



Pasture management workshop in Tusheti with local stakeholders (Hanns Kirchmeir)

## Integrated Pasture Management Planning in Mountainous Regions (Georgia)

### DESCRIPTION

The unsustainable use of pastures and forest areas has led to soil erosion, degradation, desertification and loss of biodiversity in the high mountain areas of the South Caucasus. The development of pasture passports is part of a broader approach to a strategic pasture management plan for Tusheti. This showcase includes results from the spatial planning process applied in a pilot programme for Akhmeta municipality.

#### Project area and purpose

The project area comprises the Tusheti Protected Areas (PAs) on the northern slopes of the Greater Caucasus Mountains in Georgia. This group of protected areas consists of a strict nature reserve, a national park and a protected landscape with about 40 villages and settlements. Together they form a total protected area of approx. 114,000 ha. In Tusheti, overgrazing has led, especially in the eastern part with a higher number of villages and roads, to soil erosion and biodiversity loss. Especially the intensive use of summer pastures during the Soviet period resulted in a severe deterioration of the mountain slopes. So far, there are no standards or guidelines for the elaboration of sustainable pasture management plans in Georgia. Pasture passports, as a first step towards sustainable pasture management, document the actual grazing capacity for each pasture unit and serve as a guiding document for shepherds and local stakeholders and as a basis to prepare lease contracts.

#### Data gathering

As a prerequisite for the development of pasture passports and the calculation of grazing capacity, the type of land cover, the erosion risk and the biomass of the pastureland had to be assessed for each pasture unit. This was done using remote sensing tools in combination with data collected in the field for calibration.

The details on the methodology of the Land Cover & Biomass as well as the Erosion Risk Assessment can be found in the WOCAT technology on "Remote Sensing as a Tool for Land Degradation Neutrality Monitoring" (see link).

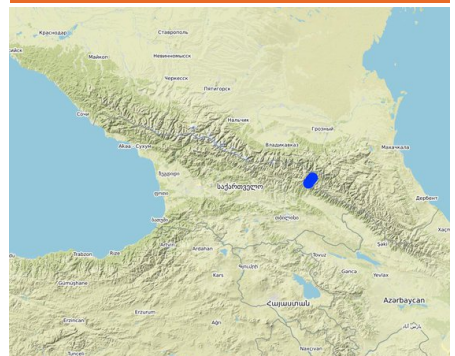
#### Evaluation and Ground Truthing

All interim results have been checked and evaluated by local stakeholders, national experts and experts from local administrations. It was important not only to conduct workshops in seminar rooms but to meet the local stakeholders in the field and to discuss the problems and challenges of pasture management on place in the field. At this workshops all levels of decision makers were included (Ministries, Donor organisations, international and national experts, local administrations and land users). This was important to create a common understanding of the current situation from different perspectives (nature conservation, administration, shepherds ...). The combination of remote sensing with calibration data from the field can be summarised as a very effective method to assess the erosion state in large areas. Neither of the two instruments would be able to provide results in this spatial dimension and quality alone.

#### Pasture Passports

As part of the spatial planning of Akhmeta municipality, pastureland that can be leased to shepherds was separated from land used as hay meadows, farmland or pastures belonging to the villagers. The resulting map shows land available to the village and land available for lease. To understand the current use of pastureland, farms, livestock numbers and pasture units were assessed. In workshops with the local stakeholders and potential users of the results (shepherds, Tusheti Protected Landscape Administration,

### LOCATION



**Location:** Entire territory of Tusheti Protected Areas (1100 km<sup>2</sup>), Tusheti, Georgia

#### Geo-reference of selected sites

- 45.44145, 42.42855
- 45.34308, 42.33225
- 45.39539, 42.38602

**Initiation date:** 2016

**Year of termination:** n.a.

#### Type of Approach

- traditional/ indigenous
- recent local initiative/ innovative
- project/ programme based

Tusheti NP Administration, APA), the design of the pasture passports was developed. Each pasture unit is described on four pages in the pasture passport.

Each pasture unit is described on four pages in the pasture passport: Header: the number (code), total area; content: map of the land cover types, the area of each land cover type, map of available biomass and carrying capacity, name of farmers/shepherds and their livestock numbers using the pasture unit

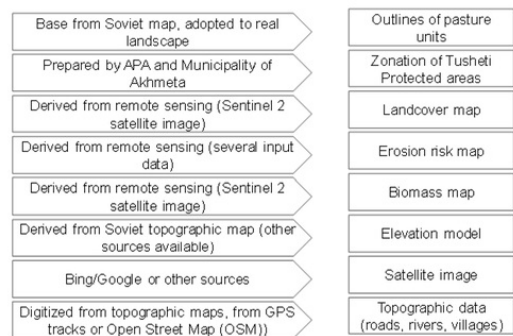
Spatial Planning Department and Construction Policy (within the Ministry of Regional Development and Infrastructure MRDI), and the Agency of Protected Areas APA (within the Ministry of Environmental Protection and Agriculture MEPA), are key stakeholders to use the pasture passports and to further develop and upscale this approach to other protected areas in Georgia. Beside APA, the Tusheti Protected Landscape Administration (TPLA), located within the Akhmeta municipality administration, is the second important user of pasture passports.

The pasture passports are showing not only the boundaries of each pasture unit, but also those areas that must not be grazed because this lands are part of strict protected areas or areas of high erosion risk. This helps shepherds to guide their flocks to the right places and the park rangers to check, if the regulations are respected correctly.



Implementing new electric fencing technology as hands-on-training together with local stakeholders, Tusheti Protected Areas (Hanns Kirchmeir)

### Input data and data sources



Overview on the data used for preparation of the passports (Hanns Kirchmeir)

## APPROACH AIMS AND ENABLING ENVIRONMENT

### Main aims / objectives of the approach

Support land use planning and decision-making processes for better management of natural resources, especially pastures.

### Conditions enabling the implementation of the Technology/ ies applied under the Approach

- **Social/ cultural/ religious norms and values:** There is a strong identification of the local communities with the traditional pasture land use and the communities are willing to establish a long-term sustainable land management.
- **Institutional setting:** Good cooperation between the relevant institutions on the national and municipal level enabled a successful implementation. The Agency of Protected Areas (APA) located at the Ministry of Environmental Protection and Agriculture (MEPA) and the Tusheti Protected Landscape Administration (TPLA), located within the Akhmeta municipality administration are responsible for contracting lease agreements with shepherds and should not only be able to understand the technology behind the passports but should also have the capacity to handle the technology to be able to adapt the passports if needed (e.g., by changing boundaries of pasture units). For this issue, training workshops with decision-makers and technicians from the MoEPA, APA with TNP Administration and Administration of Akhmeta Municipality with TPLA have been implemented. Collaboration/ coordination of actors: All relevant national and local authorities that are dealing with spatial or environmental data participated in the workshop to discuss the approach and institutional suitability to host the sensitivity model/Soil Erosion Risk Model.
- **Collaboration/ coordination of actors:** All relevant national and local authorities that are dealing with spatial or environmental data participated in the workshop to discuss the approach and institutional suitability to host the Soil Erosion Risk Model.

### Conditions hindering the implementation of the Technology/ ies applied under the Approach

- **Availability/ access to financial resources and services:** Missing financial resources is hindering the implementation of the approach.
- **Knowledge about SLM, access to technical support:** There is a high need for technical infrastructure and strong human capacity development.

## PARTICIPATION AND ROLES OF STAKEHOLDERS INVOLVED

### Stakeholders involved in the Approach and their roles

What stakeholders / implementing bodies were involved in the Approach?	Specify stakeholders	Describe roles of stakeholders
local land users/ local communities	Shephards, local communities	Participation at the workshop/meeting and making contributions through comments, suggestions and sharing their analytical point of view.
SLM specialists/ agricultural advisers	GIS-LAB (Georgian scientific GIS service provider)	National experts on remote sensing and modelling of erosion risk.
researchers	National ecologists from universities	
NGO	Centre for Biodiversity Research & Conservation (NACRES); staff and experts from FATPA (Friends Association of Tusheti Protected Areas); local NGO's	Interviews with local stakeholders, field experts
local government	Municipality of Akhmeta and Tusheti Protected Landscape Management	Participation at the workshop where they have given input and made contributions to the topic of technical aspects of the approach.
national government (planners, decision-makers)	National Park management and APA (Agency for Protected Areas)	Long term application and upscaling on national level.
international organization	Deutsche Gesellschaft fuer Zusammenarbeit (GIZ)	Funding and supervision of the implementation process.

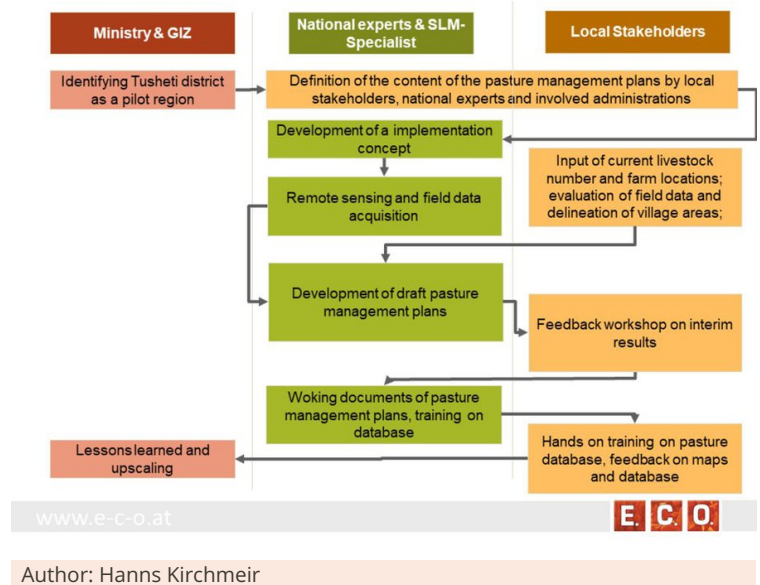
### Involvement of local land users/ local communities in the different phases of the Approach

	none	passive	external support	interactive	self-mobilization
initiation/ motivation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
planning	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
implementation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
monitoring/ evaluation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Organized meetings, workshop where stakeholders, local communities discussed different technical methodologies, visited the project communities and evaluated the preliminary result maps of erosion risk in the field.

### Flow chart

The process of generating pasture passports consists of several phases. The needs and expected content of the pasture management plans was defined in the early stage of the project by the local stakeholders, national experts and involved administrations. The preparation of the pasture management plans was an iterative process between the remotsensing and field sampling results and feedback and input from local stakeholders.



### Decision-making on the selection of SLM Technology

Decisions were taken by

- land users alone (self-initiative)
- mainly land users, supported by SLM specialists
- all relevant actors, as part of a participatory approach
- mainly SLM specialists, following consultation with land users
- SLM specialists alone
- politicians/ leaders

Decisions were made based on

- evaluation of well-documented SLM knowledge (evidence-based decision-making)
- research findings
- personal experience and opinions (undocumented)

### TECHNICAL SUPPORT, CAPACITY BUILDING, AND KNOWLEDGE MANAGEMENT

The following activities or services have been part of the approach

- Capacity building/ training
- Advisory service
- Institution strengthening (organizational development)
- Monitoring and evaluation

Research

Capacity building/ training

Training was provided to the following stakeholders

- land users
- field staff/ advisers

Form of training

- on-the-job
- farmer-to-farmer
- demonstration areas
- public meetings
- courses
- workshop with field mission

Subjects covered

Evaluation of model results, preliminary result maps of erosion risk in the field, technical implementation of the sensitivity model in Georgia.

Advisory service

Advisory service was provided

- on land users' fields
- at permanent centres

Located on district level in Telavi

Institution strengthening

Institutions have been strengthened / established

- no
- yes, a little
- yes, moderately
- yes, greatly

at the following level

- local
- regional
- national

Describe institution, roles and responsibilities, members, etc.

The results of the approach implementation in Georgia has been summarized by the Programme "Integrated Biodiversity Management, South Caucasus" and distributed to the experts in Azerbaijan for the further implementation. Approach and results have been handed over to the local municipality responsible for the lease contracts in the Protected Landscape and to APA, which is responsible for the land use in the national park to integrate them into their pasture management plans.

Type of support

- financial
- capacity building/ training
- equipment
- sharing the concept, approach

Further details

The concept and approach has been shared with local municipalities and other related experts. Pilot study financed by GIZ.

Monitoring and evaluation

Within the project a baseline was drawn with the current livestock numbers, the current available fodder biomass and the current state of erosion.

Research

Research treated the following topics

- sociology
- economics / marketing
- ecology
- technology

National and international ecologists did research on vegetation details and biomass as well as on the remote sensing technology.

FINANCING AND EXTERNAL MATERIAL SUPPORT

Annual budget in USD for the SLM component

- < 2,000
- 2,000-10,000
- 10,000-100,000
- 100,000-1,000,000
- > 1,000,000

Precise annual budget: n.a.

The funds came from the Integrated Erosion Control project which was launched as part of the Integrated Biodiversity Management, South Caucasus (IBiS) Programme of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

The following services or incentives have been provided to land users

- Financial/ material support provided to land users
- Subsidies for specific inputs
- Credit
- Other incentives or instruments

Other incentives or instruments

The Agency of Protected Areas (APA) thinks about upscaling the pasture passport method on a national level and establish the approach also in other protected areas of Georgia.

IMPACT ANALYSIS AND CONCLUDING STATEMENTS

Impacts of the Approach

Did the Approach empower local land users, improve stakeholder participation?

Through the field visits and workshops, it has involved both experts and authorities, where they have assessed, analysed and given input.

- No
- Yes, little
- Yes, moderately
- Yes, greatly

Did the Approach enable evidence-based decision-making?

By the assessment of biomass, the carrying capacity of each pasture unit was calculated.

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Did the Approach improve knowledge and capacities of land users to implement SLM?

The perception of the key stakeholders and management services towards the importance of biodiversity and ecosystem services has become more positive.

Did the Approach improve knowledge and capacities of other stakeholders?

The implementation capacity of line ministries, their subordinate bodies and of training institutions regarding the management of biodiversity and ecosystem services is improved at the national level.

Did the Approach build/ strengthen institutions, collaboration between stakeholders?

A cooperation between the local Administration of the Protected Landscape (managed by municipality) and the Administration of National Park (managed by national Agency of Protected Areas) was strengthened.

#### Main motivation of land users to implement SLM

- increased production
- increased profit(ability), improved cost-benefit-ratio
- reduced land degradation
- reduced risk of disasters
- reduced workload
- payments/ subsidies
- rules and regulations (fines)/ enforcement
- prestige, social pressure/ social cohesion
- affiliation to movement/ project/ group/ networks
- environmental consciousness
- customs and beliefs, morals
- enhanced SLM knowledge and skills
- aesthetic improvement
- conflict mitigation

#### Sustainability of Approach activities

Can the land users sustain what has been implemented through the Approach (without external support)?

- no
- yes
- uncertain

The remote sensing technology is not available to the land users, but the results (pasture passports) can be used by shepherds and local authorities to adjust the grazing intensity to the maximum carrying capacity of each pasture unit.

## CONCLUSIONS AND LESSONS LEARNT

#### Strengths: land user's view

- The pasture passports are describing each pasture unit available for lease not only by size but also by the amount of available fodder biomass. This is representing the productivity and the maps are showing the accessibility of the fodder biomass to the livestock. This is essential for a more accurate prize estimation on the value of each pasture compared to old data just giving the size of the pasture unit.
- The pasture passports are improving the legal basis for the lease contract. Areas that should not be grazed (strict protected areas, forests, areas of high erosion risk) are clearly shown on the map.
- During the preparation process the village related areas and the pastures for lease have been defined and mapped. This leads to clear responsibilities for the different pasture lands.

#### Strengths: compiler's or other key resource person's view

- Contribution to the work by local municipalities - the overall results have been handed over to the municipality, responsible for the lease contracts in the Protected Landscape and to APA, responsible for the land use in the National Park.
- The remote sensing technology is an objective method to assess the state of the pasture land and can be reproduced at any future time or in other areas of the Caucasus.
- The GIS data and databases can support the administrative process of preparing lease contracts and can additionally be used for further research activities.

#### Weaknesses/ disadvantages/ risks: land user's view → how to overcome

- Informal land use practises are now documented and fixed in lease contracts. That might lead to higher costs (lease) and reduce the profit of the shepherd/livestock owner. → It needs to be communicated that long term lease contracts guarantee the shepherds/livestock owner grazing rights for several years. Investments into pasture quality and infrastructure become more meaningful.

#### Weaknesses/ disadvantages/ risks: compiler's or other key resource person's view → how to overcome

- The preparation process includes high investment of resources in the first setup of the remote sensing data, field evaluation and database development. It needs special experts and know how. → Remote sensing becomes cheaper when applied on large areas. A distribution of field samples across the whole Caucasus range would enable to upscale from the pilot area to a much wider range with less costs per hectare pasture land.

## REFERENCES

#### Compiler

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#### Full description in the WOCAT database

[https://qcat.wocat.net/en/wocat/approaches/view/approaches\\_5490/](https://qcat.wocat.net/en/wocat/approaches/view/approaches_5490/)

#### Linked SLM data

Technologies: Remote Sensing as a Tool for Land Degradation Neutrality Monitoring  
[https://qcat.wocat.net/en/wocat/technologies/view/technologies\\_5488/](https://qcat.wocat.net/en/wocat/technologies/view/technologies_5488/)

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### Key references

- Kirchmeir H. 12/2018: Implementation of an Erosion Risk Assessment tool on pilot regions in the Southern Caucasus. The Programme „Integrated Biodiversity Management, South Caucasus“:

### Links to relevant information which is available online

- The European GeoNode system: <http://pegasosdi.uab.es/geoportal/>
- Monitoring Manual for Highland Pastures in the Caucasus: [https://biodivers-southcaucasus.org/uploads/files/Monitoring%20Manual%20Draft%20ENG\\_new%20%20amendments%20for%20Georgia\\_v9\\_acc.amend.pdf](https://biodivers-southcaucasus.org/uploads/files/Monitoring%20Manual%20Draft%20ENG_new%20%20amendments%20for%20Georgia_v9_acc.amend.pdf)