Transformation in the Javakheti Highlands Georgia – a community-based participatory approach towards sustainable pasture management in a remote mountain area

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In many regions of the world, societies are in a phase of rapid transition due to political and socio-economic changes, combined with changes in the natural environment, climate change and biodiversity loss. In the case study presented here, we address the Armenian population of the remote rural area of the Javakheti Highlands in the South Caucasus of Georgia, situated next to the Turkish frontier. Actors in this region have to deal with cumulative uncertainties related to the complex processes of post-Soviet transition and its social, cultural and economic consequences. Any transformative intention that effects local population has to be embedded into everyday life context. Entering in such an unclear situation as western researchers with the mission to generate possible answers to a vital economic and socio-cultural question, asks for comprehensive approaches following primarily the needs of the local people, integrating different perspectives of scientists, stakeholders and concerned population.

Mutual understanding, the identification with the defined mission and cooperative knowledge production are preconditions for robust answers to these challenges. Consequently, a stakeholder analysis is performed. Using the methodological approach of community-based participatory research, we answered the need, that the defined mission of this project is only achievable on the base of building trust and shared knowledge between the involved actors. This study describes the process of approximation to the research field as a first step to the development of sustainable solutions.

Keywords: activating methods; co-operative knowledge production; community development; community economy; post-soviet transition; transformative research.

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In many regions of the world, societies are in a phase of rapid transition (Sauer et al. 2016) due to political and socio-economic changes, combined with modifications in the natural environment due to climate change, soil erosion, desertification, soil salinization, and biodiversity loss. The term transition focuses on technological, social and economic change that imposes significant alterations in structures, institutions and social relations and as a result, society, or a subsystem thereof, starts operating according to new assumptions, rules and practices. "The concept of eco-social transition refers to the efforts of policy-makers, activists and researchers towards creating sustainable changes both practically and conceptually." (Matthies & Närhi 2017, p.17). It combines ecological, social and economic dimensions of sustainable development and their interlink ages.

For the far-reaching changes, in our case especially the post-socialist transition, we choose the term "transformation", as" a process of reworking in which the legacies of the past are the resources for the struggle over the construction of whatever is new." (Rotmans et al. 2002, p. 3).In his publication *The Great Transformation*, Karl Polanyi hints at "those critical phases of history, when a civilization has broken down or is passing through a transformation" (Polanyi 1944, p. 155). The term *transformation* has also been adopted by the German Advisory Council on Global Change (WBGU 2011)in its flagship report defining the necessity of remodeling of economy and society towards sustainability. Thus, transformation is a forming over, a restructuring that requires a shift in collective consciousness of a society, so that reality can be redefined. Seeing this, our understanding of transformation refers to societal change, both as a process and a result.

Science indeed, can react to the complex dynamics of transformation and their related environmental and societal problems and challenges with multi- or interdisciplinary approaches (Tress et al. 2005). In many cases, however, scientific results do not reach any practical application due to limitations in research dissemination in the respective scientific communities or to a lack of communication between scientists, stakeholders, decision makers, and practitioners, respectively (Scholz 2011, Rotmans et al. 2007,p. 5).

The contextualization of our case study in the frame of transition dynamics leads to the consequence, that sustainable answers to the complex questions ask for approaches "beyond

scientific mainstream" (Kirby et al. 2010), which integrate science and practice and aim at a mutual understanding. The theoretical framing and the methodological steps intend to undertake research oriented towards social changes. This claim is supported also by the space dimension of our project, which is connected with traditional and future land use in the respective area. Consequently, we choose the methodology of community-based participatory research, an approach developed for transformational change (Senge & Scharmer 2001).

The most prominent definition of sustainable development is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs", embraced by the World Commission on Environment and Development (1987). The Earth Council suggests that sustainable development "should be economically viable, socially just, and environmentally appropriate" (Payne & Raiborn, 2001, pp. 157-168). We propose a more comprehensive definition of sustainability as a participatory process, in which a community uses its resources in a preservative way, so that present generations can attain social and economic security and realize democracy, while maintaining the integrity of the ecological systems upon which life and production depend for future generations (Biesecker& Kesting 2003).Defining sustainability as a process implies the idea, that it has not only to be understood as an objective, but to be integrated consciously in everyday activities. This consideration leads to the insight that sustainability as a participatory process has to be an interactive learning arrangement of action and reflection. The focus on a concrete space like the local level enables these integrative and reflexive processes and it facilitates the involvement of different objectives, levels, actors and perspectives. In addition, consequences of action on local level can get measurable. Community-based participatory research outlines processes to facilitate "ordinary" people's reflection on their acting realities. Co-creative research is a prevalent strategy for capacity building through the reflexivity and the skills that involved actors learn (Rubin & Rubin 2007).

Community-based participatory research (CBPR) aims for these learning processes and contributes something of value to the community. Our case study can only be identified as a necessary participatory pre-step to an egalitarian research contribution of community members and researchers and to possible actions as consequence of the process. Nevertheless, within our case study we have been able to achieve first steps by creating a significant knowledge base,

identifying relevant local actor sand stakeholders, respectively, understanding structural conflicts and activating local inhabitants to participate in different settings of knowledge-creation.

The study site and its population

In this case study, we address them ountain society of the Javakheti Highlands in the South Caucasus, an area in post-Soviet transformation. The political transformation in the former Soviet republics of Central Asia was accompanied by a fundamental socio-economic reorganization of the now independent countries. The era of socialism involved political, social and economic modes of regulation and top-down decision making (Pavlinek and Pickles 2000). The economic liberalization implicated the move from state ownership to privatization and new property rights. In the same phase, globalization dynamics intensified and linked post-socialist states with the capitalist world economy and geopolitical relations and interests. Stiglitz (2002) emphasized, that transition occurred too quickly and that the reforms could end up in economic failures compounded by political corruption. The uncertainty of the local population as well as the lack of clarity related to property and using rights that we observed in our study area, could be explainable by the complexity and speed of the transition processes.

After the breakdown of the Soviet Union in 1991, agricultural land reforms implied the subdivision of large-scale state and collective farms into a high number of smaller private farms (Veldwisch & Spoor 2008 for Uzbekistan). Within this process, ecological and economic objectives often stood in contradiction to each other (Salzer et al. 2016). As the access to land,the use of natural resources, as well as strategies for securing livelihoods, have strongly changed, new challenges for local ecosystems and biodiversity have emerged and demand attention. Grabherr et al. (2011) consider land-use changes as the main drivers of global change in the mountain areas of former collectivized systems. It is proven that post-Soviet privatization processes have led to unregulated and intensified grazing in grasslands (Redecker 2002, Erschbamer & Mallaun 2010). This has resulted in biodiversity loss and habitat degradation (Myers et al. 2000, Williams et al. 2006, Conservation International 2007).

The alpine grasslands of the Caucasus have been used by humans for millennia (Nakhutsrishvili 2003, Nakhutsrishvili et al. 2009). Consequently, human impact has modified

natural systems to semi-natural and agricultural landscapes. Due to the post-Soviet transformation over the past decades, the sensible equilibrium of semi-natural mountain grasslands is increasingly endangered (Williams et al. 2006). According to Fry (2001) and Wilson (2007), agricultural landscapes are multifunctional landscapes that coin a specific space, connected with different functions and interests of diverse users. This, in particular, challenges landscape researchers, who are focused on the conservation and management of multifunctional landscapes, to adopt a broader perspective (Tress et al. 2001, Fischer et al. 2007, Musacchio 2009, O'Farrell & Anderson 2010, Naveh 2001).

Recommendations on sustainable pasture management are only feasible through the integration of local knowledge, as well as considering local needs, identities, and traditions. A community-based approach can effectively integrate non-academic knowledge in a participatory way. In the course of this study, an active dialogue with local stakeholders was initiated the latter mainly through working meetings and interviews with decision makers and different interest groups. The study area, the Javakehti Highland is located in the Republic of Georgia within the border triangle of neighboring Armenia and Turkey. The area belongs to the Minor Caucasus that rather forms the northern edge of the Iranian-Anatolian mountain range. The average elevation of the Javakheti Highland is about 1800 m a.s.l. whereas the surrounding mountain systems of the Niala (S) and Javakheti Range (E) and the Trialeti Range (NW) reach more than 3000 m. The highest peak Didi Abul (3,304m a.s.l.) is located on the central Samsari Range. The Mtkwari (Kura) Canyon delimits the highland to the West. As the Trialeti Range (NW) blocks humid air from western Georgia, the climate shows continental peculiarities. Within Georgia, the area is called little Siberia. In particular, this local perception addresses climate conditions being more severe than in most of the other regions of Georgia. The average temperature in July varies from +12° to +16°C, and in January from -8° to -10°C (Tarkhnishvili et al., 2001).

According to Myers et al. (2000), the Caucasus is considered as one of the 25 worldwide biodiversity hotspots. Biogeographically, it is situated in a transition zone, merging species from Central and Northern Europe, Central Asia, Middle East, and Northern Africa (Williams et al. 2006) with about 6,350 vascular plant species (Nakhutsrishvili 2004, Schmidt 2007). At least, one quarter of the species is endemic, which means that this is one of the highest levels of

endemism in the temperate zone of the northern hemisphere (Williams et al. 2006).The uniqueness of the ecosystem with more than 6,000 vascular plant species and a high rate of endemism (Myers et al. 2004), is threatened by a variety of anthropogenic impacts (Williams et al. 2006). This tendency is strongly connected to political and social changes beginning within the 1990ties that has been particularly resulting in a critical economic situation of the rural population (Hostert et al. 2011, Tephnadze et al. 2014).

Two hundred years ago Javakheti was settled by ethnic Armenians in the course of the Russian-Turkish wars (Guretski 1998, Wheatley 2004, Øverland 2009).Nowadays, with regard to the Georgian territory, the ethnic minority of Armenians represents 95% of the sedentary population of the Javakheti region (Tarkhnishvili et al. 2001).During the 1990s, Armenians in Javakheti oriented themselves more and more towards their motherland Armenia started to mobilize in favor of autonomy from Georgia or even uniting with Armenia. The general situation began to stabilize from 1995 onwards after the civil war in Georgia (Hin 2003, 63). From 1910-2007, the Russian Army maintained with a base presence in the Javakheti region, which retained the status of a border zone between the Soviet Union, Armenia and Turkey, a NATO country (Wheatley 2004, Lohm 2007, Øverland 2009). This separated Javakheti within Georgia, not only in terms of infrastructure, but also politically, socio-culturally, and economically.

Since the breakdown of the Soviet Union and the closure of the military base, almost the complete industrial sector, and the local Kolkhoz agriculture, disappeared in Georgia (O'Loughlin 2007). "Besides the general problems presented by the economic depression and the bad conditions for production that all peripheral rural areas in Georgia have to deal with such as long distances to market and the lack of transport, good roads and other means of communication, the situation in Javakheti is complicated by its harsh climate and the postponement of privatization. The central government has long put off privatization of boarder lands, fearing they would fall in the hands of "foreigners" (members of ethnic minorities) (Hin 2003, 63-64) like Armenians. Javakheti situated on a plateau of about 2,000 meters above sea level with long and severe winters, the remote villages are cut off from outside. The severe climate conditions as well as a lack of modern infrastructure only allow small-scale agriculture for about 80 % of the rural population (Tarkhnishvili et al. 2001). The economic activity of the

villagers is limited to subsistence farming. Most people live on the base of the products of their gardens and their livestock.

The main ecosystems and land-use typesare, respectively, grass-dominated mountain steppes in altitudes between 1,700-2,200 m a.s.l. and meadows in the subalpine belt up to 2,500 m a.s.l. The subsequent alpine belt is predominantly composed of firm bunchgrasses (Bohn et al. 2003, Gebhardt 2015). Apart from some pine plantations dating back to Soviet times, forests are largely absent.The raising of livestock plays an important role for subsistence livelihood in these areas, where agro-technological means are only rarely available (Gebhardt 2015). However, animal production is limited by natural productivity and the carrying capacity of the ecosystem (Didebulidze & Plachter 2002). The Javakheti highlands are one of the major Georgian summer pasture regions being periodically used for centuries by transhumant shepherds from east Georgian semi-arid lowlands. Mobile groups of ethnic Georgian and Azeri from the semi-arid lowlands traditionally use the alpine grasslands of the highland for summer pasturing. In high altitudes of the Caucasus mountain complexes, overgrazing is considered as driving force for the loss of biodiversity and habitat destruction. This holds true for almost 80% of the grasslands in the subalpine belt (Williams et al. 2006).

An internationally co-financed protected areas system aimes to preserve the unique and globally important ecosystem of the Caucasus. The Javakheti highlands became a National Park in 2011 (WWF 2011, APA 2014), characterized by open landscapes with steppes, meadows and several lakes, among which Lake Paravani is the biggest one.

Nevertheless, a sustainable pasture management that strives for social compatible nature conservation has not been sufficiently implemented yet and limiting rules have to be accepted by local land users. We agree with Kelley (1983) that "answers to overgrazing are far from simple and range conservationists will need to approach the problem differently in different regions and different societies. Some of the more obvious solutions are usually unacceptable to local people."p.43)

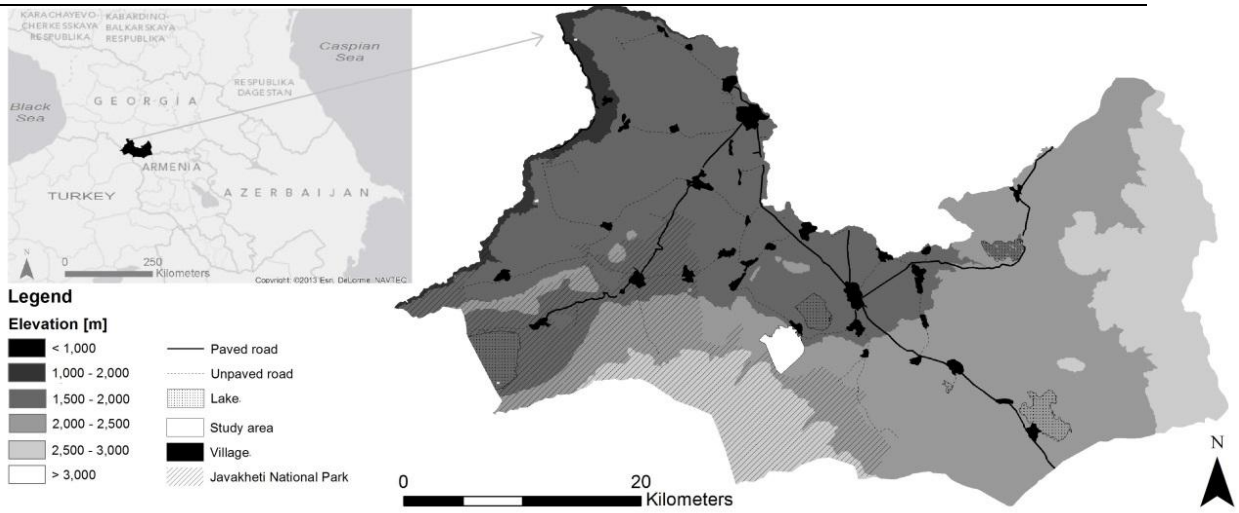

Fig. 1: Location of the study area Javakheti Highlands in Georgia and the village Patara Khanchali, with information of altitudinal belts, roads, lakes, and the national park area (figure from Gebhardt 2015).

With its 130 households and officially registered 650 inhabitants, our study village Patara Khanchaliat the southern shore of Khanchali Lakeis still dominated by three main Armenian lineages (Tarkhnishvili et al. 2001). Most of the extended families live in multi-generational households of at least three generations. “Most buses from the region go to Armenia, most children go to Armenia for their studies, the closest and most frequently used hospital and airport are in Armenia, and many Armenians even call Yerevan their capital” (Hin 2003, p. 64).

For the greater part of the households, at least one (male) family member is periodically abroad for temporary labor migration to Russia or Armenia. Social networks, for the most part, are face-to-face and multiplex promoting social compliance as a result of high social cohesion that seems to be a result of identity constructions based on a minority status within Georgia and the specific history of the region.

Converging unknown living environments

Besides the challenging socio-cultural preconditions of this project, the language barriers and the premise of community-based participatory research, involving decision makers, local

stakeholders and inhabitants in the process of co-production of knowledge have been conducive for the work of the scientists in this project. The selection and development of locally adapted research strategies and tools followed the aim, to facilitate processes of co-construction of knowledge with local people by means of different mapping techniques, focus-groups, interviews, informal communication spaces and the involvement of local co-researchers and it was based on classical methods of fieldwork, such as participant observation and semi-structured interviews.

The focal point of the study has been the relationship of local inhabitants, especially of actors in the pasture economy, to land use and the preservation of the ecological capacity. The approximation to the research questions was organized in accordance with the phases and principles of community-based participatory research and to transformative approaches, trying to generate problem, future, and transformation knowledge together with concerned actors (Schneidewind& Singer-Brodowski 2013).

First phase

The strong endeavor towards closing the gap between researchers and local population was decisive for the first phase of the project, and confidence-building activities of the researchers were multifaceted. For this phase, particularly ethnological methods were applied. These methods of field research enable the access to cultural practices, norms, values and orientations, which are not available through other research methods. A long-term witness in the field is a central facet of ethnological research. Different ethnological approaches like participatory observation, informal types of communication, field visits in the pasture camps or informal interviews served to generate an understanding of the everyday life concerns of the local people by the involved field researchers. Those rented an abandoned house in the small village Patara Khanchali and lived there for about three months in each of the three research phases (Gebhardt 2015, Salzer 2016). The common residence of the two researchers facilitated a permanent interdisciplinary exchange, mutual learning, as well as a rapprochement to the field and its people.

Already the first stage of knowledge production, the creation of an actual general information base related to fundamental socio-demographic and socio-economic data or reliable

information, for example, about property or land-use rights, turned out to be extremely complicated. Some data based on a survey conducted by the Georgian Government in 2004 exist, but they are not updated and locally specified. Newer local data, published by the municipality in 2012 imply only general data related to the population without distinguishing age, gender, or socio-economic indicators (Salzer 2016).

After different efforts to obtain data related to animal husbandry or the allotment of land, we had to recognize, that there are several reasons why this information is not available. A representative of the local administration confirmed, that among other reasons for the lack of available data are fears related to foreign interests buying land in the area. Within the stakeholder analysis, conducted in the second phase, some basic local data and information about grazing and ownership however, could be collected.

An unexpected opportunity arose to involve women in the research process and to create a trust relationship between the female social scientist and the village women. This was important because public life, as well as pasture work, are dominated by male. Informal meetings of the women ("kitchen talks") became an important source of information exchange in relation to issues or occurrences of the village (Salzer 2016).It allowed us to get an initial idea about living and working in a community so strongly defined by pasture economy and about the community's needs.

The social scientist underwent an experiment to participate in the everyday work context of the village women, including milking, preparing cow-dung as heating material, housework, garden- and fieldwork, mowing, claw-trimming, sheep shearing, wool treating and cattle crossing to understand local life in a deeper way (Salzer 2016). This immersion was important to demonstrate interest in the concerns of local people, and it opened the door for the second phase of this study. It is a question of ethics in field research with people of a different culture to try to understand in a deep way their efforts and strategies to cope with the normal course of life (Bourdieu 1997).

Second phase

The second phase pursued the objective of collecting basic information on site and developing an overview over relevant actors, interests, claims, potential, and restrictions in

relation to pastureland use, and thus creating future knowledge with the local population. The execution of the research settings in this phase was consequently participative, not only because the overall objective of the project requires the involvement of local people, but also because of language restrictions. Local co-researchers were qualified in order to conduct 130 guideline-based interviews to collect basic socio-demographic and socio-economic data and information related to attitudes of the inhabitants regarding sustainability and future perspectives (Salzer 2016).

A clearer overview of the demographic situation of the village, some aspects of the income and employment situation, concerns and future perspectives of some of the inhabitants and a clearer assessment in relation to pasture land use and involved actors emerged from this phase of the research project. These results, along with the secondary effect – the involvement of local people into the research process – became the basis for a stakeholder analysis (Görgen & Klein 2009, Aaltonen 2011)and subsequently for the integrative method of a situation analysis.

Third phase

During the third phase, different forms of knowledge production where elaborated by using participatory methods of community-based research (Elsen & Schicklinski 2016) with the local population and decision makers. With an activating inquiry, an integrative discussion, some in-depth interviews and the cognitive mapping method, we tried to reveal knowledge about the concept of sustainability in the Javakheti highlands. A cognitive map can be described as a qualitative model of how a given system operates. The map was based on different variables (for example, number of animals on the pasture, income of livestock, agricultural crops) and the causal relationships between these variables (Özesmi & Özesmi 2004).

In addition to this mapping process, we followed Latour (2009) by designing a planning tool for visual communication in order to co-create visions of desired local futures, with particular regard to pasture use. The stakeholders were invited to contribute to a joint discourse on the local context of single dimensions of sustainability, and in further steps to denominate connections between the dimensions and possible effects and problems of changes within this

system. By this, it was likely to generate an identification of some real-life problems of the local population.

The mapping tool allows for communication and discussion of perceptions of local people and of our research results. It also functions as a planning tool for the development of common strategies for sustainable local futures (Salzer et al. 2016).

The outcomes indicate that with this base, we are still at a starting point of this research and development project. On the way there however, co-learning and empowerment processes, local capacity- and systems-building, a movement to action which is related to the research aims and an acknowledgment of the socio-cultural side of the community could be initiated which can be the ground for self-directed further activities of the local population but also for a second part of this project.

Results and discussion

Actors and interests

The stakeholder analysis aimed to identify and classify different actors of pasture land use and thus their interests and activities. A key question was related to the ownership structures of pasture land and cattle. The analysis differentiated internal and external stakeholders. Within the first category, four interest groups could be identified, i.e.

(1)the individual farmers,

(2) the members of the community-based farmer organization,

(3)the transhumant herdsmen with own herds, and

(4) salaried herdsmen working for a dairy enterprise.

The second category involves on the regional and national level the local soil committee, the local pasture committee, the elected head of the village, the regional administration of the national park and the agency of protected areas. As influential international stakeholders, the WWF (World Wilde Life Fund) as consultant for the planning and implementation of the National Park and the German *Kreditanstalt für Wiederaufbau* as responsible for financing and monitoring of the implementation of the National Park were identified.

The internal and external stakeholders revealed in our analysis, which have direct or indirect influence on the range management and agricultural land use, respectively, are given in Table 1 by differentiating in their organizational form, pasture management, access to pastures, environmental impact and power with regard to decision processes and sustainable land-use development. It is important to point out here that there are other stakeholders, which also might have at least an indirect influence on land use. These are, for example, the regional dairies, schools, NGOs (e.g. Elkana, Merci Corps), and researchers and research institutions.

Tab. 1: Internal and external stakeholders in our study area, differentiated by their organizational form, land use, access to pastures, objectives, environmental impact, and power with regard to decision processes and sustainable land-use development (modified after Salzer 2016).

Stakeholder	Organizational form	Land use	Access to resource	Objectives	Environmental impact	Power
Internal stakeholders on the local level						
Individual farmers	Individual family-based form of dairy farming	Village pastures (community property), potato fields (rented), hay meadows (private)	Private use of the village common	Individual land use for milk production	Individually decided grazing system in consultation with other land users	Relatively weak, but high acceptance among the local population
Farmers' community of the village	Community-based animal husbandry with organized rotating systems of herding (frequency depending on number of cattle), jointly hired	Village pastures (community property), potato fields (rented) hay meadows (private)	Collective use of the village common	High (milk) yield through optimal utilization of energy-rich pastures	Grazing system differs from day to day depending on the respective herdsmen, strongly dependent on individual knowledge and efforts	Influence differs depending on socio-economic and political position of the family within the village
"Alp" private dairy firm	Outsourced dairy farming (Didi Khanchali)	Village pastures (community property)	Delegated use of the village common	Increase of milk yield through short distances for suckling cows	BS is independently decided by herdsmen, but under pressure of the clients to keep milk yield up	relatively weak,particular social status
Transhumant farmers (Azeri	Flock owner or hired	Pastures for sheep with	Delegated use of the	Mainly meat production	Grazing is decided	Influence differs depending on socio-

and Georgian)	shepherds, family-based, partly own sheep	different ownership status	pastures	(sheep)	independently by shepherds or by flock owner	economic and political position of the family
External						
Regional and national level						
Local soil committee	State authority	Responsible for all kinds of agriculturalland	Regulates land ownership and land subdivision (partly represented in pasture committee)	-	-	High political influence with regard to border demarcation of land (during privatization process)
Local pasture committee	Elected committee with representatives of the government, national park, etc.	Responsible for pasture-land allocation in the summer	Decides and carries out distribution and contracting of pasture-land (lease period, stock density etc.)	-	High impact, as e.g. livestock density is specified by committee	Political power and influence on land use depending on auditing team and qualification
Village *Sakrebulo* (head of village)	Elected representative of the local government legislative Ninotsminda	-	Carries out allocation of pasture land (on site); partly carries out instructions of pasture committee	-	-	Relatively weak, as sub-ordinated to Sakrebulo of Ninotsminda
National Park administration and Agency of Protected Areas (APA)	Implementation and management of protected areas	Territory (mountain meadows) of National Park	Decides on allocation and land-use of mountain-meadows belonging to the national park	National Park, Agency of protected Areas	High impact, as e.g. livestock density is specified	National Park administration is sub-ordinated to APA under the Ministry of Environmental Protection and Natural Resources
International level[1]						
WWF	Consultant for (participatory) planning and implementation of National park in accordance with APA	Pasture land usein the National Park will be regulated	-	Transboundary biodiversity conservation with emphasize on grassland ecosystem such as, e.g. as cultural landscape and migratory birds	Advise APA on allocation of land use of mountain meadows within the National park and its support zone	Sub-ordinated to APA, but scientifically high influence on implementation processes within the National Park
Kreditanstalt für Wiederaufbau (KfW)	Financing and monitoring National Park	Planning National Park in pasture land	-	Financing of functioning conservation		High influence on implementation processes within the

	program	use area		areas (conservation without negative impact on local population)		National Park

[1] other international stakeholders, which have or might have an influence on local processes are REC Caucasus (Harutyunyan 2014), UNDP (2005), and USAID (2012).

The pastures of the village Patara Khanchali are managed in common up to an altitude of 2000 m a.s.l. On average, each of the 130 families has about 5 cattle. Between May and October 2012, 5 cattle and 2 sheep flocks were collectively driven to the mountainous pastures. Thereby, a distinction between two different pastoral systems can be made, i.e.type 1, where herders change daily and the owners themselves accompany the herd according to the amount of livestock one owns; usually, the herd is driven by two herders and type 2, the system of professional herders who are paid for their service by the livestock owner.

The stakeholder analysis revealed a complex network of actors, who influence directly (e.g. permanent and transhumant farmers) and indirectly (e.g. National Park authority) the use of the mountain pastures. This is very similar to other mountain regions and, in particular, to nature protection areas (De Lopez 2001, Rastogia et al. 2010). One of the crucial outcomes of this research process was a first step towards prioritizing key issues and tasks on the stakeholder level, resulting in a clearer picture of what needs have to be addressed and what is required for the implementation of a sustainable range management or a land-use development in general.

Wishes and prospect of young people: the mapping process

The mapping tool has been first applied within workshops with different stakeholders. In a second step, it has been conducted with mostly young people (18-32 years) of the village to find out their perceptions with regard to sustainability and future perspectives.

The following issues could be elaborated within the mapping processes:

- From the perspective of the stakeholders, the local economy is almost exclusively determined by animal husbandry and potato farming being the only sources of income.

- Young people especially expressed the need for alternative income opportunities, which, for some of them, would prevent the tendency to migration.

- Future visions for the socio-cultural aspects formulated by local community members are closely linked to the re-activation of cultural events such as cinema and concerts, but also internet-related education and leisure activities.

- The natural environment and biodiversity were explicitly mentioned as a resource, but also as a risk. With regard to the importance of ecology, the inhabitants seem to be mainly aware of the risk of the local lake to dry out, whereas land-use related issues (e.g. erosion of grazing land) were not perceived as a problem.

- It should be pointed out that the greatest variety of answers appeared in relation to the perception of ecology. For some of the stakeholders, ‘‘ecology’’ and ‘‘nature’’ are seen as important resources providing fertile soil and plants with a high fodder value. Others argued that nature and the environment are in a bad state. Particularly, the destruction of nature due to uncontrolled garbage disposal (due to the absence of state-regulated waste disposal)were mentioned. Special attention was not only paid to the weak condition of the local lake but also to the necessity of planting trees as a vision for a local sustainable future.

It is possible that one reason for these communicated focal points are the result of the awareness-raising campaigns by an international NGO concerning the National Park.

Situation analysis and conclusion

The highly complex research situation of this project and the need to integrate the different types of knowledge called for the application of the integrative approach of a situation analysis developed by Clarke (2012). This comprehensive approach allows the combination of knowledge related to the historical and actual situation, basic social data, ethnographical features, and the extensive discursive data material.

The overall view revealed the diversity of factors, which influence pasture management and sustainability in the respective region in general. The situation in this remote region, populated by Armenian people at the Georgian frontier with Turkey, is largely defined by different and long-lasting uncertainties and conflicts, a lack of alternative income source, a

crucial lack of infrastructure and information, for example, in relation to the National Park, and alack of future perspectives.

Additionally, the post-Soviet transition involves some ambiguous circumstances, such as unexplained property rights or political decision making. The general post-socialist transition process (Pavlinek & Pickles 2000) with its deep political, social, cultural, and economic impact and adjunctive uncertainties, is only one aspect that has to be taken into account. Most of the local actors' statements have to be assessed in relation to this special background.

Thus, drawing on an integrated view, the knowledge generated within our research project in relation to sustainable land use and future perspectives presents a complex and contradictory picture of the actual life situation and the future perspectives. Accumulated private and public needs like employment, mobility, water supply, information, childcare institutions, etc. are obvious (Salzer 2016) and the priorities of local people, are not those of sustainable pasture land use. Even if it is obvious that, in this remote area, solutions from outside are unlikely, local people nevertheless still address the state as responsible for the supply of public needs. The lack of information or false information(like the idea of the National Park as a "zoo", as stated in an interview),as well as imaginations of the future drawn by media, intervene into the perspectives of local people.

The importance they give to the secure pillars of income sources and aspects of their lives – such as intact families, lived traditions, pasture economy, common ownership of pasture land, potato cultivation, etc.– involve many aspects of a sustainable lifestyle, even if this can be presumed due to a lack of alternatives. This lifestyle is in a strong way localized, even if almost every family has members earning money outside the region. The value, however, that many people attach to the beauty of their natural environment (Salzer 2016: 93-94), seems to be the strongest basis for a sustainable future orientation under the condition, that people are informed about the consequences of decisions and actions.

The mapping process with mostly young people of the village revealed some key aspect swith regard to sustainability, such as communication and preconditions in infrastructure. The mapping with stakeholders showed a correspondence of results in terms of content and assumptions concerning the individual dimensions of sustainability. From the perspective of the

stakeholders, local economy is determined by animal husbandry and potato farming, as the only local sources of income, which corresponds with findings of Welton et al. (2013) for the whole of mountainous Georgia. In contrast, especially young people recognized the need for alternative income opportunities, which would prevent the tendency for some of them to migrate.

One of the results of the participatory mapping process was the articulation of the need to create a multifunctional community center as an internal communication point and as an information center for subsequent touristic activities and a basic touristic infrastructure such as B&B supplies, natural park rangers, and local trekking guides.

However, there are many more economic opportunities for a remote mountain area and, in particular, a National Park, such as eco-tourism (Chaminuka et al. 2012), organic farming, regional food production (Grandi & Triantafyllidis 2012), and sustainable forestry.

Within the mapping process was targeted on a "common" perspective of sustainability. Hence, the concept was heuristically divided into its main dimensions, i.e. social, economic, and ecological (Ott 2003). With regard to the ecological dimension of sustainability, we can state that the overall biodiversity of the pastures lies currently not within the general trend of biodiversity decrease observed in many other mountain areas of Europe. Our findings on plant species richness correspond with findings by Grabherr et al. (2011) that hay meadows are among the most diverse traditional land-use types in the European high mountains. Against the background of our finding that land use has more influence on the pastures' species diversity than the altitude, the responsibility of the land users for biodiversity management becomes pronounced. Accordingly, traditionally managed grasslands of the subalpine zone are sensitive to changes in land utilization that consequently impact plant diversity and vegetation structure (Wellstein et al. 2007, Rudmann-Maurer et al. 2008).

We could find out that the common village pastures are managed by two different pastoral systems, i.e.

(1) by the herders, paid by the owners of the animals, with descent knowledge of herding and pasture quality, driving the herds every single day and

(2) by the owners themselves accompanying the herd according to the amount of possessed livestock, hence herders change daily. Compared with design-principles for commons, developed by Ostrom (1990), it becomes clear that most of these principles are followed by the latter group, and thus it can be seen as a semi-formalized "institution" of commons management. However, due to the changes of shepherds on a daily basis, the driving of the herds is arbitrary, potentially resulting in grazing practices at the expense of pasture quality, thus compromising its biological diversity.

Final remarks

Local communities and their agriculture in this region are adapted to a non-forest landscape and people mostly use cow dung to heat their houses. As forests are mainly absent, the use of timber and other forest products is hardly part of the land use or of the culture of the local populations anymore. We hypothesize, that the restoration of forests on a large scale would provide the local population with ecosystem services such as timber production for buildings, as fuel wood, and wood products, production of other forest products, such as, edible plants and mushrooms as well as plants for medical use, protection against soil erosion and the regulation of the landscape water balance, and recreation and environmental education. Additionally, forests contribute to the landscape, ecosystem and species diversity.

This remote region could have a perspective as an area, which leaped industrial modernity and now consciously and cautiously builds up a sustainable rural area.

Compounding factors however, related to the development of this region are connected to language, education, infrastructure, information and topographical access. The principal language spoken in the Javakheti villages is Armenian, with most of the actors speaking Russian as a second language instead of Georgian (Øverland 2009). This fosters the marginal situation. In particular, due to difficulties with regard to the Georgian language, education and information are mainly focused on and derived from Armenian or Russia speaking media sources, books and institutions, which lead to a marginalization in terms of higher education but also employment opportunities. In addition, many analysts of the region (Chakhaia et al. 2014, George 2008, Wheatley 2004, 2009) note a lack of information and knowledge about political and legal rights and duties, as well as the dominant socio-cultural context of Georgia.

The historical identity as Armenian minority in Georgia and the relationship to the neighbor and "motherland" Armenia could be a good starting-point for education and formation initiatives with relation to local resilience and sustainable development. Each initiative however can only be fruitful if local people themselves are enabled and entitled to take the responsibility. For such a purpose, the collaboration with the University of Yerivan should be initiated. The investment in education, infrastructure and information systems seems to be the key to the future of Javakheti.

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