

Alpine Common Property Institutions under Change: Conditions for Successful and Unsuccessful Collective Action of Alpine Farmers in the Canton Graubünden of Switzerland

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Abstract: The goal to protect and sustainably manage alpine summer pastures is stated in the Swiss state law since 1996 and direct subsidy payments from the state for summer pasturing have been bound to sustainability criteria since 2000 reflecting the increasing value of the alpine cultural landscape as a public good. However, the provision of the public good remains in the hands of the local farmers and their local common pool resource (CPR) institutions to manage the alpine pastures and those institutions increasingly struggle with upholding their institutional arrangements particularly regarding the communal work, called *Gemeinwerk*, necessary to maintain the pastures. This paper examines two case studies of local CPR institutions to manage alpine pastures in the canton Graubünden of Switzerland manifesting different institutional developments in the light of changing conditions. Explanations for the unequal reactions to change and their impacts on the provision of the CPR are provided by focusing on relative prices, bargaining power and ideology as drivers of institutional change often neglected within common property research.

Keywords summer pasture management, institutional change, multi-level governance

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INTRODUCTION

Alps include communally managed summer pastures and appending infrastructure above 1600 m.a.s.l used for grazing animals during the summer months. In the canton Graubünden about 80% of the summer pastures are common land and 60% of them belong to the commune as lowest territorial, political and administrative level (LBBZ 2007). The local farmers have user rights and co-manage the alps together with the commune defining the local institutional setting. In this context, institutions are understood as “sets of rules that define access, use, exclusion, management, monitoring, sanctioning, and arbitration behaviour of users” (Schlager & Ostrom 1992, p. 244). The communal alps are of particular interest for common property research because 1) the resource users differ from the public infrastructure providers increasing the complexity of local arrangements to sustainably use common pool resources (Anderies et al. 2004, p. 23), and because 2) the increasing number of requests for assistance received by the agricultural training and advisory centre of the canton Graubünden to resolve conflicts (meeting, 15.04.2010).

This paper focuses on the embeddedness of CPR institutions in the Swiss governmental system, particularly interesting because of its multi-level policy regarding the use and conservation of the alpine cultural landscape, and on ethnographic research carried out in two villages of the canton Graubünden to analyze institutional change and variables explaining successful or unsuccessful collective action. Robert Netting (1981) has done well known research in the 70s and 80s in the commune of Törbel leading to a robust image of CPR institutions managing alpine common pool resources in Switzerland. Since then, external and

internal changing conditions in Swiss alpine communities have been increasingly discussed focusing on state influence (Thomi et al. 2008), tourism development and accessibility of the alpine cultural landscape (Bätzing 2009), structural adjustment (Kissling et al. 2002), ecosystem-services provided by alpine cultural landscapes (Tiefenbach et al. 2006), or traditional ecological knowledge (von Glasenapp and Thornton 2011). The empirical findings show that the interest in the management of alpine common pool resources has shifted from a merely local to a policy and society relevant level, driven by a multitude of actors with different interests and bargaining power. This is related to the multiple functions attributed to the alpine summer pastures - like conservation of biodiversity, protection from natural hazards such as avalanches, recreational areas and cultural heritage. The alpine cultural landscape has become an increasingly valued public good (Tiefenbach et al. 2006, von Glasenapp and Thornton 2011) and its conservation a public demand that is reflected in the Swiss state law since 1996 binding direct payments to sustainability criteria regarding the management of summer pastures. The maintenance of the alpine cultural landscape, however, is not provided by the public but by the local farmers, which have, besides the right to use the summer pastures, the duty to maintain them. The activities within the communal work (*Gemeinwerk*) depend on the local conditions, but generally comprise fertilizing, clearance of the pastures from stones, weed and shrubs, measures of protection against soil erosion, and minor repair works on the infrastructure. However, there are indications suggesting that the provision of those goods has become increasingly difficult: Areal statistics of 2010 notice a loss of almost 4% of pasture land in the canton Graubünden between 1979 and 1997 while forestation increased by around the same extent (Peng et al. 2010). In the research of Kissling et al. (2002) a high transition and decaying structures of alpine common property regimes are observed endangering the conservation of the alpine cultural landscape. To find explanations for this ecological and institutional trend we analyze the robustness of two CPR institutions, their different responses to external and internal changes, and the factors explaining their success or failure of collective action to sustainably use the alpine summer pastures.

The theoretical instruments chosen within the context of New Institutionalism (Ensminger 1992, 1998; Haller ed. 2010) and the commons literature will be further elaborated in the following section on the theoretical framework. The methodologies used in the ethnographic research and the setting in which the research took place will then shortly be explained before assessing the role of the alpine summer pastures as a common pool resource in the context of public policies and legal frameworks in Switzerland. Two case studies will be presented later to illustrate that, despite being embedded in the same governmental system, the responses of CPR institutions to external and internal changes may differ substantially.

Theoretical Framework

The identification of conditions or circumstances facilitating the generation of rules to manage common-pool resources at the local level is one of the main concerns to be found in the commons literature. In 1990, Elinor Ostrom introduced the eight design principles (DPs), “core factors that affect the probability of long term survival of an institution developed by the users of a resource” (Ostrom 2010, p. 13). The DPs are a suitable instrument to evaluate the robustness of CPR institutions. Robust institutions are characterized by most of the DPs enhancing the ability to act collectively in order to adapt to external or internal changes and to succeed in sustaining the resources (Ostrom 1990, p. 90). Within this study, the eight design principles (reformulated version, Ostrom 2010) are used for the evaluation of the current robustness of the two CPR institutions under study. This approach suits the purpose to evaluate the *status quo* of the institutions. The DPs have been criticized that social variables, socioeconomic factors and historical processes are not sufficiently considered in order to derive explanations for the current institutional design (Cox et al. 2010, Haller 2010a). Hence,

to put more emphasis on those aspects, the model of institutional change by Jean Ensminger (1992) has been chosen to complement Elinor Ostrom's design principles. Already in earlier publications (Haller 2010b, Haller and Merten 2010, Landolt 2010), the researchers have tested the utility of Jean Ensminger's framework as a theoretical instrument to examine institutional change in the management of common pool resources in African contexts. Ensminger's model proved to be a useful instrument in explaining why institutions erode and common pool resources are overharvested or badly maintained. Her model of institutional change considers the interaction between external (economic, demographic, social-political and technological) and internal factors (ideology, bargaining power, organization and institution) and their impacts on distributional effects as well as the social, political and economic behaviour of the individuals (Ensminger 1992, Haller and Merten 2008, Haller 2010a). It provides a suitable basis to discuss under what conditions collective action takes place, particularly because she introduces the notion of bargaining power and ideology, the latter considered as a source of legitimacy for actors in social interaction changing institutional design.

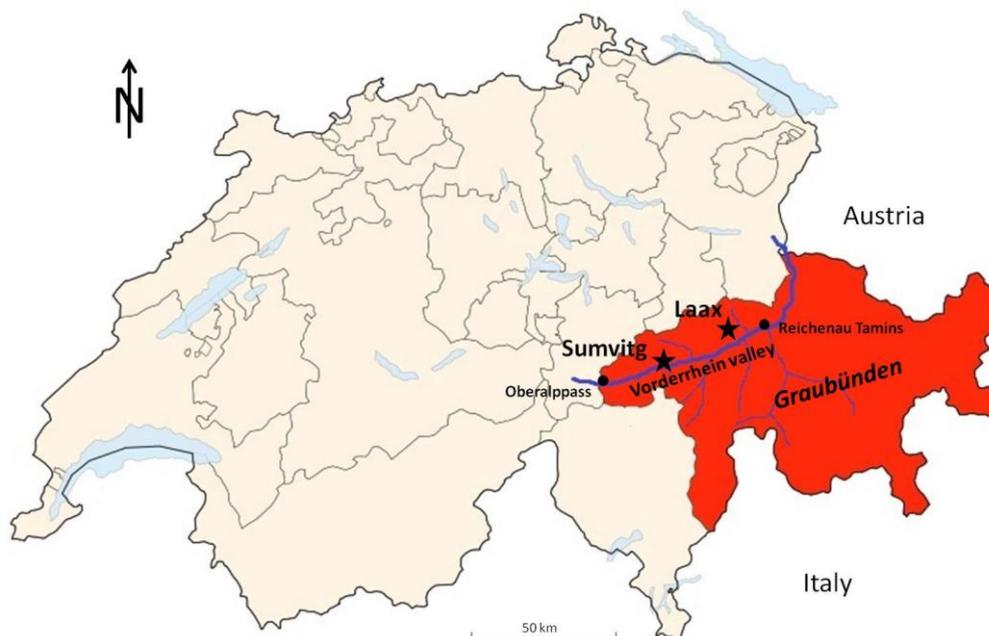
Ensminger emphasizes that political, ecological, demographic, technological, and social changes affect the value of a resource and of one resource compared to another, named as changes in relative prices. Changes in relative prices shift economic incentives which can induce institutional change. The direction of change is not prescribed but negotiated and depends on the bargaining power of actors and the ideologies used to legitimize the institutional design highlighting the central aspect of power relations and the influence of internal variables on institutional outcomes. Heterogeneity of interests within the user group as well as the heterogeneity of interests and the unequal distribution of power between the user group and the community or society are often backed by ideology and raise the transaction costs for collective action. However, the transaction costs can be lowered by good leadership communicating common interests, positive interaction between members of a group and exchange of information (Ensminger 1992: p. 167; see also Haller 2010a).

Recent developments in research on the commons have gone in a similar direction by developing a framework to analyze social-ecological systems (SESs) providing a broad set of variables at multiple tiers across the biophysical and social domains to describe SESs and to identify reasons for sustainable or unsustainable outcomes (Ostrom 2009). By referring to this model, we would like to provide an additive input by considering the interrelation of internal and external variables linked by relative prices, by focusing on its influence on internal levels of bargaining power and ideology and on how they influence the institutional design (see Haller 2010a).

METHODOLOGY AND SETTING

The case study sites were purposely selected: the agricultural department and the agricultural training and advisory centre of the canton Graubünden helped to select two communes holding communal alps, which share a similar geographic, ecological and political environment but differ substantially in their institutional development. Both villages are located in the south-eastern part of Switzerland, in the valley of the Vorderrhein that belongs to the Surselva region encompassing the valley of the Vorderrhein and all its side valleys, from the source near the Oberalppass down to Reichenau. Laax is situated at the eastern end of the Vorderrhein valley and Sumvitg around 30 km to the west (see Figure 1). They are both located at around 1000 m.a.s.l. The summer pastures reach up to 2400 m.a.s.l. in both communes. In order to observe behaviour and to better understand the local context in which collective decision-making takes place, participant-observation was carried out during the alpine season 2010 (mid June to mid September) on the Alp Nagiens in Laax and the Alp Naustgel in Sumvitg, which are both milk processing alpine farms.

Figure 1: Location of the two villages under study (source: <http://commons.wikimedia.org> adapted by Gabriela Landolt)



Working on the alpine farms enabled contact with the staff working on the alps as well as with farmers and authorities from the respective communes. Occasions when farmers were on the alps for taking care of their animals or for communal work were used to carry out informal interviews and focus group discussions. The contact with the farmers and the practical knowledge gained on the alps during this exploratory phase facilitated the semi-structured interviews that followed after the alp summer 2010. All five farmers of the alp association in Laax and ten out of twelve farmers of the alp association of Alp Naustgel in Sumvitg as well as the local authorities of the two communes (president, head of department for agriculture) and of the alp associations (board members, alp masters) were interviewed. To observe interaction, communication, information and discourses board meetings were attended. Interviews on local oral history were carried out with the oldest farmers of the villages (four in Sumvitg, three in Laax). The interviews were recorded, transcribed and qualitatively analyzed according to the research questions. Expert knowledge in alpine farming issues has been integrated through the close cooperation with a mixed expert team from the department of agriculture and the agricultural training and advisory centre of the canton Graubünden.

SUMMER PASTURES AS COMMON POOL RESOURCES

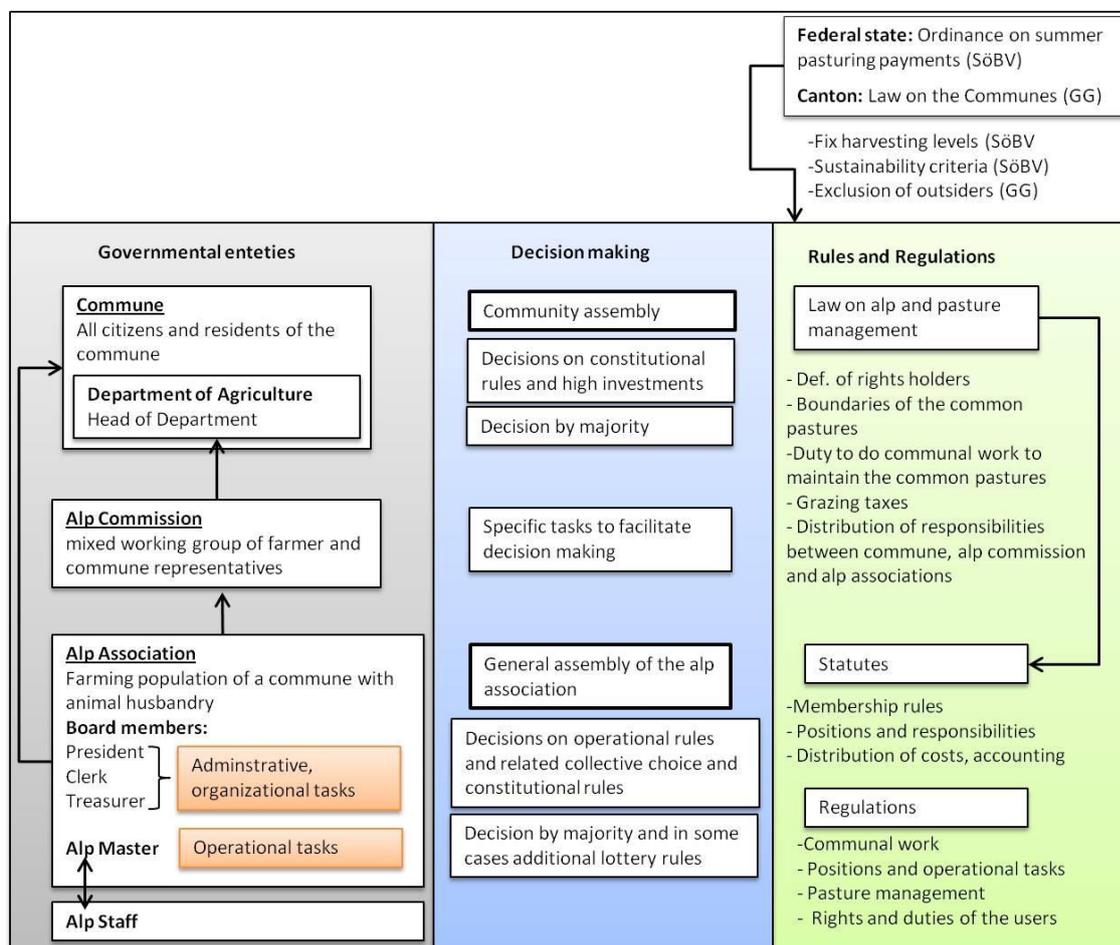
In accordance with the local variability of ecological conditions, a high variety of CPR institutions to manage summer pastures were crafted by local communities in Switzerland that go back many centuries and were therefore crafted long before the Swiss state became into being. Only the collective use of the alpine pastures made the adaptation to the ecological variability and the patchiness of the natural resources as well as the share of costs possible (Netting 1981). The communal alps of the canton Graubünden have their origin in the constitution of the communes between the 14th and the 16th century developing into CPR regimes based on the membership of individuals to a commune. The commune is the owner of its common pool resources such as forests and pastures and its residents are the legal rights holders. Referring to the bundles of rights defined by Schlager and Ostrom (1992, pp. 250-

251) the local farmers have the right 1) to have access to the summer pastures during a fixed period of time, 2) to withdraw products of the resource (grazing rights) within the limit of the sustainable yield defined by the canton 3) to define user rules within the limits of higher regulations, and 4) to exclude external users not resident in the commune. Rights cannot be sold, but the association can allow outsiders to bring their livestock in, in case that they are not able to fully stock the alp with local animals. In case that the demand to graze animals on summer pastures exceeded the local supply, lottery rules assigning rotational rights are usually implemented and additional grazing rights organized on foreign alps (Stevenson 1991, p. 89).

The legal framework of summer pasture management

The institutional setting regarding the management of communal alps is defined by different governmental levels (federal state, canton, commune) and by the appropriators (alp associations). Figure 2 provides an overview of the usual institutional entities, positions, decision making platforms and written regulations regarding the management of communal alps.

Figure 2: Local governance system of communal alps (based on own data)



Since 1992, direct payments are bound to ecological services while price guarantees were continuously reduced (BLW 2000). The development since the 1990s shows a dual role of the state: the federal state is obliged to open the markets and to make the agricultural sector more competitive, while it is at the same time responsible for the conservation of the cultural landscapes, the biodiversity and the sustainable use of the alpine pastures. Regarding its later obligation, the former ordinance to support alpine farming was revised and replaced by the ordinance on summer pasturing payments (*Sömmerungsbeitragsverordnung*, SöBV) in 1999. The SöBV requires the definition of the maximum sustainable yield (MSY) for each alp

according to the productivity of the pastures by the canton. Each alp has to remain within the range of 75% to 110% of the MSY in order to get full direct payments. Each commune is required to register all animals admitted to the alpine pastures in a national database enabling efficient monitoring. Furthermore, the SöBV provides sustainability rules such as the protection of the pasture against scrub and forest encroachment, an adapted and biodiversity enhancing fertilization of the pastures, the control of weeds and the maintenance of alp buildings and infrastructure. It should be noted that the regulations cover exactly the activities traditionally included in the communal work. However, the implementation and monitoring of the sustainability criteria are either difficult to control or open to a wide margin of interpretation, for example in the case of natural regrowth or erosion (Schulz 2011, p. 90).

On the cantonal level, the law on the communes (*Gemeindegeseztz*, GG) states that it is the duty of the communes to secure the use of common pastures for the local farmers (Art. 30) and also the responsibility to maintain them (Art. 41). Outsiders are excluded by the rule that citizens and residents have privileged user rights (Art. 30: 2). The user rights are limited by the restriction that only cattle fed during the winter with fodder harvested on the territory of the commune are allowed to use the summer pastures (Art.31: 1). It can be concluded that the canton clearly defines the set of people with user rights ensuring the exclusion of other potential beneficiaries and fixes the sustainable stocking capacities for each alp reducing the chance of overharvesting.

At the communal level, a law on alp and pasture management is usually implemented to provide a legal framework for the co-management between the commune and the alp association. The communal laws provide an important pillar for alpine summer pasture management but, as the comparison of ten communal laws revealed, do usually not address central aspects of summer pasture management, such as the grazing management that defines how intensively pastures are used, the communal work to sustain the resources, the accounting of the alp associations distributing costs and benefits or concrete monitoring instruments. Platforms for collective decision making are present but the majority vote rule might privilege actors with higher bargaining power or disadvantage the ones most affected by the rules. Those aspects highly depend on the institutional arrangements established by the alp associations, on power relations within the community, and particularly of the authority of the alp master in charge of coordinating and monitoring the communal work, the communication with the alp staff and the supervision of most operational issues regarding the alp management (see Figure 2).

The following case studies illustrate the increasing difficulty to maintain the communal work and to cope with the freedom or implicit duty respectively to establish own conflict resolution mechanisms, monitoring, sanctioning and collective-choice agreements in order to strengthen the robustness of their institutions.

THE VILLAGE CASE STUDIES: LAAX AND SUMVITG

Being located in the same valley the communes Laax and Sumvitg share a similar early history. Between the 14th and 16th century the alps were either in feudal hands by barons of the region or by the Disentis Monastery. The alps were given in fief to the communes for a yearly rent. The communes finally became proprietors by defending their rights against other communes resulting in the settlement of borders and by trading and buying alp rights. Laax made its final payment to the baron of Rhäzuns in 1564. Sumvitg, even though the taxes were reduced to a symbolic amount, did its last payment to the Disentis Monastery in 1970 (Maissen 1978, Maissen 2000).

Despite similarities in the constitution of the communal alps, the institutional development that followed proceeded very differently.

Laax: Lack of leadership, heterogeneity of interests and lost bargaining power

The commune of Laax is the owner of the Alp Nagiens, which comprises 1102 ha of summer pastures providing grass to around 220 cows, heifers and calves (Maissen 1978, p. 287). The limits between the Alp Nagiens and the neighbouring Alp Mughels from the commune Sagens were clarified and written down in the 19th century as a result of heavy disputes. The user rights within the community of Laax and the alp association however stayed based on oral customary law (Maissen 1978, p. 81). Abundant pastures were available so that the formalization of rules had not been regarded as necessary. In deviance to the local governance systems presented in Figure 2, the alp association was solely headed by the alp master being in charge of all operational tasks. As the administrative obligations increased, the head of agriculture of the commune took over all the administrative tasks such as staff employment, registration of animals, and correspondence. Until the end of the 1960s, a rotational system was in place to pass the position of the alp master from one member of the alp association to the next. This system was abolished in 1969 when farmers started to refuse the position and the ones in charge were not committed to sustainably manage the alp due to the short terms. It was also the time when the farmers started to sell their land and stopped farming because of the high land prices and the better income opportunities that tourism brought to Laax. The number of farmers dropped from 27 in 1930 to 10 in 1977 (according to Maissen 1978). Having abandoned the rotational system, the alp association became stabilized by the long terms of two alp masters from 1970 to 2000. Their ability to run the alp was able to hide the fact that the farmers became marginalized within their community and lost bargaining power on various levels: on the level of the local government, as the last farmer left the commune council in 1990, in the community due to the rapid increase of the non-farming population (310 habitants in 1960, 1197 in 1985 and 1541 in 2011 according to communal statistics) and in bilateral negotiations due to increasingly powerful external actors like tourism agencies. Although respected for their knowledge, the alp masters became suspected to abuse their position for self-interests. Mistrust and conflicts rose until the alp association decided in 2000 to go back to the rotational system in order to distribute power more evenly. However, the same experiences were made as in 1969: the incentives to develop sustainable management structures and the commitment were low due to the short terms. Furthermore, in 2004 a rather inexperienced farmer had to take over the position of the alp master. He was missing the necessary traditional knowledge about rights and duties to run the alp so that he requested that customary law was written down. The commune supported his idea and asked a cantonal agricultural advisor to assist the rule constituting process. Five members remained in the alp association, all of them dairy farmers at that time. Despite the small number and same types of production, different views and self interests dominated the discussions and raised the transaction costs to the extent that only standard rules were agreed upon without considering any local specifics. The regulations could not prevent the failure of the rotational system. Under general approval, one of the old alp masters from the period of 1970 to 2000 took over the position for three more years until 2008. In 2008, major and sudden changes occurred, which made the institutional system collapse: two of the younger farmers shifted from milk to meat production (suckler cow husbandry), what meant a severe break with tradition to the remaining dairy cow farmers aggravating internal disputes. Furthermore, the community assembly of Laax decided to use one part of the cowshed of Alp Nagiens to open up a restaurant. As a reaction to those changes, the alp master resigned his position. Within one year everything changed and the loss of local knowledge became apparent as one of the younger beef farmers noticed:

Sep and I changed to suckler cow husbandry, the restaurant was built in the alp stable and Martin handed the position of the alp master over to the commune. Everything that was taken for granted suddenly disappeared. Usually there is an instruction manual telling you how the alp was managed so far. But nothing like that exists for the Alp Nagiens and that's why all knowledge, collected over centuries, has been lost overnight. It's a tricky

situation as the ones that have the knowledge are not ready to share it but prefer to see the others fail (interview, 17.02.2011).

The fact that the farmers were not considered before agreeing to the building of the restaurant made them realize their marginalized position:

There is no tourism that allows discussions to find joint solutions. Here tourism dominates. 20 years ago, one could share his opinion and was heard but not so today. Decisions affecting the alpine pastures are taken by the community assembly without considering the farmers. If you raise your voice you will be laughed at and ignored. Most of the farmers do not go there anymore (interview, 17.02.2011).

Resentments against the farmers are enhanced by a general change of ideology within the community. The subsidies and the privilege to construct stables and residential houses in the agricultural zone are perceived as unjustified and unfair (mentioned by several members of the local government). This perception triggers collective decisions made within the community against the interests of the farmers, as it was the case when the community approved the establishment of a restaurant in one part of the cowshed. With no leader and in a decision making environment, where there is nothing to win and not much to lose, none of the farmers were ready to assume the responsibilities of the alp master. In the end, the commune as the owner of the alp, had to find a solution. The responsibility fell into the domain of the head of department for tourism and agriculture. He was not a farmer and had no experience in alpine farming and in managing an alp. Furthermore, he could not count on the support of the farmers as he was made responsible for the predicament. The only way to strengthen his position was to ask the agricultural training and advisory centre of the canton Graubünden for assistance. But suggestions made by the cantonal agricultural advisor were *per se* not accepted by the farmers. Later, the farmers rectified their resistance that the suggestions were perceived as being in contradiction with customary law and were not well explained to them. Despite resistance by the farmers, changes were made inter alia in the accounting system. Lack of communication combined with lack of transparency of the new system raised doubts about the fairness of the distribution of costs and benefits between the dairy cow and the suckler cow farmers. During participant observation in 2010 it became evident that the rules defined in 2004 have already been orally altered by individual negotiation depriving the written regulation of its validity. The alpine herding seasons of 2008 to 2010 were characterized by uncoordinated communication between the commune, the farmers and the alp staff leading to misunderstandings regarding the pasture management and by individualized communal work due to the unwillingness of the farmers to work together. Negative ecological consequences are foreseeable if the communal work does not improve.

According to cantonal agricultural advisors, this development illustrates a major trend in communal pastoral management for the years to come. However, there are counter examples such as the case of the commune of Sumvitg, in which local actors choose to act collectively in order to adapt to the economic, political and social changes.

Sumvitg: History of positive interactions and good leadership

5500 ha of the territory of Sumvitg are pastures held as common property comprising not only alpine pastures but also common pastures in the valley (*Heimweiden*). There are eight alps providing pastures for approximately 1200 animals. Based on local regulations, two of them are alpine pastures reserved for dairy cows. On the other alps, suckler cows, young cattle, and sheep are herded. There are 26 fulltime farmers mainly engaged in cattle breeding and further nine farmers mainly holding small livestock. The historical process of the legalization of property relations ended in the first law on pasture and alp management in 1805. The two milk processing alps, named Naustgel and Glivers, have always been organized in alp associations, which had established their own statutes and took care of all management tasks by themselves (similar to Figure 2). The alps reserved for young cattle and sheep, however,

have been entirely managed by the commune. The head of the communal department of agriculture employed herders selected a farmer as alp master and did the final accounting. Every ten years the communal law was revised by an alp commission consisting of three farmers and a representative of the commune (see Figure 2). The major issue, that had to be discussed every ten years, was the distribution of the animals among the alps. The regularly excess of animals made it necessary to rent additional grazing rights on neighbouring alps. Until today, Sumvitg has summering rights on alps in the neighbouring communes Trun and Russein. To select the farmers, which had to give their cattle to foreign alps, a lottery rotational system was installed. Every ten years the lottery was repeated. Structural changes were initiated by the industrialization of the 1950s and reduced the number of farm businesses from 142 in 1955 to 84 in 1969 (according to Maissen 2000) due to alternative job opportunities. Another reaction was the specialization of the production types of the farms for market integration and cost reduction. As a reaction to the increasingly difficult conditions particularly in the milk production in the 1990s, an increasing number of farmers shifted from dairy cow to suckler cow husbandry. Today, eight farmers breed suckler cows in Sumvitg, in total 145 suckler cows with around the same number of young cattle. The increasing number of suckler cows challenged the traditional patterns to distribute the animals among the alps and made it difficult to find solutions practicable for ten years. In the year 2000, the alp commission was again asked to revise the alp and pasture law of the commune. The commune asked three young farmers in the commission who were known for their ability to find innovative and acceptable solutions. It happened that in the same year the ordinance on summer pasturing payments (SöBV) changed in a decisive way: it allowed paying the subsidies directly to corporations under public law giving them more autonomy in the financial matters. Inspired by the new policy and aiming at operational independence in order to react more rapidly to change, particularly to the continuing trend to shift from dairy cows to suckler cows, the alp commission elaborated the idea to unify all alps, each organized as an alp association with own statutes and regulations, under the roof of an alp corporation. The alp corporation, having the status of a public law institution, was able to lease the common pastures for a yearly rent. According to the president of this new organization, the loss of social status and the tendency of losing bargaining power in the community were other reasons for creating the corporation, apart from general financial incentives. But despite good arguments, it took time to convince the farmers and get their support:

At first, the level of consent was high, but then, when uncertainties rose only a narrow majority was reached, but when all saw that the goal is near and benefits foreseeable the support increased again (interview with the president of the corporation, 08.03.2011).

This discourse describes change as a process influenced by the perceived probability of future benefits in a relatively short time span. But also leadership seems to play a crucial role in explaining successful collective action as an old farmer pointed out:

We have a few intelligent young farmers with a good education, which steer the boat. As long as the others jump on, a lot can be achieved (interview, 09.03.2011).

The old farmer's statement reflects intergenerational trust, reliance on the new generation and their perception of the future that facilitates institutional change. The idea of changing the management structure was also welcomed by the commune. A central aspect of the commune's approval was that the management of the alps means a high workload and hence costs to the commune. Within the new institutional structure, decisions are taken on two levels: at the general assembly on the level of the alp associations and at the general assembly on the level of the alp corporation. Only in rare cases, when fundamental changes or higher investments shall be made, the decision has to be taken by the general assembly of the whole

community. But also in this case the president of the corporation is not worried as he knows how to win a cause:

We only bring absolutely necessary, well reflected, and broadly supported requests before the community assembly. If we organize ourselves well, bring our children and grand parents to vote for the cause, we will have the majority and win (Interview, 08.03.2011).

Furthermore, there has always been at least one farmer in the commune council, so that lobbying for the interests of the farmers and the exchange of information between the local institutions and the communal political level has always been given. The creation of the corporation in the year 2000 enabled the farmers to change their rules, especially the distribution of animals among the alps, every year. The lottery system is still in practice but only used when redistributions are necessary and no volunteers are found. The high institutional flexibility, the independence from the commune and the increased bargaining power in the community through the more centralized organization were noticed as the major benefits of the new institutional structure. Institutional stability has further been increased by regular exchange of information and participatory decision making:

Each year, the distribution of costs has to be newly discussed. Long discussions are needed to achieve a faire distribution of costs among all appropriators but so far we have always succeeded (interview with the president of the corporation, 08.03.2011).

Besides trusting the leaders, the participation in decision making processes seems to be a key discourse explaining the ability to resolve problems. Regular interaction and cooperation might be a further reason that supports this culture of open debate: groups of farmers and particularly neighbours exchange machines and labour in order to reduce costs, meet in the different assemblies, work together during communal work, and meet during festivities organized during the summer on the alp and at the end of the alp season in the valley.

This case shows successful collective action to strengthen the CPR institution of the farmers and to facilitate collective action in the future to sustainably use the common pastures.

DISCUSSION

The legal framework regarding alpine pasture management in Switzerland reflects the increasing concern of the federal state to conserve the alpine cultural landscape and its ecological multifunctionality. However, despite regulations on multiple governmental levels, the achievement of this goal mainly depends on the robustness of local CPR institutions and their ability to sustain the resources. The comparison of the two case studies according to Elinor Ostrom's design principles shows that, despite the favourable conditions of high autonomy and direct payments, not all local CPR institutions are able to keep up the institutional robustness to adapt to changing conditions (see Table 1 below).

Table 1 Coherence between local CPR institutions and Ostrom's design principles (Ostrom 2010)

	Laax	Sumvitg
1A. User boundaries	Statutes of the alp association clarifying membership are missing.	Statutes of the corporation and the alp associations are available.
1B. Resource boundaries	Defined by the canton and commune.	Defined by the canton and commune.
2A. Appropriation and provision rules are congruent with local conditions	Allocation rules are not adapted to local conditions.	Allocation rules are adapted to local conditions.
2B. Appropriation and Provision: costs and benefits	The distribution of costs and benefits are not transparent, not clearly defined	The distribution of costs and benefits is clarified in the statutes and is

are proportional	and perceived as unfair.	regularly discussed.
3. Collective-choice agreements	Platforms for collective decision-making are present but not participatory.	Participatory collective decision-making are present at various levels.
4. Monitoring (users and resources)	Insufficient due to the absence of a respected authority and shared local knowledge.	Good, due to social interdependencies and the respected authority of the alp master.
5. Graduated sanctions	Sanctions (fines) mentioned in the regulations but no enforcement due to low monitoring.	Sanctions in place (fines) but not yet enforced due to the high authority of the alp master issuing cautions and rare abuse of rules.
6. Conflict resolution mechanisms	The commune tries to mediate but without much success.	The alp master and the board of the alp association are local contacts to resolve conflicts.
7. Minimal recognition of rights to organize	The right is present but not actively used by the farmers.	Self-organization is welcomed by the commune and is pro-actively used by the farmers.
8. Nested enterprises	There is no communal law regarding the alp, the written regulations are not followed, and customary law is not supported enough to be effective.	The alp associations are embedded in the corporation as well as in the institutional setting of the commune.

The low compliance with the DPs of the CPR institution in Laax predicts high transaction costs for collective action and institutional change while in Sumvitg the conditions for collective action seems to be more favourable. But how can those differences in the present institutional settings be explained?

The state and the market as the main drivers of structural change play a vital role in determining the conditions for institutional arrangements. Structural changes and the change in relative prices raised the costs for the communal work. Even though compensated by the direct payments of the state, the transaction costs for organizing the communal work increased due to the decreasing human resources available and the high work load of the farmers. Relative prices furthermore influence the institutions and organizational structures indirectly through changes in the individual livelihood strategies: The specialization of the farm businesses and the shift from dairy cow to suckler cow husbandry is a reaction to the low prices for agrarian products, particularly milk, compared to the high investments necessary to increase production. The farmer communities of both communes are affected by those changes. However, there are differences to observe in the speed of these transformation processes: Tourism development in Laax accelerated structural changes, particularly the shrinking of the farming community because of increasing soil prices and income alternatives. In Sumvitg, tourism as accelerator of change is absent, so that the farmers experience structural changes in a slower pace.

The small group size in Laax has certainly reduced the pool of potential leaders and human resources in order to manage the alp and to organize the communal work to a greater extent than in Sumvitg. However, the various kinds of heterogeneity, the participants' preferences and capabilities like skills, knowledge, information and past performance (Libecap 1995, p. 162) seem to be more relevant as will be later discussed.

Besides the above mentioned external variables, the two case studies suggest that the ability to react to external pressures also depend on internal factors and particularly on bargaining power, ideology, leadership and the history of interaction: The farmers of both communes perceive a loss of social status and bargaining power partially due to their decreasing number and partially because of an ideological shift within the communities. However, in Laax the situation is much more severe as there is no connection anymore between the commune as

owner and the farmers as resource users and between the farmers and the non-farming population. As described by Glasenapp and Thornton (2011, p. 778) this disassociation decreases the chances to create shared values. In Sumvitg, regular positive interactions on the institutional, and social and economic interdependencies on the individual level still enable shared values to grow. Ideology also influences the perception of the farmers regarding leadership. In Sumvitg, leadership is linked to middle aged farmers with knowledge based on experience, education, communication skills and future-oriented thinking. The young leaders that initiated the idea of the corporation have already been known as good leaders from earlier institutional changes. The support of the young and active generation in Sumvitg by the older generation can be seen as an example of a positive image influencing decision making. Collective action was further supported by the perspective of future advantages and the high probability of success because of sufficient bargaining power. In the case of Laax, the monopolistic leadership, based on the monopoly of local knowledge, reduced the transaction costs to run the alp from 1970 until 2000 but was also responsible for ignoring changing conditions. The deceitful stability of the institution, characterized by a one man leadership, impeded collective action and participatory decision making processes at the moment when the leadership broke down. Distrust towards the commune and among the farmers due to negative past interactions, the lack of a mediator or a respected authority to discuss future developments, and the general frustration of the farmers to be at the mercy of more powerful actors like the commune, the community, or tourism left the farmers with little incentives to invest in the creation of a new set of rules. The rules established in 2004 were not followed because of the perception that they were imposed by the commune and unfair. In the case of Sumvitg, on the other hand, multiple platforms for participatory decision-making and leaders supporting a culture of open debate increase the legitimacy of the rules created. The notion of fairness and justice is mentioned by Ensminger (1992, p. 141) as a crucial element of ideology having the power to reduce transaction costs for the monitoring and enforcement of rules.

CONCLUSION

Despite the existence of a state eager to facilitate the sustainable management of summer pastures by legitimizing community based common property management and establishing a direct payment system, external factors such as market integration and agrarian policies resulting in changing relative prices, put pressure on the local CPR governance systems. The results suggest that the robustness of the local CPR institutions and their ability to adapt to changing conditions in order to sustain the CPRs depend 1) on the time frame and level of impact of external factors and 2) on internal factors such as the history of interaction, ideology, leadership and sufficient bargaining power to reduce transaction costs for collective action. In Laax, the fundamental changes within short time induced by external factors combined with internal variables further increasing transaction costs for collective action, resulted in unsustainable outcomes supporting Elinor Ostrom's (2005, p. 272) prediction that the "faster key variables change and the more variables that change at the same time, the more demanding is the problem of adaptation to new circumstances". In Sumvitg the impact of external factors was lower and spread over a longer time period, the farmers were used to minor disturbances and to agree on collective action in order to adapt to those changes, and the internal setting helped to enable collective action leading to sustainable outcomes supporting the assumption of Fleischmann et al. (2010, p. 10) that minor disturbances enable learning processes which support the long-term robustness of an institution.

Variables identified as important in this study such as history of interaction, leadership, ideology and knowledge have also been integrated in the SES framework (Ostrom 2009). However, we suggest to put more emphasize on the negotiation processes and the distribution

of bargaining power in relation to those variables and support herewith earlier efforts made by Agrawal (2003) and Nightingale (2011) to highlight the importance of power and social relations in explaining success or failure of common property arrangements. Further research on the role of bargaining power and ideology in other communes with communal alps is needed in order to increase the significance of the results presented. Furthermore, it would be interesting to analyze the interrelation between social and ecological performance for example by systematically including traditional ecological knowledge; an aspect that could not be addressed in the context of this paper.

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Acknowledgment

This research project has been made possible thanks to the following financial contributors:

- The Swiss National Centre of Competence in Research (NCCR) North–South, Research Partnerships for Mitigating Syndromes of Global Change, co-funded by the Swiss National Science Foundation (SNF) and the Swiss Agency for Development and Cooperation (SDC)
- The Department of Agriculture of the canton Graubünden