constitutional state). The Empire's Forest Act of 1852 aimed at the preservation of all forest land and obliged all forest owners to manage their forests according to the principles of "sustainable forestry", that is sustained yield in timber. The major concern of the forest law was still the production of timber, although in the liberal spirit of the time the private owners benefited from timber production.

And what about the protective effects of the forest? The Empire's Forest Act includes a regulation of "ban forests", which concerns forests that protect against natural hazards. This regulation bears the same name as the old ban forests of the commons, but the specific regulation is adapted to the new legal system.<sup>41</sup> Similar to former "forest ban" regulations it means the prescription of distinct forest management which is different from regular management. In the modern regulation after the revolution of 1848, a restriction of the ownership rights in the "public interest" may only be defined by official procedures, and includes compensation for the forest owner. The regulation complies with liberal principles and is still valid today (Forest Act 1975). The regulation is necessary because the forest owner and the beneficiary of the protective effects might possibly not come to an agreement in free market conditions.<sup>42</sup> It allocates the costs of the management of protective forests to the parties involved. Forest owners are obliged to maintain their forests (polluter-pays principle), and costs of additional forest management measures are to be borne by the benefiting property owners (beneficiary-pays principle). The regulation guarantees the protection of the benefiting party at the lowest level of costs, but it also relies on the ability of everybody to look after his or her safety interests.

The forest laws, especially the stricter amendments to the laws enacted in the mountainous provinces, are often explained by the special role forests play in protecting against natural hazards. However, no indications can be found that these were the motivation for the enforcement of Austrian forest laws in the 19<sup>th</sup> century.<sup>43</sup> In mid 19<sup>th</sup> century, foresters developed an understanding of the relationship between rain, forest cover, and floods.<sup>44</sup> Yet, while the expansion of state supervision and the increase in forest staff was argued with the flood catastrophes, no efficient policy measures were taken.<sup>45</sup> As no further conclusions for forest management regulations were drawn, the argument seems to be only of symbolic character. The actual explanation for the extensive forest supervision in the Tyrol is the

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<sup>41</sup> In Switzerland the old term "ban forest" was planned to be included in the Forest Police Act of 1876, but was then replaced by the term "protective forest" (TROMP 1975: 204; SCHULER 1992: 109).

<sup>42</sup> This is a situation of a bilateral monopoly. According to game theory a compromise between the effective costs for the forest owner and the value for the beneficiary could be expected if no regulation existed. The rights of use of the forest for "protection" are transferred to the owner of the property below a forested slope.

<sup>43</sup> It is true that severe floods occurred in 1848 and 1851 just before the enactment of the Empire's Forest Act, but the only reactions known was the announcement of prizes for land reclamation projects (Preisauflösungen) and the investigation of the causes of the floods (KILLIAN 1990: 67ff, 80ff).

<sup>44</sup> Before that time people believed that the mountain springs were connected with the sea or with huge water-filled caverns in the mountains (in KILLIAN 1990: 35-37). It was believed that floods were God's punishments for sins (PFISTER 1994: 3).

First documents on the scientific analysis of floods date back to the end of the 18<sup>th</sup> century: ZALLINGER 1788/89, ARETIN 1808, DUILE 1826, ZÖTL 1831 (cf. OBERRAUCH 1952: 261f; KILLIAN 1990: 23ff).

<sup>45</sup> KILLIAN (1990: 67ff, 116ff, 142ff).

specific ownership structure in this mountainous province. In the mountains, farmers had always been free, i.e. not in the serfdom of land-lords. This had the effect that in most cases, the right of ownership was eventually granted to the farmers, the communities or to farmers' cooperatives. The forest authority strove for growing influence and justified this with the particular importance of the communal forests "for the public".<sup>46</sup> The reason for their success, however, is that the communities were not able to organize their interests effectively for defending supervision.<sup>47</sup> Although foresters knew the limits of the protective effects of the mountain forests in fighting floods, they exaggerated the role of the forests. If the forests were appropriately managed, they promised the prevention of any more floods.<sup>48</sup>

The evaluation of this program shows discouraging results.<sup>49</sup> The regulations are applied only to a small proportion of protective forests. Many protective forests are damaged by game browsing and have to be restored with public funding. One reason for this is considered to be the way the legal system conceptualizes forests: Wood production, natural hazards protection, and game management concern all one ecosystem but are represented by different agencies. As the analysis shows the problem is not so much a simple lack of coordination, but the orientation of the administrative agencies at their particular clienteles. Even in the province of Salzburg, where – at district level – only one executive body controls both the forest law and the hunting law, no satisfactory policy coordination could be achieved.

## 5 Conclusions

The interests and values of foresters determine their actions as well as their perception of existing regulations. The professional interest of foresters is an intensification of forest management. Public administration is interested in budget maximization. Today, foresters are still committed to the industry-oriented forestry model which developed during the industrial revolution. The foresters' value system is still based on the prominent role of timber production.<sup>50</sup> Additional "forest functions" are rather symbolically defined in the forest law in order to achieve legitimacy.<sup>51</sup> Interests in forest uses that are not under the jurisdiction of the forest administration (e.g. agricultural uses and hunting) are what foresters contemptuously call "by-uses". The interests of influential actors within the policy-making system shape what is officially regarded a "good forest". Institutional settings influence effective interests considerably and in this respect also the development of values.

The accounts of protective forest policy in different eras show that societies may use different concepts in regulating forest uses. The regulation of forest management may be organized in a common-property regime, by state regulation or the market system. In practice, the basic

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<sup>46</sup> OBERRAUCH (1952: 275ff).

<sup>47</sup> OBERRAUCH (1952: 278ff); KILLIAN (1990: 134ff, 142ff). In provinces with dominating private property (land-lords and noblemen) the owners rejected a strong forest authority successfully (e.g. in Lower Austria, Styria, KILLIAN 1990: 131f).

<sup>48</sup> KILLIAN (1990: 125ff). Using similar exaggerated arguments, the well-organized foresters in Switzerland succeeded with their claim for a federal forest law. With the enactment of the Forest Police Act they reached institutionalization (PFISTER 1995: 323; 1998).

<sup>49</sup> WEISS (1999).

<sup>50</sup> GLÜCK (1995); DUERR/DUERR (1975); KENNEDY/THOMAS (1995; 1996).

<sup>51</sup> The normative concept of the "forest functions" (*Waldfunktionenlehre*) was developed in 1953 by the Swiss professor for forest policy Victor DIETERICH and was soon incorporated in many European forest laws (GLÜCK 1983).

institutional framework allows only certain ways of problem-solving since particular regulations have to be consistent with the framework. But this is not valid without restriction: The problem solving capacity of different approaches might differ, and the ruling systems are not as coherent as one might assume.

Different institutional settings mean different perceptions of problems and different concepts of problem-solving:

*The institutional structure may fit the natural problem in different respects:* Collective ownership may be more adequate than private ownership for regulating forest resources.<sup>53</sup> The regulation of protective functions may be more efficient at community level than at state level.<sup>54</sup> In the system of private property, the beneficiary of the protective effects of a forest is not the owner: The institutions of private property and the market fail in this case due to external effects and the monopoly situation. The market failure results in the necessity of state regulation. Public administration, on the other hand, is organized in particular economic sectors and territorial districts. The deer, living innocently in their ecosystem, may nevertheless cause damage in a different district and in a different "sector". Public administration of natural resources is not organized according to ecological conditions.

*The problems in coordination are driven by interest conflicts:* Interest groups benefit from the imperfect coordination and reinforce the separation of the sector policies. If interests in an effective regulation of the forest resource are strong enough, however, the system may adjust to the problem situation and find new ways of regulation.

There is no "pure" coherency within the institutional framework:

*Problems arise in transition periods:* As institutions do not change from one day to the other, there are periods when regulations are not clear and therefore not effective. This can lead to the depletion of natural resources.

*Different institutional concepts may exist at the same time:* Relics of the time of the commons can still be found today: In the mountain regions, where many forest commons have been converted into collective property, the "public good attributes" of forests are still perceived. Many uses of the forest are still seen as public rights. In contrast to the legal definition of ban forests in the Empire's Forest Act, people think of ban forests as quasi-common property. While according to the Forest Act forest owners can claim compensation, the consideration of natural hazards in forest management is believed to be a moral obligation.

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<sup>53</sup> MCKEAN (1998).

<sup>54</sup> HÄFLINGER/RIEDER (1996).

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