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Integrative Land Use Management Approaches in Tajikistan

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Contents

Executive Summary

A significant part of the population of the Central Asian countries (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan) relies upon land resources to sustain their livelihoods. Pastures, cropland and forests are the basis for food security and provide income opportunities for many people in the region. About 60 percent of the region's population lives in rural areas and directly depends upon land resources and its respective ecosystem services. Development efforts to sustain these ecosystems consequently play an important role in alleviating poverty, enhancing food and nutrition security as well as foster the economic growth. Land degradation is, however, a shared problem of all five Central Asian countries. In addition to the widespread degradation of productive land resources, climate change will further increase pressure upon the Central Asian countries to sustain their production bases. Forecasts of climate change effects predict multiple threats, including extreme temperatures, retreat of glaciers and changes in precipitation and snowmelt patterns that will change the hydrology of mountain rivers and cause water shortages, droughts, and floods[1].

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH (German Federal Enterprise for International Cooperation) has been working on land use management in Central Asia since early 2000. The interventions started with the implementation of the United Nations Convention for Combating Desertification (UNCCD). In the past, GIZ approached land use challenges in a more traditional sense, by tackling land use types individually.
In Tajikistan specifically, GIZ worked foremost upon sustainable forest management and community-based wildlife management approach. Pasture management and biodiversity-enhancing agricultural practices were subsequently added to the portfolio. With climate change having a significant impact upon Central Asia's land resources, in particular in the mountainous landscapes of Tajikistan, climate change adaptation measures were also included into the scope of activities, in recognition of the important role of the land use sector for limiting global warming and building resilience of rural communities. GIZ's multi-level approach proved to be successful in tackling forest and pasture degradation, conservation of mountain ungulates and halting the loss of wildlife habitat. Now, after more than ten years of engagement in the land use sector of Central Asia, ranging from direct community-level forestry management to processes of policy development and mainstreaming on the national level, the progression of the multi-level approach into a more holistic and integrative land use management approach was an inevitable evolution.

The real challenge of sustainable land use management cannot be solved with technical solutions only. Socio-economic, institutional, financial and environmental issues that differ across regions must be considered. Integrative land management approaches are based upon understanding landscapes as ecosystems comprised of environmental, human, cultural, technological and institutional dimensions, among others. Potentially harmful effects of land use changes are the result of complex interactions between these different dimensions. Because addressing only one dimension will not lead to sustained landscape management, GIZ has developed the Integrative Land Use Management Approaches (ILUMA) as a simultaneous conceptual framework and knowledge management and dissemination tool to address all dimensions and their interactions and interconnectedness.

ILUMA consists of the following eight dimensions, each of which must be considered to a variable degree when planning, designing and implementing land use measures to ensure sustainability in the medium and long term:

- **Institutions and Institutionalisation:** building strong institutions and institutionalising core processes
- **Organisational Development:** strengthening and developing effective organisations and performance- based organisational mechanisms.
- **Competence Development:** strengthening the core competencies of the key stakeholders for better performance.
- **Knowledge Management:** constantly improving knowledge management and fostering ongoing learning to better adapt to change.
- **Socio-cultural Relations:** taking into consideration social relations and culture as strong foundations for integrative land use management.
- **Planning and Monitoring:** adequate planning, management and monitoring instruments, structures and processes.

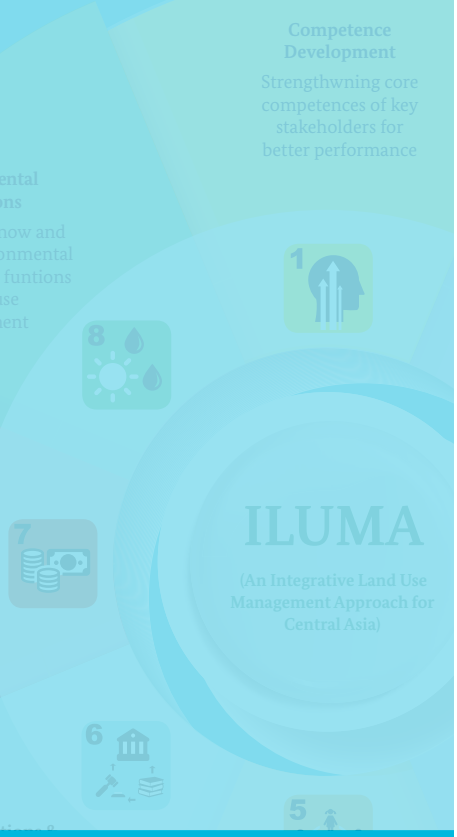
[1] ENVSEC - Environment and Security Initiative (2017). Climate Change and Security in Central Asia – Regional Assessment Report.

- Economy and Financing: emphasizing economic viability and fostering economic development by sustainable investments.

- Environmental Conditions: consciously knowing and integrating environmental conditions and functions in land use management.

Fundamentally, ILUMA will enable creating among stakeholders a common vision of integrative land use management, including guiding principles in policy development, framing the planning and designing of new programmes and projects, and monitoring and evaluating ongoing land use measures.

Within this report, the conceptual framework is introduced in detail for its application in planning processes. The second part of this document consists of a documentation of the experiences in four land use practices that GIZ has implemented in Tajikistan. These land use management approaches are forest, pasture and wildlife management as well as biodiversity-enhancing land use practices. Further, a selection of successfully applied methods and methodologies is introduced that is particularly well suited for the socio-cultural setting of Tajikistan.



Conceptual Framework

for Integrative Land-Use Management Approaches (ILUMA)

Conceptual Framework

for Integrative Land-Use Management Approaches (ILUMA)

Introduction to Land Use in Central Asia

Production systems that depend upon land resources, such as livestock farming, production of agricultural crops, fruits, nuts, and forest products, constitute the basis of the livelihood for much of Central Asia's rural population. Indeed, approximately 60 percent of the region's population lives in rural areas and depends upon land and its respective ecosystems. Hence, such ecosystems play an important role in fostering national economic development.

Unfortunately, the core functions (e.g. ecosystem-services) and the productivity of these natural resources have been threatened in Central Asia by increasing land degradation, desertification, and biodiversity loss. Especially problematic for the region have been overgrazing, which has spurred on soil erosion and deforestation and poor management of forest resources both contributes to greenhouse gas (GHG) emissions and prolongs unsustainable agricultural practices, such as monocultures. Additionally, excessive use of fertilizer and pesticides contaminates water sources. The only way to maintain core functions is to switch to sustainable land-use management, which is vital for maintaining the core functions of natural resources.

Sustainable land management becomes even more important under a climate change perspective. With its complex hydrological balance and steep slopes, Central Asia is a particularly vulnerable region to climate change. It is expected that climate change will further increase the pressure on Central Asian countries' land-related production bases. Forecasts of the impacts of climate change predict multiple threats, including extreme temperatures and changes in precipitation patterns. Such impacts will be felt especially hard during the dry and hot summer months. The vast glacial systems of the Pamir and Tian Shan Mountain Ranges are the water reservoirs for the whole region, and increases in average annual temperatures which will amplify glacial melt. Initially, this situation will result in increased water discharge and a shift in seasonal water availability. In the long run, however, both water discharge and total rainfall will be reduced. Peak water discharge from glaciers is expected to occur during the middle of this century[1]. Even though there is currently general water availability, satellite observations indicate that the productivity of crops in Central Asia have already decreased due to water stress[2]. The mountainous regions of Central Asia are especially vulnerable to climate change while having the least resources for adaptation. Climate change will lead to increased competition for water and land resources. Consequently, current political tensions may further intensify.

Already today there are lines of conflict regarding land-use rights and management. Yet, natural resources in Central Asia remain largely neglected at the macro-political level, as policy-makers instead focus on short term economic benefits. At the same time, natural resources form the basis of the livelihoods for a mostly poor, rural population. Of the 399.4 million hectares of land in Central Asia, approximately two thirds are dry land with extreme biophysical constraints common to arid and continental climate zones[3]. It is estimated that land degradation affects 4-10 percent of cropland, 27-68 percent of pastures and 1-8 percent of the forests throughout Central Asia . Sustainable land use management approaches can thus help to maintain the functionality and productivity of the region's natural resources.

Integrative Land Use Management Approach (ILUMA) for Central Asia

The implementation of sustainable land use management is not just a technical challenge that can be tackled by a one-dimensional approach. Socio-economic, institutional, financial and environmental concerns must all be addressed. Therefore, a landscape perspective has been introduced to all landscape management approaches implemented by GIZ. The landscape approach enables tackling land-use challenges from several dimensions and balances competing land-use demands, all the while paying attention to conserving the ecosystem as well as ensuring enough benefits to the land user. The Global Landscapes Forum, a leader in land-use management, introduced the concept with the following definition:

"The Landscape Approach is about balancing competing land-use demands in a way that is best for human well-being and the environment. It means creating solutions that consider food and livelihoods, finance, rights, restoration and progress towards climate and development goals." (GLF, 2013)

[1] https://doi.org/10.1038/s41558-017-0049-x

[2] https://www.ipcc.ch/site/assets/uploads/2019/08/Fullreport-1.pdf

[3] http://geoagro.icarda.org/downloads/publications/geo/Sustainable_Agriculture_1.pdf

The integration of different dimensions of land use at the landscape level, managed by multiple actors with varied and sometimes conflicting interests, as well as competing policy frameworks and state institutions, call for an inclusive approach that we are calling the Integrative Land Use Management Approach (ILUMA). The concept is based upon the understanding of landscapes as ecosystems comprising environmental, human, cultural, technical and institutional dimensions (visualized in figure 1). Negative impacts of land-use changes are conceived as the result of complex interactions between these different dimensions. ILUMA thus addresses not just the key challenges of land use management – which are related to desertification, land degradation, or climate change adaptation – but also those challenges related to peoples' behaviours, cultures, interests and conflicts, environmental management, sector policies, and organisational development, as well as technical solutions to prevailing problems.

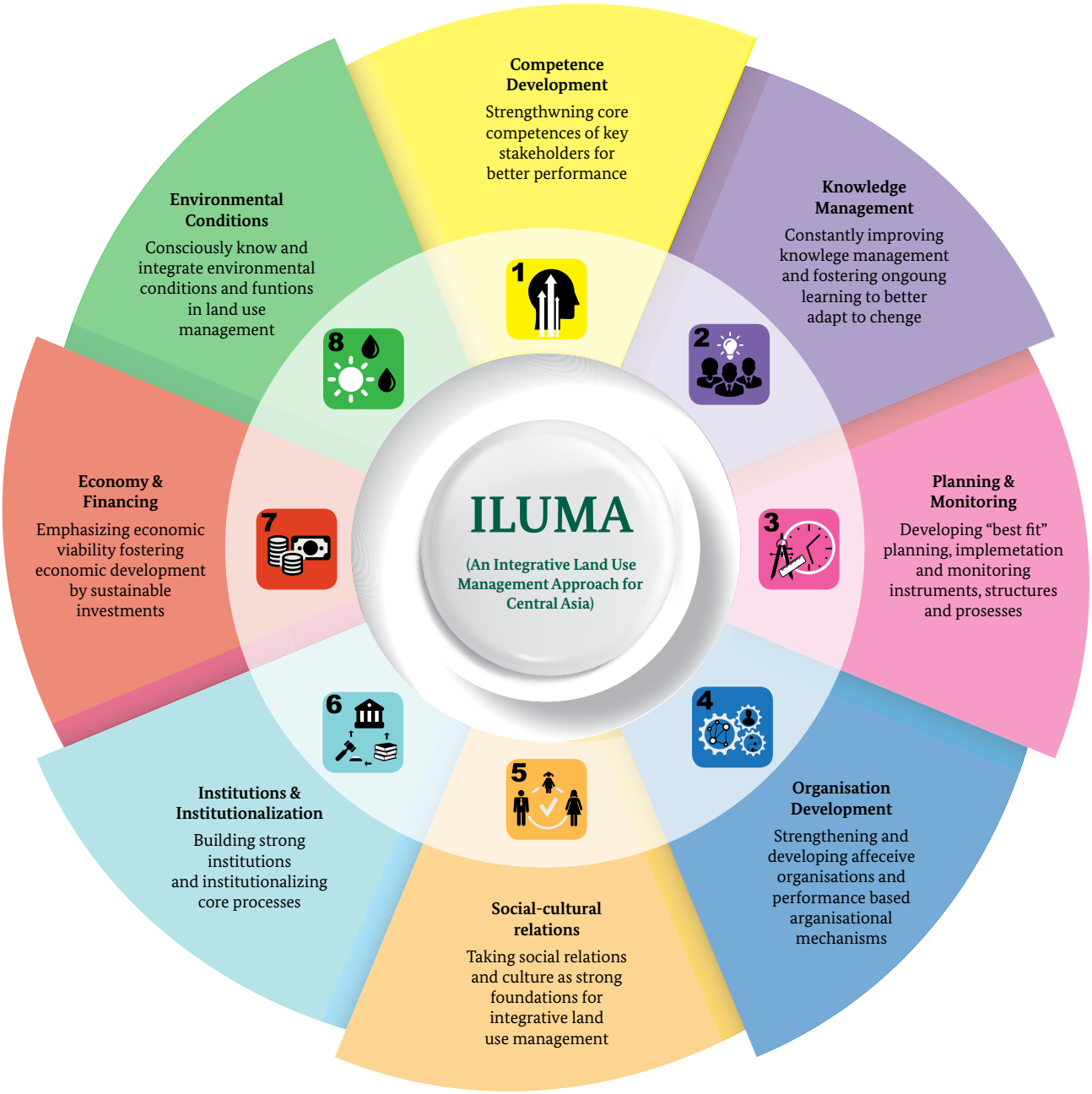


Figure 1: Dimensions of the Integrative Land Use Management Approach (ILUMA)

Approaching land-use systems in an interdimensional manner fosters better organisation of the integrative and interdependent nature of land use management. ILUMA has been designed in such a manner as to reorganise the dimensions of land use management according to different purposes depending upon the stakeholders' needs. The conceptual framework shall function as:

- a tool to create a common understanding and vision on integrative land use management
- a framework to develop sector policies: guiding principles for integrated land use management
- a framework to design new programmes and projects
- a framework to monitor & evaluate ongoing programmes and projects in a strategic way
- a knowledge management tool

Surveying the Dimensions of ILUMA

ILUMA has not been conjured out of thin air. Rather, it is based upon more than 12 years of practical experience in Central Asia, such that the conceptualisation of each dimensions draws heavily from the region's distinct context. ILUMA thus deploys innumerable lessons-learned from on-the-ground – it is, in other words, the conversion of practice into theory, not the reverse.

The land use management experiences of GIZ that have served as the concrete basis for our new conceptual framework have all been documented. Alongside a detailed description of ILUMA, they can be accessed via our webpage. Additionally, each ILUMA dimension has been described in detail in the following chapter. The below table gives an overview is also provided here. For each dimension, the aim, focus, and key challenges are delineated, with ILUMA's guiding principles articulated throughout:

Competence Development	Knowledge Management
 **Aim:** To develop key stakeholders' core competencies for improving their performance in land management. **Focus:** Personal development; team building and capacity development of change-makers within key organisations; facilitation and communication; and technical expertise. **Key challenges:** Lack of awareness of the need for changing and adapting core competencies by many stakeholders; no conducive frameworks and constraining work environments within many government organisations; distracting behavioural changes, including high staff turnover; common understanding of competence development that over-prioritises 'hard skills' and neglects 'soft skills'; culturally-embedded individualism; lack of an established culture of sharing and learning; and administrative culture of state apparatus that takes top-down approaches and inhibits collaboration between different institutions and other actors.	 **Aim:** To support knowledge management and to foster ongoing learning of key stakeholders in order to achieve better management of land resources in Central Asia. **Focus:** Information management, exchange of knowledge, and learning. **Key challenges:** Official data and information is often scattered across different institutions and inaccessible for technical or legal reasons; data is sometimes of unreliable quality; little experience with systematic documentation of processes for learning; absence of an established culture of sharing and learning; 'silo mentality' in which very few state organisations are spontaneously willing to share their data and information with other stakeholders; restrictive legal frameworks that discourage information exchange and transparency; and low level of IT literacy.

Planning & Monitoring

Aim: To improve planning and monitoring of land use management and to adapt it to changing framework conditions.

Focus: Planning mechanisms, monitoring systems, and technical guidelines.

Key challenges: No reliable and up-to-date data available; Soviet-era state management systems remain in place with senior government officials not willing to change or adapt ineffective planning and monitoring systems; and land-use practices derived from out-dated management schemes that do not consider the current conditions of land resources.

Organisation Development

Aim: To advance organisations in the field of land use and to improve the interaction between key stakeholders for better land management.

Focus: Strengthening existing organisations, land and water user organisations; coordinating interests and needs,

Key challenges: Strong individualism at all levels; limited experience with democratic processes; limited exchange of knowledge; strong lack of trust between state and private/ civil society actors; frequent changes of governmental structures; and indistinct functions delineated within and between government organisations.

Socio-cultural relations

Aim: To include the social-cultural relations of key actors when developing and implementing integrative land use management measures.

Focus: Gender, social mechanisms, recognition of cultural rules, and strategic communication.

Key challenges: Identifying socio-cultural 'Do's and Don'ts'; actively involving women and young people in land use management while taking traditional roles into account; and developing mechanisms that best fit to the social-cultural context yet also promote transformative change.

Institutions & Institutionalisation

Aim: To strengthen existing institutions and legal frameworks, which are key for sustainable and integrative use of land resources and institutionalising socially agreed rules and guidelines on land use management.

Focus: Inclusiveness, active participation, and involvement of all key stakeholders; fair share and joint management; transparency and flexibility.

Key challenges: Unclear priorities and policies; inappropriate regulatory frameworks; national regularisation and policy-making versus final and practical decision-making on land use by private and community stakeholders; and lack of clear land-use rights.

Economy and Financing

Aim: To achieve inclusion of land use management in national development planning processes, thereby supporting economically viable and sustainable land use.

Focus: Economic valuation of natural resources; financing of sustainable land use; and environmental-economic accounting.

Key challenges: Obtaining economic gain from land resources without reciprocating any benefits to society through wealth creation (rent-seeking); limited understanding of the economic value of natural resources; lack of trust regarding the general framework conditions for long-term investments in land use management; high costs for switching from current land-use patterns to integrative land-use approaches; limited short-term benefits from sustainable land use; land users are economically obliged to generate immediate income; and almost no public policies and mechanisms to foster public or private investments in maintaining and improving the productive capacity of natural resources.

Environmental Conditions

Aim: To maintain and strengthen indispensable ecosystem functions within integrative land use management.

Focus: Ecosystem services; climate change; environmental landscape boundaries; ecosystem resilience.

Key challenges: The value of ecosystem services (especially biodiversity) for human well-being and their importance for land-use systems is not clearly understood and acknowledged by key stakeholders; conflict between landscape perspective versus political/legal units (e.g. municipality, district) in which ecosystem boundaries usually do not correspond with political boundaries, thereby challenging a landscape approach.

Dimension 1: Competence Development

Strengthening core competences of key stakeholders for better performance.

The competences of key stakeholders are central for managing land resources in an effective and sustainable fashion. Land users, government officials, development workers and entrepreneurs constantly need to adapt to rapidly changing environmental, economic and political conditions by improving their performance and maintaining their competitiveness. Competences are required to facilitate and manage these change processes in a systemic and strategic manner.

Land resources, policy frameworks and economic conditions in Central Asia today have changed immensely since the end of the Soviet Union. These new framework conditions oblige actors to change their behaviours, acquire new knowledge and develop additional abilities.

Although 'hard' competences, such as technical knowledge and skills, are clearly important for better managing land resources, 'soft' competencies of values, belief systems and attitudes must also be substantially changed if key stakeholders are to perform better.

Guiding questions:

- What are the core competences for integrative land use management?
- What and whose competences should be strengthened?
- What is the purpose of competence development?

What are we aiming at?

Focusing on the development of key stakeholders' core competences so as to improve their land resource management performance can be best achieved by carrying out different competence development measures aimed at the following goals:

- Developing the attitudes, values and belief systems of individuals, thereby enabling them to look for innovative solutions for known challenges.
- Supporting stakeholders to work together in teams for collective action.
- Supporting members of organisations to clarify their role within their teams, so as to better perform their jobs by feeling accountable and responsible for the organisation's success.
- Improving the competence of individuals to facilitate change processes and communicate appropriately and constructively with other actors.
- Improving technical expertise of key stakeholders for better personal performance in managing land resources.

What are the major issues / challenges?

There are several challenges for developing and undertaking systemic and strategic competence strengthening. These challenges are primarily found within governmental institutions:

- Lack of awareness of the need for changing and adapting core competencies by many stakeholders, who are accustomed to a 'business as usual'-style approach.
- No conducive frameworks coupled with limiting environments and distracting institutional behaviours (this is likewise primarily an issue within governmental institutions).
- High staff turnover results in diminished knowledge transfer within institutions, thereby undermining build-up of institutional memory.
- Widespread notion that competence development is primarily attained via participation in training courses, and should primarily concern 'hard skills', thereby neglecting other development opportunities and the importance of 'soft skills'.
- Strong and culturally-embedded streak of individualism within institutional contexts that negates the worth of and need for working in teams or any form of collaboration.
- No established culture of knowledge-sharing and learning
- Working styles and attitudes inherited from Soviet governance-administrative culture remains dominated by bureaucratism, thereby ignoring sectoral and external interests.

What are common principles for guiding action in the framework of this dimension?

Focal area	Guiding principles
Personal Development	Strong focus upon developing values and belief systems that emphasize sustainable land resource management.
	Harnessing creativity, critical thinking and innovativeness.
	Support the development of empathy for and understanding of the interests and need of other actors.
Team Building	Focus upon the advantages of working in a team versus individual performance.
	Support the capability to trust other team-members.
	Foster the ability to cooperate between the different team-members.
	Ensure mutual accountability and responsibility.
The Individual Within the Organisation	Support self-management competencies (managerial skills) to improve the organisations' performance as a whole.
	Support rewarding individuals' good performance.
	Focus upon a clear understanding of each individual's role.
Facilitation and Communication	Develop leadership skills (e. g. visioning, systemic and strategic thinking) to facilitate change processes.
	Support learning to communicate effectively with both internal and external audiences.
Technical Expertise Technical Expertise	Develop competences for analysing current technical problems.
	Develop competences for planning land use.
	Develop competences for selecting and implementing different options on sustainable land use.

Dimension 2: Knowledge Management

Constantly improving knowledge management and fostering ongoing learning to better adapt to change.

Fact-based and empirically-informed decisions on land use can only be made based upon information that has been obtained via transparent methodologies:

- To whom does this plot of land belong to?
- What is allowed and what is forbidden to do on this land?
- What is the potential productivity of this field / plot?
- How will climate change affect this area in the short and long-run?

Currently, in most Central Asian countries, such information is either non-existent, unavailable, inaccessible or of poor quality.

That being said, knowledge management is about more than managing information within databases and document repositories; it is also about using and communicating knowledge more effectively so as to improve the way land resources are managed, thereby making an impact. Reducing knowledge as such to data would thus limit the scope of the term, for knowledge is the ability to know how to apply, create, organise and transfer information, as well as to be able to use it for making decisions.

Transparent and efficient exchange and use of knowledge and information increases efficiency and reduces duplication of efforts. Implicitly, supporting knowledge management and exchange between institutions can be a means to increase their overall level of cooperation and performance.
Knowledge usage is directly linked to the learning processes of the key actors. Hence, knowledge management must also consider the ways in which an organisation functions, as the same piece of knowledge might be used differently in different organisations. This is a key, although often overlooked, challenge of knowledge management. Only when knowledge is used to develop innovative ways of land use management can the ongoing trend of degrading land resources in Central Asia be halted or reversed.

Guiding questions:

- Who possesses which knowledge and how can it be managed and utilized for the benefit of all?
- How do actors learn and how can learning, and experimentation be fostered?
- How can information on strategic issues related to integrative and sustainable land use management be disseminated and shared in appropriate ways between key stakeholders?

What are we aiming at?

Developing better knowledge management and learning to achieve a better management of land resources in Central Asia can be best achieved by aiming at:

- Supporting decentralized knowledge management platforms in order to make relevant knowledge available to a broader interested audience.
- Developing knowledge exchange and learning formats adapted to the respective needs of different groups of land use stakeholders.
- Developing more harmonised national data and information systems.
- Documenting, analysing and synthesising learning processes ('lessons-learnt').
- Documentation of lessons-learnt for collective and individual learning.
- Establishing feedback mechanisms and processes to integrate lessons-learnt at different stakeholder levels.
- Fostering a work culture of feedback and learning.

What are the major issues / challenges?

The following issues have been identified as major challenges related to managing knowledge and learning-for-change:

- Official data and information in Central Asia is often scattered across different institutions, inaccessible due to technical or legal reasons, and sometimes of unreliable quality.
- Little experience with systematic documentation of processes for learning, as well as the absence of an established culture of sharing and learning.
- A prevailing 'silo mentality', according to which very few state organisations are spontaneously willing to share their data and information with other stakeholders. Knowledge is considered a source of power, and hence not provided to others. Restrictive legal frameworks amplify this problem, as such frameworks discourage information exchange and transparency.
- In general, a low level of IT literacy prevails, a key consequence of which is sow adoption of modern knowledge management tools.

What are common principles for guiding action in the framework of this dimension?

Focal area	Guiding principles
Information Management	Support the collection, documentation, analysis and synthesis of data and information as a basis for informed decision-making.
	Create common pools of data.
	Improve national data and information systems.
	Improve the technical infrastructure for storing and exchanging information and data.
	Design and package information formats appropriate to the intended user.
Knowledge Exchange	Source new ideas and innovations on land use, disseminate them to a wider audience.
	Support / develop decentralized knowledge management platforms.
	Develop knowledge exchange formats, appropriate for different groups of land use stake-holders.
Learning	Foster a work culture of feedback and learning.
	Support collective learning by documenting and analysing experiences ('lessons-learnt').

Dimension 3: Planning and Monitoring

Developing 'best fit' planning, implementation and monitoring instruments, structures and processes.

Planning and monitoring of land use systems are still based on mechanisms put in place during the Soviet Union decades ago. Since the collapse of communism, the framework conditions for land use management have completely changed. Today, Central Asian countries are exposed to multiple challenges regarding the planning and monitoring of land use management:

- They are subject to market-driven economic processes.
- They must generate their own income, instead of receiving a budget from Moscow, as during the Soviet era.
- In those countries with democratic structures, there is increasing demand for an active participation from all key stakeholders.
- They face increasing pressure of local populations upon finite land resources, resulting in serious degradation.
- They have rapidly growing populations which need to be fed and employed.
- They have developed new governance structures, including for land use management.

These challenges call for the adaptation of planning and monitoring mechanisms for land use management. Such management requires innovative ways of planning and monitoring land use, adapted to the current situation and future challenges (e.g. climate change).

Guiding questions:

- What technical aspects of land use management are crucial?
- What planning mechanisms are needed for integrative land use management?
- What monitoring system best fits to which land use system?
- How and by whom planning and monitoring will be best done; who must be involved?

What are we aiming at?

In order to develop 'best fit' planning, implementation and monitoring instruments, structures and processes for land use-related organisations, the following core elements should be in place:

- State-centred Information Systems[4] on the different forms of land use. These systems should be available for all land users who require information and data for planning and monitoring.
- Appropriate planning mechanisms for land use at different levels – central / national, regional, local – actively involving all key actors (government agencies, land user organisations, land users, private sector).
- Appropriate monitoring systems for different forms of land use at different levels.
- Technical guidelines for different forms of land use.

What are the major issues / challenges?

The following issues have been identified as the most important with respect to planning and monitoring for land use management:

- No reliable and up-to-date data is currently available, resulting in unreasonable planning figures and useless monitoring schemes.
- State management systems of the Soviet era still remain in place among senior government officials who are also unwilling to change or adapt these systems.
- The land use practices that are being applied today remain based upon out-dated management schemes and do not consider the current conditions of land resources.

[4] The details are explained in the ILUMA dimension on Knowledge Management.

What are common principles for guiding action in the framework of this dimension?

Focal area	Guiding principles
Planning mechanisms	Support the development of national, governmental planning systems (e.g. strategies) for land use management. Such systems should be based upon empirical facts and figures, and whenever possible, practical experience.
	Develop planning mechanisms at the local level that involve all key stakeholders (e.g. participatory pasture management plans).
	Link national, regional and local planning to foster coherence.
	Base planning upon the sustainable use of natural resources.
	Combine short and mid-term planning with a clear vision on what to develop in the long term.
Monitoring systems	Develop monitoring systems for different forms of land use that will collect data and information for planning and decision making.
	Involve those stakeholders in monitoring who will make use of the information /data for their planning and decision making.
	Develop systems for Monitoring, Reporting and Verification (MRV) for alternative forms of land use.
Technical guidelines	Look for innovative ways of sustainably managing land resources.
	Test and experiment new ways of managing land resources, emphasizing participatory forms of managing the resource base.
	Develop descriptions of land uses, which can be used as practical guidelines by end users (technicians, land users).

Dimension 4: Organisational Development

Strengthening and developing effective organisations and performance-based organisational mechanisms.

A clear theoretical definition of organisations does not exist. Usually organisations refer to entities that are comprised of people, in contrast to institutions which are a set of rules. The people that form the respective organisations usually do so with a particular purpose or with the goal to meet the needs of the members. Examples would be a company or a government department. Often, the terms 'organisations' and 'institutions' are used as synonyms. We propose that an organisation is an open system, in the sense that such entities not only affect their environment but are themselves affected in turn. Such a definition offers possibilities for change.

The way land resources are managed is determined by a broad array of different stakeholders, ranging from policy makers of state institutions, technicians of government organisations, NGOs and private advisory services, farmers, agro-businesses, herders, private business companies, land users, local authorities (religious / traditional / government) and many others. Each of these stakeholders decide at different levels on how to use land. Organisations are the entities under which all the stakeholders are brought together and which provide the platforms for exchange and change. The management structures of organisations thus determine the way that certain things are done (e.g. relationships between members, roles, responsibilities, and authority to carry out different tasks).

Effective land use management calls for key stakeholders to organise themselves effectively and to perform well. This refers to the organisation of different stakeholders and stakeholder groups (e. g. state forest enterprises or pasture user organisations), as well as the way in which the interaction between these stakeholders is conducted.

Guiding questions:

- What is the overarching purpose for which key stakeholders in land use management are organised?
- Which organisations are involved in land use management and how can their performance can be improved?
- What are these organisations' internal management structures?
- What are the most appropriate forms of organisations in the given context?
- What are the 'best-fit' organisational mechanisms for the given purpose?

What are we aiming at?

In order to strengthen and develop effective land use-related organisations, including fostering performance-based organisational mechanisms, the following elements are central:

- Improve the internal management structures of existing organisation in order to facilitate better completion of their core functions.
- Promote and support building-up strong, effective local land user organisations.
- Strive for the representation of the interests of local land users at the national level via national umbrella organisations.
- Establish collective mechanisms to coordinate the needs and interests of different stakeholders.
- Support innovative forms of collaboration between state-sector organisations and local land users.
- Support networking within and between organisations.

What are the major issues / challenges?

There are several challenges for developing strong, effective organisations or organisational mechanisms in Central Asian countries:

- Strong individualism at all levels, but first and foremost at the level of local land users.
- Little to no experience with democratic structures and respective decision-making mechanisms.
- Little will and/or interest to exchange knowledge or to engage in exchange mechanisms, as knowledge is considered to be a source of power.

- Strong lack of trust between state and private / civil society actors.
- Weaknesses in sectoral 'visioning' among many state-sector organisations.
- Frequent changes of government structure, organisational structures of state agencies and replacement of leadership at the strategic level of governmental organisations.
- Promiscuity of functions in governmental organisations leading to inefficient performance of governmental organisations.

What are common principles for guiding action in the framework of this dimension?

Focal area	Guiding principles
Strengthening Existing Organisations	Identify or develop 'working processes' that define what tasks have to be done and by whom, then determine the best-fit organisational structure, including job definitions and descriptions of all members / employees of the organisation.
	Enhance competence in major management functions (e.g., decision making, planning, budgeting, accounting).
	Strengthen the organisation's leadership.
	Focus on change management and developing learning within organisations.
	Foster ownership of the organisations' core functions, processes and goals.
Assessing Land User Organisations	First verify whether there are traditional local organisations that have a stake in land use management.
	Clarify whether there is a clear need and benefit for local land users to organise themselves, including potential organisational visions, purposes and objectives.
	Clarify the roles and responsibilities of women in land use management and their role in local organisations.
	Determine the geographical scope of the local organisations, depending on their purposes and objectives.
	Identify major benefits to people joining local organisations.
	Consider establishing umbrella organisations of local organisations look to represent their needs and interests at the national level to politicians and policy makers.
Coordinating Interests and Needs	Identify whether at the local level there are mechanisms in place through which the interests of all key stakeholders involved in land use management are negotiated and coordinated.
	Link coordination mechanisms at the local level to a certain land use or a cluster of land uses in a given geographical area (e. g. a micro-watershed or village) so that concrete and tangible issues can be negotiated.
	Develop new organisational forms of joint land resource management with shared responsibilities and benefits in order to address the state's dual problem of dominating land resources yet lacking capacity to manager them.
	Establish policy dialogue or coordination mechanisms at the national level to provide a platform to negotiate interests and needs of all relevant stakeholders regarding policy development.
	Network information and knowledge exchange.

Dimension 5: Socio-Cultural Relations

Deploying social relations and culture as strong foundations for integrative land use management.

The ways in which land resources are managed largely depend upon people's interactions and interdependencies. In particular, social-cultural relations within land user societies and between land users, state agencies and market actors (buyers of land use products) strongly influence decisions on land use management. 'Unwritten' rules set the framework within which land users and other key actors can make decisions on land use – essentially, the 'Do's' and 'Don'ts', including with respect to gender roles.

Consequently, technical and managerial decisions regarding land use must be based upon the social environment of decision makers and not just on best-fit technical approaches.

Guiding questions:

- How can ethnicity and culture be considered?
- How do social relations within communities' influence land use management?
- How can gender equality be considered?
- How does kinship influence decision-making on land use management?

What are we aiming at?

In order to take into account, the social-cultural relations of key actors when developing and implementing integrative land use management measures, the following elements must be grappled with:

- If feasible, develop land use management mechanisms based upon established social structures.
- Establishing mechanism, that ensure fair and democratic participation of all key actors in decision-making processes.
- Establishing mechanisms that ensure non-discrimination due to social status, ethnicity or gender.
- Improve communication between key actors to ensure understanding of and commitment to agreements.
- Support generation of trust between key actors (trust building measures).
- Integrate gender perspective in natural resource management planning.
- Recognise social-cultural 'Do's' and 'Don'ts' regarding land use management
- Foster planned, targeted communication and packaging.

What are the major issues / challenges?

The following are the major challenges for considering social-cultural relations in integrative and sustainable land use management:

- To become acquainted with social-cultural 'Do's' and 'Don'ts' and to integrate them in land use planning.
- To actively involve women and young people in land use management while taking in consideration local paternalistic social-cultural patterns.
- To develop mechanisms that best fit the given social-cultural context and, at the same time, promote innovative change.

What are common principles for guiding action in the framework of this dimension?

Focal area	Guiding principles
Accounting for Gender	Ensure taking into account women's and young people's perspective in planning land use.
	Consider gender when implementing land use measures.
	Ensure fair sharing of economic benefits between men and women.
	Ensure equal access to information on land use.
Develop Social Mechanisms	Develop social mechanisms that institute innovative ways of sustainable land use management (e.g., giving social weight to innovators).
	Ensure the fair participation of all relevant social and ethnic groups of society in land use management (i.e., inclusion).
	Develop mechanisms for fair and democratic participation of all key stakeholders in land use management.
	Build land use management mechanisms as far as possible upon existing social structures, in particular at the local level.
	Identify trust issues between stakeholders and apply appropriate trust building measures.
Recognising Social-Cultural Rules	Identify the social-cultural 'Do's' and 'Don'ts' and consider these when planning for and implementation of land use management.
	Question cultural rules that favour unsustainable land use and unfair treatment of social groups in an appropriate way, emphasizing that new challenges to land use require adaptation, including of social-cultural rules.
Strategic Communication	Develop mechanisms and formats for clear, transparent and targeted communication between key stakeholders.
	Establish feedback mechanisms between stakeholders to ensure a shared understanding of agreements.
	Foster 'free' communication to foster creativity and innovation in land use management.

Dimension 6: Institutions and Institutionalisation

Building strong institutions and institutionalizing core processes.

Theoretically-speaking, institutions can be defined as 'humanly devised constraints that structure political, economic and social interactions'[5] – or in other words, very generally, like a set of rules. Following this logic, institutions consist not only of formal legal rules but also encompass informal social norms. As such, institutions are central for governing individual behaviour and structuring social interactions.

Following the dissolution of the Soviet Union, the fifteen-former member-states embarked upon a process of great transformations. Reforms in the newly independent countries' economic and social spheres wrought changes in the legal status of those resources that in the Soviet era had been owned and managed by the government. These change processes also wrought significant alterations in the system of relations between land resources owners, that in turn have since necessitated revising those institutions responsible for regulating land use and developing and institutionalizing new efficient approaches on managing land resources.

Institutions and institutionalisation are thus critical factors in the promotion of integrative land use management approaches, as these form the framework for implementing management mechanisms. Specifically, they ensure consistency and coherence of approaches, regardless of the ownership and legal status of the actors involved in the system of relations arising over land use. Additionally, the institutionalized processes of such relations are more likely to be retained and improved over an extended period of time.

Guiding questions:

- Which institutions are key for land use management and how could these be strengthened or built up?
- How and which land-use mechanisms shall be institutionalized?

What are we aiming at?

Facilitating the process of strengthening existing institution – which are key for sustainable and integrative use of land resources and institutionalizing socially agreed rules and guidelines on land use management – can best be achieved by focusing upon the following aims:

- Support setting-up new institutions in response to emerging social, economic and environmental demands.
- Facilitate policy dialogue (e.g. interdepartmental, or government-civil society) and the establishment of coordination mechanisms.
- Support institutionalisation of tested, successful and practice-proven approaches on integrative land use management.
- Strengthen the institutional and legislative framework on integrative and sustainable land use.

What are the major issues / challenges?

The following are the major challenges that face any attempt to strengthen institutions and institutionalise integrative land use management approaches:

- Unclear priorities and policies of state-sector organisations regarding land use.
- Non-participatory monopoly of the state sector over regularisation and policy making, versus a better possible reality wherein private and community stakeholders make the final and practical decision on land use.
- Inappropriate regulatory frameworks that contradict and thus impede the implementation of integrative and sustainable land use management approaches.

[5] Douglass C. North (1991). Institutions. The *Journal of Economic Perspectives*, Vol. 5, No. 1, pp. 97-112.

What are common principles for guiding action in the framework of this dimension?

Focal area	Guiding principles
Inclusiveness	Develop conceptual schemes for ensuring equal opportunities, equal access to decision-making and equal economic benefits to all stakeholders when developing land-use regulations.
Active Participation and Involvement of All Key Stakeholders	Develop mechanisms for appropriately involving all key stakeholders in the process of land use regulations development (e. g. consultation mechanisms).
	Develop mechanisms to ensure the fair and democratic participation of all relevant groups of interest at local level in land use management process.
Fair Share and Joint Management	Ensure that state authorities acknowledge the need for the possession of the economic benefits of land use management implemented by stakeholders at local level.
	When building joint land-use management mechanisms at local level, consider real and short-term benefits for relevant key stakeholders to participate in such mechanisms.
	Developing sharing mechanisms (e. g for the lease of State Forest Fund land) that provide economic and other benefits for both the tenant and the government.
	Consider fiscal measures to enable the use of land-use revenues for the benefit of stakeholders.
	Ensure fair sharing of economic benefits among key stakeholders, in particular between local land users and State organisations, responsible for leasing land.
Transparency	Make use of communication media and platforms to inform land users about all relevant issues related to land use management.
	Develop standards and norms by which information on land tenure rights awarding is made public.
	Ensure that when strengthening of the legal and institutional environment, open competition and accountability are favoured.
	Network information and knowledge exchange.
Flexibility	Consider flexible use of land use options (as compared to traditional statutory instruments) that allow fostering community-driven and context-specific (territorial, social, economic, environmental, cultural) efficient management of land resources.

Dimension 7: Economy and Financing

Emphasizing economic viability and fostering economic development via sustainable investments.

Central Asian countries show little consideration of land resources as a crucial production factor for generating their wealth and contributing to their economic growth. Instead of sustainable and profitable management of renewable natural resources, such as forests and pastures, these are overused and increasingly degraded. Stagnant land productivity, land degradation and loss of biodiversity are some instances of unsustainable land use that are now besetting the region. Appropriately managed, however, land resources could significantly contribute to national GDPs on a sustainable basis.

Currently, there are little to no economic incentives that encourage investments in sustainable land use management in Central Asia. Land users increase the demand for and use of land by raising the number of livestock and the exploitation of remnant forests every year. However, only if they are given the opportunity to economically benefit from sustainable and integrated land use management will they maintain and even improve land resources.

In addition, land resources do not factor into existing national accounting systems and thus are not sufficiently considered in national development planning. Natural Capital Accounting methods, such as the System of Environmental-Economic Accounting (SEEA) enable 'translating' the non-monetary benefits of natural resources (socio-cultural values, tourism, carbon sequestration, protection against disasters, etc.) into monetary terms and thus to include them into national accounting systems. In general, successfully demonstrating that natural resources account for a significant share of the national economy provides a stronger justification for their rational use.

Guiding questions:

- How can sustainable and integrative land use management become an attractive income source for land users?
- How can sustainable land use contribute significantly to the GDP of Central Asian countries?
- How can methods for economic valuation of land resources be introduced and used for decision making?
- How to bridge short-term economic benefits with long-term sustainability?

What are we aiming at?

Incorporating integrative land use management into national development planning processes and supporting economically viable and sustainable land use can be achieved if the following actions are done:

- Implement economic valuation method (e.g. cost-benefit analyses of land degradation).
- Verify and test which incentives are needed to mobilise land users into switching to sustainable land management practices.
- Foster those factors that promote private sector investments and integrative and sustainable land use management.
- Improve framework conditions so that private and public finances are released for sustainable land use management.

What are the major issues / challenges?

The following are key factors that hamper sustainable economic development related to land use management:

- Obtaining economic gain from land resources without reciprocating any benefits to society through wealth creation (rent-seeking).
- Little to no knowledge / understanding of the economic value of natural resources / ecosystem services by nearly all stakeholders.
- Lack of trust regarding the general framework conditions (policy framework, political situation and economic situation) for long-term investments in land use management.
- Relatively high costs for switching from current land use patterns to integrative land use approaches, especially if the latter does not bring immediate economic returns.
- Limited short-term benefits by sustainable land use.

- Limited readiness for embarking upon long-term sustainable management approaches, as land users are economically obliged to generate immediate income.
- Lack of public policies and mechanisms that foster public or private investments in maintaining and improving the productive capacity of these resources.

What are common principles for guiding action in the framework of this dimension?

Focal area	Guiding principles
Economic Valuation of Natural Resources	Conduct cost-benefit analyses of the most important products or value chains to assess their economic viability (e.g. by showing the cost and benefits of land and land-based ecosystems in cooperation with the Economics of Land Degradation Initiative for political and public awareness).
	Assess the option to enter niche markets (e. g. organic and fair-trade certification of natural resource products).
Financing of Sustainable Land Use	Assess options for creating economic incentives (e. g. savings book approach, tax exemptions, payment of subsidies, micro-credits with low interest rates).
	Clarify whether there is a clear need and benefit for local land users to organise themselves, including potential organisational visions, purposes and objectives.
	Channel remittances into sustainable and integrated land use management.
	Improve the quality and outlook of adding value to the production of primary goods.
Environmental Economic Accounting	Establish satellite accounts to assess the monetary value of land resources for economic development (e. g. forest accounting).
	Use the outcomes of such satellite accounts to broadly advocate for sustainable use of land resources, shifting focusing away from short-term monetary benefits.

Dimension 8: Environmental Conditions

Consciously knowing and integrating environmental conditions and functions in land use management.

Land use is delineated by the biophysical limits of the ecosystem and its respective carrying capacity. These environmental or ecological limits depend upon biotic (e.g. pests) and abiotic factors (e.g. availability of soil nutrients or water). Land users who wish to maintain or increase the productive capacity of land and water resources should thus be aware of these limiting factors so as to consider the sustainability of available management options. Indeed,

assessing the environmental conditions and current and future impacts, threats and pressures related to different land use practices via a systems approach to the agro-ecosystem (e.g. plot, farm, landscape) forms the basis of sound risk evaluation and decision making for land use planning and management options.

Currently, many ecosystems in Central Asia are under pressure from overuse and unsustainable management practices focused upon short-term benefits. To maintain ecosystem resilience and adaptive capacity, land use management must consider, and where necessary restore ecological buffering capacity, as an integral part for fulfilling its principle environmental functions and providing important ecosystem services.

Meanwhile, climate change is strongly affecting Central Asia's ecosystems. Changing precipitation patterns, increasing temperatures, and more frequent extreme weather events restrain the development potential for Central Asian nations or even reverse progress that has been achieved so far. Central Asian countries should therefore make use of adaptive approaches to land use management and resource governance to adapt to the dynamics of non-linear ecosystem change and remain well within essential environmental thresholds. Enhancing socio-ecological diversity and overlapping redundancies of environmental functions is hereby a key strategy.

Guiding questions:

- How should the environmental capacities (e.g. ecosystem resilience) of the land resources be taken into account by decision-making on land use options?
- How can the principal environmental challenges (climate change, desertification, loss of biodiversity etc.) be considered and integrated into development planning?
- How can ecosystem services be considered in land use planning and be part of land use practices?
- How can land use planning focus on the landscape level?

What are we aiming at?

In order for land use management to maintain and strengthen indispensable ecosystem functions, the following goals must be aimed at:

- Improve environmental quality, reduce greenhouse gases, and enhance the adaptive capacity of ecosystems.
- Consider the different land use types within a given ecosystem and their interconnections and interactions.
- Highlight the significance of well-functioning ecosystem services and their conservation, restoration, and enhancement for the long-term viability of land use practices.

What are the major issues / challenges?

The major challenges for considering environmental conditions in integrative land use management are the following:

- The value of ecosystem-services (especially biodiversity) for human well-being and their importance for land use systems is not clearly understood and acknowledged by key stakeholders.
- Disconnects between a landscape perspective and political/legal units (e.g. municipality, district), such that ecosystem boundaries usually do not correspond with political / legal ones.

What are common principles for guiding action in the framework of this dimension?

Focal area	Guiding principles
Ecosystem Services	Assess which ecosystem services the land use system depends upon.
	Analyse the positive and negative impacts of land use measures upon ecosystem services.
	Identify land use management options that conserve, restore, or enhance ecosystem services.
	Raise awareness on the concept and value of ecosystem services
Climate change	Conduct a vulnerability and risk assessment for the area of intervention.
	Assess the current and future impact of climate change in the area of intervention based on climate projections.
	Identify land use management strategies and options that help the local communities in adapting to climate change.
	Raise awareness of key stakeholders on the implications of climate change in their particular context.
	Consider the potential for climate change mitigation within a given intervention.
Environmental landscape boundaries	Consider the different land use types within an ecosystem or landscape and how they are interconnected and interdependent (e.g. different land use types in a watershed or forest landscape).
	Identify the main landscape elements (e. g. land uses, ecosystems) and identify linkages between them, then decide on how these should be sustainably managed.
Ecosystem Resilience	Identify and decide options for land use planning and management based upon assessing ecosystem boundaries and the ecosystem's buffering capacity.
	Strengthen ecosystem resilience, so that ecosystems can cope with environmental shocks (e. g. Ecosystem-based Approach), and improve related infrastructure when/ where required.

Experiences in Tajikistan

As mentioned above, GIZ has not conjured ILUMA out of thin air. Rather, we have based it upon more than 10 years of practical experience in Central Asia. GIZ has piloted numerous land use approaches in Central Asia, together and alongside other organisations and institutions. In the past, different land use management approaches were implemented exclusively within the scope of specific land use types, such as forestry or pasture management. After some years of piloting and implementation, it became clear that a broader perspective needs to be applied to the whole landscape. This is when GIZ started to apply a landscape approach to its projects, according to which land use systems are examined via different dimensions related to the management of land resources. Such an approach also acknowledges the holistic nature and the interdependency of different elements for integrative land use management.

In this chapter we will present the experiences that serve as the bedrock of ILUMA, in particular those from our Regional Programme on "Sustainable and Climate Sensitive Land Use for Economic Development in Central Asia" commissioned by the Federal Ministry of Economic Cooperation and Development (BMZ) and since 2008 implemented by GIZ and its partners, its predecessor programmes and partner projects. These experiences in forest and pasture management, agriculture and biodiversity, as well as wildlife management in Tajikistan, all served as showcases for how the dimensions of sustainable land management methods were best adapted to actual field activities. However, rather than talk about the experience on its own, we will discuss it in the context of the particular land use approach that it justifies and sustains. Thus, in what follows here, we will give an overview of each approach, subdivided into five sub-sections: a) what the land use practice is about. b) the key functions of each practice (themselves sub-organised into cornerstones; c) the experience in-itself; d) the experience reconstructed in a step-wise format; and e) guiding principles (themselves sub-organised according to their respective dimension). We also provide links to external, more detailed resources. In the last section, we will discuss methods and methodologies crucial for the application or replication of ILUMA within Tajikistan and beyond.

Wildlife

Sustainable Management of Wildlife in Tajikistan

1. What is this land use practice about?

About 90 percent of the territory of Tajikistan is mountainous and almost 25 percent of the country has the status of a protected area. The diverse and rare wildlife species of the mountainous region are its most valuable resources as well as an integral part of the mountainous ecosystem. All wildlife is owned and managed by the state. However, due to budgetary constraints, funding of the protected areas and implementation of wildlife protection laws are rather weak. Wild animals, particularly wild sheep (argali Ovis ammon and urial Ovis vignei) and wild goats (ibex Capra sibirica and markhor Capra falconeri heptneri) are hunted for subsistence, commerce and sport. The international hunting of mountain ungulates provides significant revenues for the state budget. At the local level, the population of the remote and mountainous areas rely upon subsistence farming, such as livestock keeping, for sustaining their livelihoods. The wildlife is a source of food and income for household; in certain areas, it is the only option to survive.

2. Cornerstones of the wildlife management

Sustainably-managed wildlife resources with the participation of direct users, i.e. local communities, and close cooperation with state authorities and the scientific community is one of the 'cornerstones' of wildlife management. This approach can establish a management model that ensures the conservation of wild animals and their sustainable use. The Community Based Wildlife Management approach (CBWM) piloted and implemented by GIZ in Tajikistan during 2008-2014 was based upon the principles of sustainable wildlife management and has been among our more successful land use experiences. Two important success factors of CBWM are long terms rights for the concessions as well as the protentional to bring the communities a minimum economic benefit to sustain their livelihoods. Sustainable wildlife management can be a source of money to pay for people's basic needs, invest in wildlife conservation measures and contribute to the enhancement of local infrastructure. Hunting of wildlife is allowed through issuing of permits exclusively in an assigned

General description what the land use practice is about, its idea, context and particularities

Key functions of each land use practice are assembled in a set of cornerstones

Each experience is shortly described and linked to further documentations

Key elements of the experience are described in a step wise format

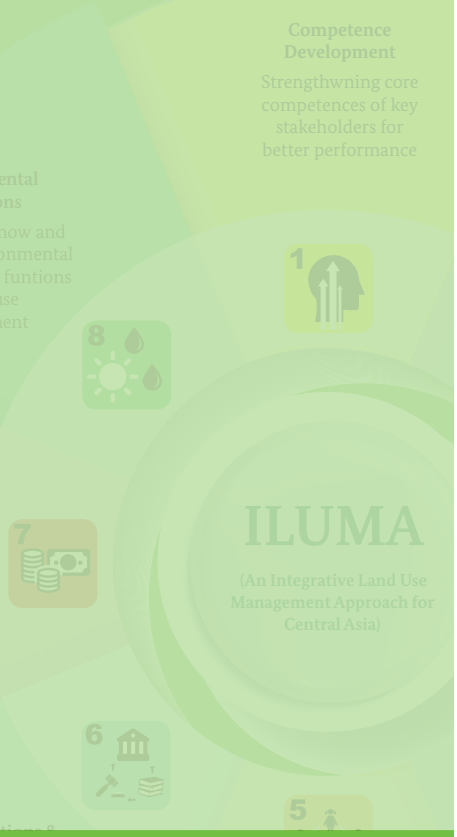
Selected guiding principles for each element that needs to be considered when implementing the land use practise, organised by its respective dimensions

Cornerstone 1: Community-Based Wildlife Management

GIZ Experience in Implementation	**Community-based wildlife management** is aimed at conservation and sustainable management of wild animals through the participation of local communities and the private sector in the management of hunting grounds.	
	Reference material: Factsheet: Sustainable Management of Wildlife in Central Asia. The Current Situation of Wildlife Management in Central Asia. Practitioner's Guidebook: How to Run a Wildlife Management Organisation and Conduct Trophy Hunts for International Clients	
Key Elements of the Experience	**Guiding principles and the way how they are related to ILUMA dimensions**	
Identification of potential and existing opportunities for establishing Community-Based Wildlife Management		Counter adverse negative impacts brought about by illegal and unsustainable hunting of ungulates as a source for food and revenue. Ensure sufficient forage for ungulates despite an increasing livestock population. Avoid livestock overgrazing and habitat degradation. Protect targeted wildlife species: Argali Sheep Ovis ammon, Markhor Capra falconeri heptneri, Severtsov Argali Ovis ammon severtsovi, Siberian Ibex Capra sibirica, Snow Leopard Panthera uncia Urial Ovis vignei.
		Ensure sufficient economic benefits and opportunities for the local population in rural areas.
Community mobilisation and awareness-raising		Technical advice and training on population surveys, management planning and provision of services to tourists and trophy hunters.
		Collaborate directly with traditional hunters, state-authorised bodies (e.g. Forestry Agency) and protected nature areas department, scientific-research institutions, private conservancies[1] and hunting concessions.
		Provide basic equipment (uniforms, field and optical equipment).
		Facilitate involvement and empowerment of traditional hunters and other interested community members (monitoring, tourism services, etc.

The following symbols are used for ILUMA dimensions:

Symbol	ILUMA dimension	Symbol	ILUMA dimension
	**Competence Development:** strengthening core competencies of key stakeholders for better performance.		**Knowledge Management:** improve knowledge management and foster ongoing learning so as to better adapt to change.
	**Planning and Monitoring:** adequate planning, management, and monitoring instruments, structures and processes.		**Organisational Development:** strengthen and develop effective organisations and performance-based organisational mechanisms.
	**Socio-cultural Relations:** deploy social relations and culture as strong foundations for integrative land use management.		**Institutions and Institutionalisation:** build strong institutions and institutionalise core processes.
	**Economy and Financing:** emphasize economic viability and foster economic development by sustainable investments.		**Environmental Conditions:** consciously know and integrate environmental conditions and functions in land use management.



Integrative Forest Management

for Integrative Land-Use Management Approaches (ILUMA)

Integrative Forest Management

Integrative forest management to increase forest cover in Tajikistan

1. What is this land use practice about?

Tajikistan is a mountainous country that is very vulnerable to the impacts of climate change: climate-related hazards, such as landslides, floods, and droughts are not uncommon, while remote populations that rely upon their natural environment to ensure their livelihoods have very limited coping capacities to deal with the aftermath of natural disasters. It is expected that climate change-related risks will increase in the coming decades. Extreme weather events in particular are expected to become erratic and unpredictable. Sustainable management of forests can help to attenuate the risks associated with climate change by: a) reducing the likelihood and intensity of expected hazards (via soil stabilisation, reduced erosion, flood protection); and b) increasing the resilience of local populations (via increased economic opportunities, diversification of options for energy supply, and legally guaranteed tenure rights).

Forests play a key role in the lives of Tajikistan's rural population. Firewood, fodder, medicinal plants, fruit, and nuts can be sold locally at a profit and thus represent an important source of income. Forests also perform an essential function in regulating the water balance and providing protection against natural disasters. Rehabilitating and protecting forests is therefore of vital importance in the process of strengthening resilience and adapting to climate change. Unfortunately, following the collapse of the Soviet Union, increased demand for fuelwood led to widespread deforestation. This made Tajikistan more vulnerable to climate change. Conflicts over land use rights between forestry offices and the local population also continue to lead to overuse and degradation of forest resources.

The experience of GIZ has shown that measures to strengthen the capacities of forest authorities and forest users to plan, implement and monitor sustainable forest management, as well as to settle land use conflicts, function best when they are consensus-oriented. In this way, measures taken can lead to the rehabilitation of degraded forest areas, greater availability of fuelwood and increased earnings from forest management activities. Integrating biodiversity conservation into the capacity building process further promotes the long-term stability of forests and helps to mitigate the negative impacts of climate change.

2. Cornerstones of Forest Management

Successful forest management requires a multi-level and multi-dimensional approach. Piloting integrative forest management approaches based upon rehabilitation, protection, and reforestation is as important as supporting appropriate forest governance and management structures which enable sustainable forest use planning and monitoring. Forests-based economic development based upon timber, pasture, non-timber forest products (NTFP) or tourism provides the opportunity to take advantage of economic incentives to promote sustainable management approaches among the local population and forest management institutions.

The most important 'cornerstones' regarding the land use practice 'forest management' are:

1. Forest Rehabilitation
2. Forest Protection
3. Afforestation and Reforestation
4. Forest Governance & Management Planning
5. Business development

Cornerstone 1: Forest Rehabilitation

GIZ Experience for Implementation	
	Joint Forest Management (JFM) is a participatory forest management approach that enables the local population to be involved in forest management and to support the rehabilitation of degraded natural forests over the long-term while getting economic benefits. Local tenants sign a leasing contract for the land use rights with the State Forest Enterprises for a period of 20 years, with the possibility of prolongation. In addition to the contract, management and annual plans serve as tools for forest management planning and for the monitoring of activities and results. **Reference material:** JFM presentation SFA: K-Link / Website Training modules on integrative forest management: Website: EN, RU JFM manual: Website: EN, TJK Contract templates: K-Link / Website Template MP/ AP: K-Link / Website JFM movie: K-Link / Website

Key Elements of the Experience	Guiding principles and the way how they are related to ILUMA dimensions	
Leasing Contract Contracts between local tenants and the local forest enterprise grant the land use rights to the local forest tenants over a period of up to 20 years with the possibility for prolongation.		Raise awareness of the local population on sustainable forest and land management practices. Evaluate potential future benefits to determine a fair share of the income between the local forest enterprise and forest tenant(s).
		Ensure the legal basis for the contracts given. Develop bylaws and regulations on the application of JFM. Specify the management objectives and monitoring structure within the contract.
		Calculate the potential benefits to determine a fair share between state forest enterprise and forest tenant.
		Ensure that forest users and staff of forest enterprise know their roles and responsibilities. Establish communication channel between forest users and the local forest enterprise. Consider the necessity of trust-building measures between tenants and forest enterprise.
Management Plan Develop for a 5-year period forest management goals together with forest tenant and forest expert.		Implement planning and monitoring forest management activities within the management plan.
		Consider the economic means of the forest tenant and the potential for support from the forest enterprise for forest rehabilitation.
Annual Plan Specify the yearly activities, developed annually together with the forest engineer.		Regularly monitor AP to collect statistics for the development of integrative landscape plans.

Technical Consultation Consult the staff of the local forest enterprise on forest management based upon the needs of forest tenants.		Identify the need for technical consultation and support. Ensure the capacity development of local foresters (e.g. on using GPS and maps).
		Depending on the socio-cultural structure of the community, consider whether separate training events for men and women are needed.
Forest User Groups (FUG) Members can jointly organise work to improve their forests infrastructure and monitor the fulfilment of Annual Plans, as well as solve conflicts between forest users or other stakeholders.		Establish a JFM council for regular meetings, exchange, and conferences of NGO and governmental organisations. Establish a communication channel between the forest user group and focal forest enterprise. Consider the current village organisation structures.
		Identify if there are existing land use conflicts in the community. Consider local traditions when setting up a FUG. Set up a forest user group for coordination of forest-related issues in the villages.

Cornerstone 2: Forest Protection

GIZ Experience for Implementation		**Afforestation on communal land** reduces pressure on nearby forests by cultivating trees (mainly fast-growing species) on plots adjacent to the settlements, so as to meet the local needs for fuelwood and fodder without degrading the forest areas. The harvest from these fast-growing trees shall then decrease the need for cutting the nearby forests. In the case of the 'Gazza' plantation area, irrigation pipes were constructed to be used to cultivate fast-growing trees. **Reference material:** Background on an Irrigation project in Penjikent: K-Link / Website Forest Management techniques: K-Link / Website: TAJ, RU, EN Management Planning Table: Website
Identifying land use rights These are fundamental to the long-term development of reforestation/rehabilitation areas, and equally, to ensure proper distribution of land.		Ensure every land user' land use rights are formally documented by state institutions. Provide maps for each individual land plot leased to a community member to the government.
Environmental assessment of the area helps to identify vulnerabilities of the ecosystem and people, thereby also helping to develop recommendations of mitigation measures.		Conduct environmental assessments to identify each community's vulnerabilities and risks. Conduct such assessments in a participatory manner so as to get to know changes in the surroundings.
Management plans support managing the plantation area in a climate-friendly and sustainable way.		Consider the environmental condition of the forest plot when identifying management goals. Plant climate-resilient forest tree species.
		Ensure that both the local forest enterprise and forest users agree with the management plan and that their expectations are met.
		Plant fruit or nut trees among the forest tree species to ensure benefits for the forest user.

GIZ Experience for Implementation	**Living Fences** are an alternative to often hardly-affordable wire fencing, or they can replace a wire fence over time (such that weathered wire fences, which need to be replaced every few years, can be replaced by a living fence). Living fences are common throughout the Pamirs, where sea buckthorn and rosehip grow well. These thick, thorny bushes are very suitable as living fences, as even goats are hindered by the thorns to enter.	
Key Elements of the Experience	**Guiding principles and the way how they are related to ILUMA dimensions**	
Due to a large number of livestock, fencing often becomes necessary. Livestock eat young trees and damage root systems, which in turn hinders natural regrowth and reduces growth rates and harvests. Fencing is essential especially if the forest area is located close to roads or livestock corridors.		Provide access to affordable fencing material, set up a financing mechanism, or provide simple machinery to build mesh wire locally.
		Promote the planting of fast-growing trees and bushes along a mesh wire fence, so that once the fence is due to be replaced, the natural, living fence can take its place and function.
Key Elements of the Experience	**Energy-Efficient Technologies (EE Stoves, solar heaters, improved house insulation)** are a solution to reduce the pressure on natural resources, as well as to improve the quality of people's lives.	
	Reference material: Documentation on thermal insulation: K-Link / Website Reduced pressure on forest resources by improved thermal insulation in private houses: Wocat / Website	
Key Elements of the Experience	**Guiding principles and the way how they are related to ILUMA dimensions**	
Marketing and community awareness When launching the microloan product, the awareness and interest of people must be increased (see documentation on thermal insulation).		Create awareness about thermal insulation among the local population.
		Calculate the financial benefit over time by using thermal insulation.
Microloans A step-by-step description of the particularly complex cycle of microloans (financial and technical) for thermal insulation needs to be followed.		• Ensure financial literacy of clients, or potentially provide financial literacy training. • Train clients in business plan development.
		• Ensure the microloan organisation has adequate financial literacy in loan management and provide training if needed.
Microloan product "Warm comfort" offers a microloan for thermal insulation materials and construction services with discounts.		• Ensures potential benefits for MLOs, clients/local population. • Ensure that clients have the possibility to repay the loan from the savings on electricity costs or from other sources.

Cornerstone 3: Afforestation / Reforestation

GIZ Experience for Implementation	**The Saving Book Approach (SBA)** was developed as an incentive system to bridge the high labour and investment cost / low-income phase of afforestation and reforestation activities within the JFM approach. The approach provides a financial incentive for afforestation and reforestation activities. The centrepiece of the approach's design is the establishment of deposit accounts for participating forest tenants. An activity plan is developed together with the forest tenant and the local forest enterprise, determining the amount which can be withdrawn annually. The annual amount can only be withdrawn if the goals from the previous year have been fulfilled. As the income from the forest plot increases, the annual amount from the SBA is decreasing. The time horizon of the SBA varies and depends on the site-specific conditions and planted tree species. **Reference material:** SBA Manual: K-Link / Website

Key Elements of the Experience	Guiding principles and the way how they are related to ILUMA dimensions	
Identification of area and community for suitable re-/ afforestation areas together with the local forest enterprise and the community. The engagement of both parties is needed to ensure the success of the investment.		Raise awareness of the local population on sustainable forest and land management practices. Consider the environmental conditions of the identified plot for its suitability for afforestation or reforestation.
Three party Contract between the local community or individual forest user, the local forest enterprise and an MLO provide the legal basis for the application of the SBA. A work plan builds a mandatory element of the contract. Additional contracts between the forest users and the local forest enterprise, including management and annual plans, are concluded according to the JFM approach (please see above).		Ensure that forest users, local forest enterprise, and MLO know their roles and responsibilities within the contract.
		Ensure financial literacy of clients, or potentially provide financial literacy training.
		Calculate the potential benefits to define the amount and the lengths of the SBA. Assess the necessity of infrastructure investments at the beginning of the contract (e.g. irrigation, fencing).
Regular monitoring of the afforestation or reforestation measures as defined in the three-party contract forms an essential part of the SBA. The local enterprise holds the right to withhold the annual payments if the activities were not fulfilled as agreed in the work plan.		Specify the roles and responsibilities of monitoring in the contract. Ensure regular monitoring visits.
		Consider hiring a local NGO to support the three contracting parties in monitoring.
		Consider that environmental events or disasters might influence the activities as specified in the work plan.

Cornerstone 4: Forest Governance & Management Planning

GIZ Experience for Implementation	
	Forest management planning is the process of planning and implementing practices for the stewardship and use of forests and other woodlands targeted at specific environmental, economic, social and cultural objectives. Forest management planning is a fundamental component of sustainable forest management, and it may be required at various levels, from local to national. The role of forest management planning is to determine and specify the objectives for a particular area of forest and to set out the steps to be taken to achieve those objectives. A forest management plan defines the planned forestry activities (e.g. inventory, yield calculation, harvesting, silviculture, protection, and monitoring), specifying objectives, actions and control arrangements in a forest area. A forest management plan is also an important tool for ensuring the participation of and communicating management objectives and strategies to people living in or near the forest and other stakeholders in the implementation of SFM. **Reference material:** Methodology for forest management planning: K-Link / Website Forest typology: K-Link / Website: EN, RU

Key Elements of the Experience	Guiding principles and the way how they are related to ILUMA dimensions	
Forest cover assessment is the process of mapping the forest cover in a certain area while considering the national definition of forest. The process involves a wide application of remote sensing data and geographic information systems (GIS) analyses. It is usually implemented before management planning and serves as a basis for the forest inventory and stand-wise planning.		Cultivate practical experience using GIS and remote sensing among partner institutions (learn-by-doing). Organise regular trainings about GIS and remote sensing.
		Monitor deforestation and forest cover change. Develop a land cover/forest cover classification system.
		Consider the national forest definition and translate it into criteria understandable by GIS software.
		Ensure that the outcomes (GIS layers, statistics, etc.) are anchored in the relevant responsible institution and are used for planning and implementing forestry management activities.
Forest inventories collect statistical information on wood and non-wood forest resources, site classification, social aspects, and biodiversity. Full inventories at the Forest Management Unit (FMU) level may be carried out periodically. Data should be integrated with GIS to the greatest extent possible. Currently, there is no information on the status of forest resources in Tajikistan. The data provided by authorities is simply a rough calculation and often does not reflect reality (see: "Forest inventory experiences").		Provide information and training for relevant state agencies.
		Conduct a vulnerability and risk assessment in the project intervention area. Develop sustainable and climate-resilient forest management plans.
		Consider environmental conditions during the design of ample plots. Integrate climate change indicators in the inventory process. Identify the most appropriate areas for JFM dissemination.
		Develop a forest information system (see: TajFIS experience). Document the methodologies and tools for forest mensuration.
		Plan sufficient quantities of trees that provide NTFP, as these are the main livelihood for local communities. Consider the interests of different stakeholders, especially the local population as they are living directly from the forest.

Business plans for local State Forest Enterprises involves marketing of timber and non-timber forest products, and development of recreation points, as well as the optimization of the structure of the business processes of forest enterprises. The business plan is harmonized with the general management objective and developed for a certain period of time as articulated by the laws of the Republic of Tajikistan.		Optimize business processes of local forest enterprises (See BPMN)
		Ensure profitability of local state forest enterprises.
GIZ Experience for Implementation	**Forest sector development strategy** The period 2016-2030 in Tajikistan is aimed at achieving the sustainable development of the forest sector, so as to ensure a balance between the ecological, economic, and social functions of the forests. The implementation of such functions will contribute to important aspects of forest reform, as well as correspond to the main priorities of the National Development Strategy of the Republic of Tajikistan. **Reference material:** Forest Sector Development Strategy for Tajikistan: K-Link: EN, RU, TAJ / Website: RU, TAJ Action Plan: K-Link: RU, TAJ / Website: RU, TAJ	
Key Elements of the Experience	**Guiding principles and the way how they are related to ILUMA dimensions**	
An action plan for implementation will be implemented in three stages: 2016-2020 2020-2025 2025-2030		Promote economic development by attracting the private sector to forest-based activities. Consider improving the welfare of local people by involving them in participatory forest management. Sufficiently early in the budget design, address whether finances will be made available for implementing the strategy.
		Envisage capacity-building for forestry staff.
		Whenever supporting a new strategy, consider its possible negative impacts and try to minimise these (e.g., contradictions with other existing laws and strategies, deep institutional re-structuring, reinforcement of monopolistic situations and behaviours, etc.).

GIZ Experience for Implementation	**A forest inventory** is a systematic collection of data about the forestry resources within a given area. While in the past forest inventories were primarily aimed at assessing timber availability, in recent years forests have been recognised as complex ecosystems with several interacting elements (including humans, as in JFM). Forest inventories are now commonly conceived as multipurpose, with the contribution of expertise from different fields such as sampling theory, surveying, information technology, remote sensing, social science, mensuration and modelling to assess the multiple functions of forests and trees. **Reference material:** Methodology for forest inventory: K-Link / Website Forest monitoring: K-Link / Website

Key Elements of the Experience	Guiding principles and the way how they are related to ILUMA dimensions	
Definition of the inventory objectives and information desired, in particular regarding the purpose (objective/goal) and the targeted audience of a forest inventory. The focus of data collection should also be outlined accordingly and with the users' information needs in mind.		Prioritise the information needs of State Forest Enterprises and the Forestry Agency.
		Monitor and assess forest species and forest biodiversity within the forest inventory.
		Develop clear regulations for data storage and sharing.
Remote sensing surveys are used to determine the extent of different land-cover (or land use) classes. This greatly assists in extrapolating volume and biomass densities generated by field-based measurements over large areas and over time. Such surveys entail repeated assessments to estimate changes in total volume and biomass stocks, as well as stratified analysis of the field data.		Map landscapes and ecosystems, as well as infrastructure.
		Develop a technical guideline for local experts. Organise practical training events for local experts from the Forestry Agency.
		Develop a data information system (TajFIS).
Development of sampling design and methods to contend with cost and time constraints. Inventories should be carried out using sampling techniques, the general principle of which is to select a subset from a population and draw inferences from it to the entire population.		Select a regular monitoring period. Identify sample plots for regular monitoring. Make sure that stakeholders understand these sample plots must not be changed at any point either during or between monitoring cycle.
		Organise training events on GPS and mapping.
		Document applied methods in such a fashion as to enable reapplication by the Forest Agency.

Data collection (field surveys) that entail measurements and field observations of individual specimen (trees and shrubs) and the forest ecosystem as a whole. Common tree measurement parameters include diameter, height, stem form, health condition, etc. A variety of instruments and tools are available depending on available budgetary resources and expertise.		Identify and map climate change hazards and risk areas. Identify and map areas of soil erosion.
		Involve students as a part of field crews (i.e., practical training on forest mensuration).
		Conduct additional surveys and data collection drives to verify the sustainability of management planning.
Data analysis and publication of the results in the form of reports and statistics enables incorporating data and project results into general management plans and conservation of biodiversity and threatened species.		Develop factsheets and other hand-out materials to disseminate information. Provide data for the National MRV.
		Ensure the data is approved by the respective national authorities and incorporated into management plans.
GIZ Experience for Implementation	The Tajik Forest Management Information System (**TajFIS**) is envisaged as an integrated system for planning, implementing, and monitoring multi-objective forest management activities. TajFIS can be used for strategic, tactical and operational planning and implementation, and operational control in and across administrative units and levels of the organisational hierarchy. Besides providing databases and models needed to support decision-making for the many activities of the SFA Department, TajFIS also has the ability to maintain current forest inventories and generate maps of spatially-oriented data (e.g. attributes of entities depicted on a map, such as population of a village, whose location can be fixed on a map). TajFIS is comprised of several interlinked components, including a Monitoring Information System (MIS), Geographic Information System (GIS), and Klink (KDMS). **Reference material:** Reporting system for TajFIS: K-Link / Website Documentation of the workshop: K-Link / Website The workshop process: K-Link / Website	
Key Elements of the Experience	**Guiding principles and the way how they are related to ILUMA dimensions**	
Involving stakeholders in cooperation with international experts to conduct GIS and remote sensing activities. During training workshops, the interests and requirements of the different stakeholders can be discussed and considered.		Collect and document information from stakeholders during the workshop.
		Invite all relevant stakeholders. Establish a working group centered around focal points for data sharing between the institutions.

Requirement analysis of technical documentation, including technical concepts, sustainability studies software requirements, and cost estimates. Such analysis should be done based upon discussions and interviews with the State Forest Agency and other stakeholders.		Establish a GIS and knowledge management working group at the state agency. Develop a concept for a data information system. Choose inexpensive open source technology over commercial technologies so as to ensure that state agencies can maintain and administer the system independently.
		Provide an innovative method for data management.
		Support relevant state agencies in using GIS and open-source data management tools.
Piloting TajFIS, so as to introduce a very complex system into an environment with very little IT capacities. The pilot project should entail a small module focusing on data and document management instead of introducing the system at once. This due to a general lack of IT capacities. To harmonise data systems between different projects at the state agency, a module of TajFIS for storing spatial (geographic) data has been developed. The actual module that serves as the basis for this experience has been developed as a plugin for the Open Source K-Box (see KLINK). It enables storing, sharing and previewing various vector and raster formats.		Support exchange of data between the governmental and non-governmental institutions. Join forces with other institutions.
		Provide sufficient training on data management and use. Ensure training events are attended by representatives from those state agencies that are expected to share data in the future.
		Invest time in this behavioural change. Changing from a paper-based working system to digital data management requires a significant behavioural change, which will take time.

GIZ Experience for Implementation

Business Process Model and Notation (BPMN)
is a system of notation for description and modelling of working processes of an organisation at management, operational, and supportive levels. It enables creating diagrams of formalised working processes that can later be visualised, understood, analysed and reproduced by other stakeholders. Detailed graphical descriptions of working processes can help provide advice and guidance on how the existing agency's/ enterprises' operations model can be transformed toward an efficient business-oriented approach.

Reference material:

Textual descriptions of working processes of the State Forest Enterprises: K-Link / Website

Graphical descriptions of working processes: K-Link / Website

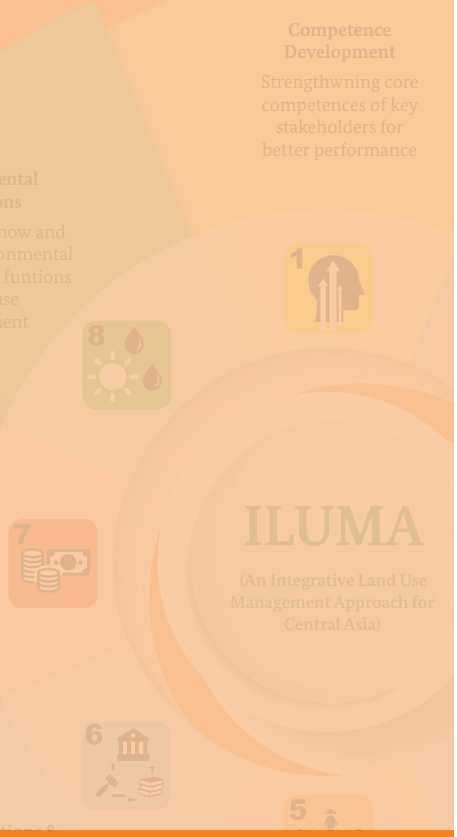
Analysed normative-legal base, regulating the working processes, and proposals for optimisation: K-Link / Website

Key Elements of the Experience	Guiding principles and the way how they are related to ILUMA dimensions	
Training events for BPMN are provided for experts responsible for forest management, in order to increase their capacity in conducting in-depth analysis of the working processes of their sector and, as well as designing optimised working processes.		Train responsible Forest Agency staff on the relevant BPMN standard enables creating BPMN models with clear process logic. Provide practical training sessions on BPMN.
Textual description of the working processes of SFE entail detailed work instructions are documented. The instructions that are linked to individual activities (business roles) of the process model, in order as to specify detailed action items within them.		Provide the texts in clear and simple language that can be understood even by those personnel who have not been trained in BPMN to be equally understood by personnel not trained on BPMN.
		Define clear roles and responsibilities in each business role, such that they are distinguishable and clear.
Graphical description of the working processes of SFE help to visualise activities and processes in the workflow, as well as simplify their thereby aiding comprehension.		Accelerate the process of day-to-day services, and ensures their quality by use of clear and logical visualisations of all processes. Provide recommendations for the work process optimisation.
Analysis of legal bases of work processes for the forestry sector, from which recommendations to introduce new transparent and standardised approaches for adequate and effective management and control can be provided.		Raise awareness of stakeholders about current problems. Ensure working processes and business roles comply with legal frameworks.
GIZ Experience for Implementation	**Day-to-day Technical Support to the Forest Agency**, particularly technical support at the institutional level. Such support encompasses forestry techniques, digital competences, and organisational advisory. One of the key aspects of technical support is a permanent physical presence of GIZ staff in the building of the Forestry Agency itself. Via this physical presence, long-term trust and cooperation have been built, enabling in the long-term much more efficient backstopping. **Reference material:** VET professional education programme: K-Link / Website Training modules on integrative forest management: K-Link / Website Two-pager introduction to K-Link and K-Box: K-Link / Website	
Key Elements of the Experience	**Guiding principles and the way how they are related to ILUMA dimensions**	

VET – Professional training program 'Forester' consists of nine training modules, the first of which is general while the others are technical. The curriculum for forest rangers offers a modular structure of training that contributes to the development of competencies needed by a forest ranger. The modular approach enables gradual participation by those undergoing the training.		Ensure knowledge exchange among all state forest enterprises. Ensure participants understand the concept and importance of forest ecosystem services and forest biodiversity.
		Ensure equal participation of all state forest enterprises.
Training module on the integrative forest management for local communities with forest and pasture resources. The module raises awareness about the importance of forests and sustainability. The training takes a landscape perspective and hence enables addressing environmental challenges in the community.		Address challenges and facilitate dialogue between forest and pasture users so as to improve sustainable natural resource management. Conduct an environmental assessment prior to trainings.
		Provide a discussion platform for stakeholders to address environmental challenges and potential conflicts over resources. Engage local authorities in parts of the workshop, so that challenges can be jointly addressed, and solutions are jointly found.
		Ensure that women and youth equally participate in workshops.
		Train foresters and other NGOs working in the forest and pasture management in how to implement what they have learned in the workshops.
Knowledge Management with K-Box and K-Link, open-source software systems that enable forest agencies to organise, manage and share internal data and information. The software can be handed over to local partners and hosted, maintained and further developed locally.		Improve internal knowledge management of the Forestry Agency and its subsidiary institutions. Facilitate access to and publication of information.

Cornerstone 5: Business Development

GIZ Experience for Implementation		**Dissemination of Innovative technologies** supports private sector actions aimed at raising awareness for the rational use of natural resources, as well as for introducing market-oriented approaches. Various technologies improving the efficiency of natural resource use – such as fuelwood, irrigation and drinking water provision – have been developed and adapted to local conditions at the household and community levels, and standardised for further production. **Reference material:** Ppt on CC 'Zindagi' K-Link / Website Collaboration with MLO: K-Link / Website Support to private forest extension services: K-Link / Website
Support for local cooperatives such as the consumers' cooperative "Zindagi" was founded in 2010 with the aim of producing and disseminating fuel-efficient technologies developed by GIZ. The cooperative provides its members/masters with production materials, financial services, marketing, equipment, as well as training and consultancies.		Support local cooperatives or the establishment of cooperatives in order to disseminate innovative technologies among memberships
		Support local cooperatives in defining a financially lucrative business model so as to finance their organisational and membership's costs.
Support for local NGOs such as 'Camp Tabiat', which is specialised in environmental management protection as well as on climate change adaptation measures.		Build the competencies of local NGO staff in using new technologies and methodologies for the environmental sphere, specifically in accounting for climate change and identifying appropriate adaptation measures.
		Ensure the NGO is well-accepted by the local population and knows the cultural specifics of the region in which it is operating.
		Ensure the NGO is not solely dependent upon GIZ funding. Before supporting the set-up of a new NGO, certify that there is not already another NGO covering this thematic sphere in the target region of operation.



Pasture Management

for Integrative Land-Use Management Approaches (ILUMA)

Pasture Management

Sustainable pasture management for improving grassland ecosystems and livelihoods of pastoralists.

1. What is this land use practice about?

The Republic of Tajikistan is the smallest landlocked country in Central Asia. Mountains cover more than 90 percent of the country. With a total area of pasture of 3.9 million hectares, alpine ecosystems thus constitute 80 percent of the country's agricultural land, which is used heavily for livestock husbandry. Most of the livestock is privately owned, awhile approximately 96 percent of products, including dairy, are produced by private farmers. Only a few farms use modern technology.

Due to land degradation and overgrazing, the area for pasture has decreased since independence. Yet, the livestock numbers have increased from 4.5 million head in 2005 to about 7.4 million head in 2014 (table 1). This increase of over 65 percent is the main driver of overgrazing.

Pastures play a major role in economic development and in reducing poverty in rural Tajikistan. However, the degradation of pastures is posing an increasing threat to rural livelihoods. It is also threatening the important biodiversity of adjacent ecosystems, with restoration being nearly impossible and becoming more and more expensive.

2. Cornerstones of the Sustainable Pasture Management

Many different projects and donor-funded initiatives are continuously contributing to the identification of solutions and supporting efforts to rehabilitate degraded pastures. At a 2013 meeting of practitioners and experts working in the field of pasture management on the occasion of the approval of the first Tajik legislation on the issue – entitled, 'On Pasture' – it was noted that there is weak or inconsistent networking and coordination among pastoralist organisations and knowledge exchange among related stakeholders, as well as a lack of synergies in activities and weak legislative framework. The approval of new legislation marked the starting point for GIZ's work on pasture management.

The most important 'cornerstones' regarding the land use practice 'pasture management', are the following:

- Pasture Governance
- Pasture Management Techniques

Table 1: Animal husbandry, 2005–2014, thousand head

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total	**4 501**	**4 661**	**5 580**	**6 024**	**6 106**	**6 369**	**6 092**	**6 855**	**7 100**	**7 397**
Beef cattle	652	666	838	866	878	912	978	995	1 023	1 169
Milking cows	720	757	864	933	952	985	1 033	1 049	1 076	1 093
Pigs	1	1	1	1	1	1	1	1	1	1
Sheep	1 893	1 952	2 374	2 579	2 617	2 729	2 288	2 960	3 097	3 227
Goats	1 160	1 209	1 424	1 568	1 583	1 666	1 715	1 773	1 826	1 830
Horses	75	76	79	77	76	76	77	77	77	78

Source: Agency of Statistics, website, 2015.

Cornerstone 1: Pasture Governance

GIZ Experience for Implementation	**Improvement of the legal framework** Tajikistan faces a major problem of unsustainable grasing pressure from high livestock numbers and insufficient pasture management. The country is in a dire need of better pasture governance based upon a solid legal basis. Therefore, GIZ in Tajikistan has worked on the improvement of the legal framework and facilitated a dialogue between different stakeholders. **Reference material:** Institutional analysis on pasture management in Tajikistan: K-Link / Website Pasture Law K-Link / Website Pasture User Unions (PUU): K-Link / Website Policy note on PUUs: K-Link / Website

Key Elements of the Experience	Guiding principles and the way how they are related to ILUMA dimensions	
Institutional analysis on pasture management in Tajikistan that outlines the institutional and legal set-up and distribution of roles and responsibilities in the pasture management sector of Tajikistan. The analysis can indicate potential entry-points for future donor-supported activities that could strengthen the institutional basis for sustainable pasture management in Tajikistan.		Raise awareness of stakeholders on the institutional and legal set-up. Identify entry-points for future improvement. Ensure good donor coordination. Involve stakeholders from different governmental and non-governmental institutions and organisations.
		Specify the roles and responsibilities of each stakeholder.
		Identify needs for further competence development among all institutions involved in pasture management.
Law 'On Pasture' and its by-laws (PUUs charter, etc.) passed in 2013, which regulates access to pasture resources and is governed by the Land Code. Primary pasture use rights over most of pastures have been allocated to individuals, often on a first-come-first-served basis. Common problems include lack of secure pasture use rights for most livestock keepers, high rental fees, underuse of remote pastures and overuse of pastures near villages, and few incentives for land use right holders and pasture users for sustainable management of pastures. Note that a new law has been adopted as of June 2019.		Specify the roles and responsibilities in pasture management. Support the creation of Pasture User Unions (PUU) and a Commission on Pastures (CoP).
		Inform pasture users of laws and regulations regarding pasture management and support their compliance. Support pasture users in developing compliant pasture management plans.
		Support development of laws, amendments and by-laws. Support exchange between national, district and local levels to deal with challenges and gather ideas and input from all stakeholders.

Pasture User Unions (PUU) are comprised of pasture users and are established at the jamoat (rural municipality) level with members from several villages. It is a formal organisation, replete with a statute and legal registration, stamp and bank account. The advantage of a PUU is that members can work together to solve immediate problems while also planning future joint activities. For instance, they can control livestock grazing, monitor the condition of pastures, repair or rehabilitate pasture corridors, monitor animal health and organise vaccination of the entire livestock in the community, and most importantly, protect the interests of each member of the PUU to ensure secure access to pastures.	 	Encourage pasture users to join or found a PUU. Support PUUs to register legally as a union and to join the national Pasture Management Networking Platform (PMNP). Ensure PUUs are linked to each other, to the national level and to other organisations working on pasture management.
		Study whether there exist conflicts over access to pasture, interest to join pasture management activities, or availability of pasture through the jamoat. Be aware of transhumance corridors used by big herds, particularly during summer.
		Ensure a fair sharing principle of economic benefits is in place between PPU members.
		Support establishment of a knowledge management platform for PUUs.
Policy note on Pasture User Union (PUUs), the purpose of which is to inform the Minister of Agriculture, the Deputy Prime Minister and the Executive Office of the President of Tajikistan about the registration of local pasture user unions, their rights, and limitation over the use of pasture lands.		Raise awareness among key decision-makers in relevant ministries regarding the importance of PUUs and their legal registration.
		Identify entry-points for future improvements in registration, in particular how to simplify the process. Institutionalise exchange between PUUs and the Ministry of Agriculture, especially the Pasture Trust.
		Involve NGOs in helping PUUs to register themselves, in particular by working and sharing knowledge with the latter.
GIZ Experience for Implementation	**Pasture Management Networking Platform (PMNP)** seeks to foster national dialogue and knowledge exchange based upon practical and on-the-ground experiences of network members. **Reference material:** Gender Analysis and Policy note: K-Link / Website Quarterly newsletter on Pasture Management: K-Link / Website Pasture map: K-Link / Website Policy note on PUUs: K-Link / Website Documentation of exchange visit: K-Link / Website	
Key Elements of the Experience	**Guiding principles and the way how they are related to ILUMA dimensions**	

Gender analysis and policy notes, in which Tajik and international NGOs, donor projects and experts' operating in the field of pasture rehabilitation and livestock development come together with public partners to analyse the role of women in pasture management and relations between men and women in the sector. The policy note gives insight into gender roles in pasture management and provides recommendations on how to apply gender-sensitive or transformative approaches in pasture management.		Raise awareness about the role of women and men in pasture management. Develop leadership skills among young rural women.
		Support and encourage women to set up their own PUUs, businesses, or NGOs.
		Empower women to achieve transformative change in practice. Identify a change-maker who can motivate other women to become more active. Engage older women in order to have younger ones follow in their footsteps.
Quarterly newsletters are useful for keeping each member of the PMNP informed about the latest news from various organisations concerning pasture management.		Encourage members to share and exchange news and knowledge in general. Inform stakeholders about latest news and modern techniques. Disseminate best practices through a quarterly newsletter. Engage different readers by addressing all levels.
		Engage the relevant ministries to participate in the newsletter, if not even potentially take over authorship.
Mapping of all projects contributing to sustainable pasture and livestock management, in the form of an interactive GIS map, enables all PMNP members to see all past and existing projects throughout the country, thereby fostering better awareness and synergy.		Raise awareness about relevant projects and use synergies. Ensure the map is available to all stakeholders involved in pasture management.
Field exchange visits among the members of the PMNP encourages knowledge exchange on pasture management techniques and learning about various pasture conditions in the regions of Tajikistan. Field exchange visits are organised with members of the network.		Ensure that pasture users, experts, and local authorities join exchange visits. Increase understanding of the importance of sustainable pasture management. Encourage knowledge transfer of good practices.

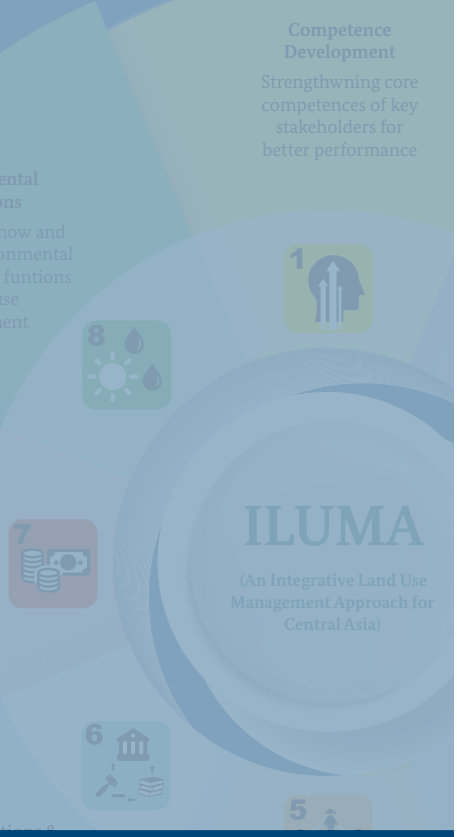
Regional Pasture Network promotes the exchange of experience and expertise in pasture management in Central Asia, China, and Mongolia. It focuses on pasture management, but also includes aspects of forest and wildlife management. To ensure sustainability, the RPN has recently been handed over to a consortium of local NGOs that will host it in the future.		Ensure democratic access to relevant information for all stakeholders. Make lessons-learned from ongoing and concluded projects available beyond the project duration.
		Provide a platform for political dialogue, highlighting the importance of the topic to decision-makers and building networks amongst practitioners.

Cornerstone 2: Pasture Management Techniques

GIZ Experience for Implementation	**Pasture Management Planning in Tajikistan** is needed to contend with overgrazing, especially in the immediate vicinity of villages. Overgrazing puts significant pressure on communal pasture lands and leads to serious land degradation. This land degradation, in turn, puts the livelihood and food security of the rural Tajik population at risk. Despite the adoption of a law 'On Pastures' in 2013 and its revision in 2019, community-based controlled grazing mechanisms are not yet widespread. Key culprits behind the lack of such mechanisms are the absence of by-laws and weak law enforcement. **Reference material:** Pasture Management Plan: K-Link / Website Pasture Plant Species Catalogue: K-Link / Website Grasing calendar: K-Link / Website Documentation of sustainable fodder production: K-Link / Website Hay carrying technology: K-Link / Website

Key Elements of the Experience		**Guiding principles and the way how they are related to ILUMA dimensions**
Pasture management plans (PMPs) are effective tools for improving community pasture management practices and increasing benefits derived from livestock keeping. Thus, a PMP template is proposed that can be adjusted per regional pasture situation (e.g. high altitude or lowland pastures), PUU preferences and project needs and wishes.		Scope the environmental condition of the pasture area for which a PMP (pasture management plan) is to be developed. Do not restrict the PMP to pasture management, but also include planning for livestock management in general.
		Use sufficiently simple templates that any PUU member can easily understand. Use sufficiently simple formulas when calculating balances for the number of animals and their fodder requirements.
		Train PUUs and local NGOs in developing PMPs and ensure regular monitoring.

Considering **pastures plant species catalogues and carrying capacity calculation tools** are vital before starting the development of any management plan, as planners need to know about the geo-botanical composition of the pasture species. Of equal importance is calculating the carrying capacity based upon the pasture state.		Raise knowledge about pastures' actual carrying capacity among ordinary pasture users and managers. Provide information about plant species, especially those that are beneficial for the pasture area, and identify potentially harmful or non-edible plant species.
		Ensure plant species catalogues are available for all PUUs, as well as provide a Tajik-language copy to all PUUs.
Grazing calendars enable pasture users to jointly identify and agree upon when and where to graze their livestock, as well as define fallow periods.		Develop a grazing calendar together with the PUUs and local NGOs.
		Monitor the PUUs to ensure that they comply with developed grazing calendars.
		Ensure that all members of the PUU have equal access to the pasture resources as planned in the grazing calendar, so as to prevent conflicts from arising.
Sustainable fodder production addresses the problems of increasing number of livestock amounts and a general scarcity of pasture areas in Tajikistan. Both problems have led to overgrazing, especially winter pastures. Fodder is scarce and often does not last until spring, which leads to pastures being grazed too early in spring, diminishing recuperation time for growth. This approach provides solutions at the local level for rehabilitating degraded summer pastures by fencing off rain-fed pastures located close to the villages, so as to foster fodder production.		Use traditional, local varieties of fodder seeds. Increase plant diversity to foster nectar for pollinators and beneficial insects. Control and prevent erosion.
		Promote locally-available fencing material that is affordable to farmers. Ensure farmers receive sufficient economic benefit from fenced areas. Support farmers with diversified seeds for reseeding purposes.
		Train farmers in how to make living fences. Train farmers on diversifying their fodder plants.
Hay carrying technology can make harvesting fodder from steep highland mountain slopes less cumbersome. Such technology can enable the rapid descent of sheaves of hay, as well as carry the fodder to homes.		Ensure optimal use of fodder production areas. Train farmers in building low-cost harvesting and carrying technologies.
		Ensure access to technologies via documentation of techniques on platforms like Wocat and PANORAMA.



Agriculture

for Integrative Land-Use Management Approaches (ILUMA)

Agriculture

Enhancing biodiversity and preserving ecosystem-services in agrarian landscapes

1. What is this land use practice about?

In Tajikistan, as in other countries, the present use of resources is not sustainable, characterised as it is by uncontrolled logging for firewood and construction timber, overgrazing of pastureland and woodland, soil erosion and monocultures. These excesses prevent the rejuvenation and regeneration of natural vegetation, reduce the growth of wild plants and animals, and degrade agricultural land. At the same time, agricultural production is becoming increasingly intensive, including increased use of fertilisers and pesticides. The rapid growth of the agricultural sector has had negative impacts on ecosystems and biodiversity. These land use practices assist farmers to implement the land use practices described for promoting sustainable agriculture. These practices aim specifically at enhancing biodiversity and conserving ecosystem-service. Rejuvenating native species and diversifying cultivations, along with implementing relatively simple land use management techniques, support farmers in increasing their yields, diversifying their diet and, whenever possible, increasing their economic opportunities.

Biodiversity in agriculture provides a multitude of ecosystem services, vital for environmental sustainability and human well-being, that are currently under threat due to overuse, mismanagement and climate change. The natural capital of agricultural landscapes is a source of food, fibre, firewood, fodder and provides additional ecosystems services such as nutrient cycling, soil fertility, water conservation, and pollination. The richness of genetic diversity in agricultural landscapes guarantees better adaptation to changing conditions such as severe droughts, variability of precipitation and other weather extremes. Adaptation to climate change is gaining urgency globally and in this regard conservation and sustainable use of biodiversity and ecosystems services play a key role in addressing the challenges and alleviating threats posed by climate change. The livelihood and food security of many citizens, particularly rural communities depend heavily on the biodiversity of agricultural landscapes, be it subsistence farming or income-earning from the cultivation of cash crops, livestock breeding or agro-forestry.

It is important to note that smallholder farmers in Tajikistan mainly depend upon the production of their land and are not entitled to subsidies in exchange for promoting biodiversity. Thus, the implementation of the following approaches should imply an increase in or at least maintenance of the same level of productivity currently attractive to the farmers.

2. Cornerstones of the Sustainable Pasture Management

The most important 'cornerstones' regarding the land use practice 'biodiversity and agriculture', are the following:

- Biodiversity enhancing and ecosystem-services conserving agricultural practices
- Governance

Cornerstone 1: Biodiversity enhancing and ecosystem-services conserving agricultural practices

GIZ Experience for Implementation	**Sustainably managed irrigated annual crops** About 95 percent of the staple crop production in Tajikistan comes from irrigated land which underlines the importance of irrigation in cultivating annual agricultural crops. Irrigated annual crops are usually intensive cultures that make for efficient use of land resources. A variety of annual crops is important for generating income, ensuring food security, and balancing diets. **Reference material:** Documentation of biodiversity enhancing land use methods: K-Link / Website

Key Elements of the Experience	Guiding principles and the way how they are related to ILUMA dimensions	
Conservation of **traditional and local varieties** of annual crops, which are usually better adapted to the local climate conditions		Support local varieties that are especially well adapted to the current climate and have the highest potential to be resistant to expected climatic changes.
		Document knowledge on traditional and local varieties of annual crops for the region of implementation and beyond and make the knowledge available on macro, meso, and micro level.
		Enable local organisations to store and exchange high-quality seeds of different varieties. Facilitate the collaboration between local seedbanks with national level seed banks.
Promotion of **mixed and associated crops** that allow for harvesting a variety of different products during the seasons of the year		Ensure that the crops are well suited to the local diet and people know how to process them.
		Support local NGOs and agricultural extension services so that they have enough knowledge on newly introduced crops. Support local institutions in the seed exchange of newly introduced crops to encourage further dissemination.
Due to a large number of livestock, **fencing** often becomes necessary. Especially, if the cultivated fields are located close to roads or livestock corridors, fencing is essential.		As fencing is often pricy and hard to afford for local farmers, provide access to affordable fencing material, set up a financing mechanism, or provide simple machinery to build mesh wire locally.
		Promote the plantation of fast-growing trees and bushes along a mesh wire fence, so that once the fence is due to be replaced, the natural, living fence can take its place and function.
Diversification of crops and practice of **crop rotation** will increase soil fertility and contribute to a nutritional diet.		Encourage farmers to diversify their crops to maintain an optimal soil nutrient balance and to increase nutrition security.

GIZ Experience of Implementation	**Adapted rain-fed annual crops** Selecting an appropriate location is especially important in the case of cultivating rain-fed annual crops due to climatic conditions. The hot and dry summer months limit the cultivation season of rain-fed fields significantly. Therefore, land for rain-fed annual crops should be carefully selected considering soil, water reserves, and exposition. **Reference material:** Documentation of biodiversity enhancing land use methods: K-Link / Website

Key Elements of the Experience	Guiding principles and the way how they are related to ILUMA dimensions	
Conservation of **traditional and local varieties** of annual crops, which are usually better adapted to the local climate conditions		Support local varieties that are especially well adapted to rain-fed areas, for Tajikistan this means corps that grow in spring and fall season. Ensure the planting area is covered during the hot and dry summer months to avoid soil degradation.
		Document knowledge on traditional and local varieties of annual crops. Make the knowledge on traditional and local varieties available on macro, meso and micro levels.
		Enable local organisations to store and exchange high-quality seeds of different varieties. Facilitate the collaboration between local seedbanks with national level seed banks.
Promotion of **mixed and associated crops** that allow for harvesting a variety of different products during the seasons of the year		Ensure an especially suitable mix of crops on rain-fed areas that keep soil moisture high while stabilising the soil during heavy rain events.
		Support local NGOs and agricultural extension services so that they have enough knowledge on newly introduced crops. Support local institutions in the seed exchange of newly introduced crops to encourage further dissemination.
Due to a large number of livestock, **fencing** often becomes necessary. Especially, if the cultivated fields are located close to roads or livestock corridors, fencing is essential.		As fencing is often pricy and hard to afford for local farmers, provide access to affordable fencing material, set up a financing mechanism, or provide simple machinery to build mesh wire locally.
		Promote the plantation of fast-growing trees and bushes along a mesh wire fence, so that once the fence is due to be replaced, the natural, living fence can take its place and function.
Water conservation measures such as water harvesting through contour trenches, conservation ponds, harvesting of snowmelt during winter can prolong the cultivation period on a rain-fed area, consequently, significantly contribute to the output.		Train farmers in using simple water conservation measures.
		Provide access to local material for constructing trenches, ponds, or similar water retention facilities.
		Consider local structures around water management that are already in place in most villages. Investigate the possibilities of empowering women in villages through water management, e.g. by women holding an official function.

GIZ Experience for Implementation	**Diversified Orchard Management and Agroforestry** Diversified tree species reduce the risk of massive pest and disease outbreaks and ensure a healthy soil structure with an adequate balance of nutrients. Furthermore, the different flowering periods for tree species provide nectar for pollinators over a longer period and hence offer benefits for beekeepers. **Reference material:** Documentation of biodiversity enhancing land use methods: K-Link / Website

Key Elements of the Experience	Guiding principles and the way how they are related to ILUMA dimensions	
Conservation of traditional, local varieties of fruit trees, which are normally better adapted to the local climate conditions		Support local varieties that are especially well adapted to the current climate and have the highest potential to be resistant to expected climatic changes. Ensure to plant trees that flower at different times, so that there is always nectar for important pollinators in the orchard.
		Document knowledge on traditional and local varieties of fruit tree species. Make the knowledge on traditional and local varieties available on macro, meso and micro levels.
		Enable local organisations to store and exchange high-quality seeds of different varieties. Facilitate the collaboration between local seedbanks with national level seed banks.
Association of fruit trees with vegetables, herbs and fodder plants offers pollen and nectar to pollinators and other beneficial insects over much of the vegetation period.		Encourage farmers to plant vegetables, herbs or fodder plants among their orchard to make use of the multitude of benefits, such as the provision of the shade of fruit trees, increased number of pollinators, etc..
		Train farmers in associating fruit trees with vegetables, herbs and / or fodder crops.
		Ensure that local NGOs and agricultural extension services can support farmers on associating fruit trees with vegetables, herbs and / or fodder crops.
By **grafting different species**, a better climate-adapted fruit free can be grown or several varieties are grown on one tree.		Encourage grafting species to increase their resilience to climatic changes, such as heatwaves and dry spells in summer, as well as heavy rainfalls in spring. For instance, a sweet almond tree grafted on a bitter almond rootstock is more resilient and requires less water. Hence, grafting has increased harvest and nut quality.
		Collaborate with local research institutes that have the required expertise and experience in grafting. Build up a network of local experts on grafting tree species, who can provide the service to the farmers.
		Encourage farmers to diversify one single tree by grafting different species together what ripen at different types of the year.

Integrated Pest Management, especially phytosanitary measures and biological pest control should be promoted to not harm beneficial insects and other species in the surroundings.		Promote IPM measures that are not harmful to neither plant nor humans while effective in combating the pest. Promote IPM measures especially for pest prevention instead of damage control.
		Provide training on IPM for farmers and service providers. This is especially important if farmers have little knowledge on how to apply pesticides and do not possess the needed equipment (e.g. protection not to inhale the pesticides when applying). Introduce precaution measures that prevent the most common pest to break out.
		Engage local institutions, NGOs, and agricultural extension service providers in IPM, as currently, they are connecting many farmers in Tajikistan with access to low-cost and often low-quality chemical fertilisers from China. Through these local institutions, the application of IPM can be further disseminated.
GIZ Experience for Implementation	**Kitchen gardens** are very important for improving the nutrition of Tajik families in rural areas as they contribute to food security by providing a diversity of vegetables, herbs, and berries. Vegetables, herbs and spices, berries, and fruits are cultivated in small-scale kitchen gardens, often directly adjacent to houses. Products from kitchen gardens can be sold fresh or processed, generating additional income. Harvest and post-harvest management skills, including drying and storage, are specific skills passed through generations. **Reference material:** Documentation of biodiversity enhancing land use methods: K-Link / Website	
Key Elements of the Experience	**Guiding principles and the way how they are related to ILUMA dimensions**	
Diversification of crops and practice of **crop rotation** will increase soil fertility and contribute to a nutritional diet.		Promote the diversification of species in kitchen gardens and encourage soil rotation. this will help to increase soil fertility while mixed crops are less perspective to pests.
		Document knowledge on traditional and local varieties of annual crops. Make the knowledge on traditional and local varieties available on macro, meso and micro levels. Promote new crops through farmer field schools.
		Support an old species that might have been lost in the Soviet area or during the Civil War. Local communities often still remember these species and know how to cook or process them. Consequently, the communities adapt more easily to the new species.
Processing of products, such as canning, pickling, juice, etc., ensures food in the winter and can provide additional income to the farmers if sold on the market.		Support farmers in the processing of products which can be sold on the local market and for which a higher price can be received when selling during winter times.

Compost By decomposing organic matter, natural soil fertiliser can be generated from what is usually regarded as waste. Composts are often applied in kitchen gardens or to high-value crops. Compost mainly consists of cut grass, weeds, green and brown pruning material, and kitchen waste, such as eggshells and vegetable peels.		Promote the establishment of simple composting facilitates in kitchen gardens to boost soil fertility.
		Provide training material on how to establish a compost and how to maintain a healthy balance in ones composted. Compost needs a balanced mixture of green and brown material.
		Encourage farmers to establish a compost as it is currently not very much widespread in Tajikistan. Reasons for this is that much of the kitchen scraps are fed to the livestock while composting requires some specific knowledge of content, storage, and application.

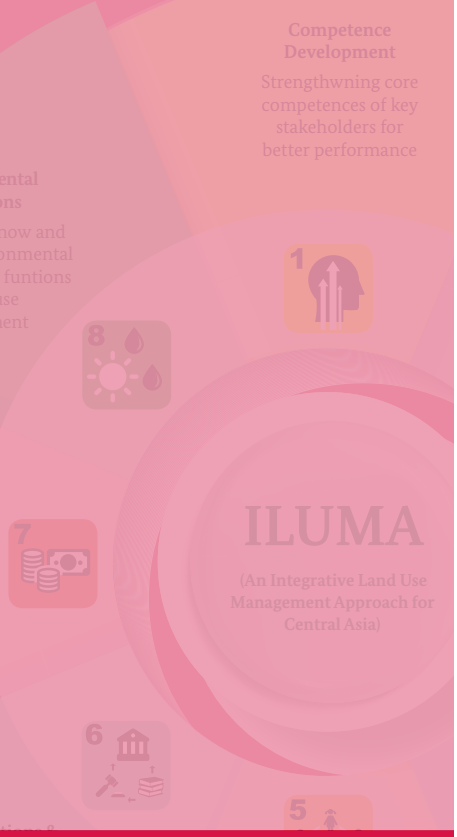
Cornerstone 2: Governance

GIZ Experience for Implementation	Despite the sound **legal framework**, the enforcement of laws concerning biodiversity and ecosystem services in the agrarian landscape is weak. There is an urgent need to harmonise policies and strategies to avoid contradictions and to develop and enforce bylaws. Only if action is taken, land use practices can be changed towards more sustainability to ensure food security today and in the future. **Reference material:** Policy Brief Biodiversity and Agriculture EN: K-Link / Website RU: K-Link / Website Report on international commitments EN: K-Link / Website RU: K-Link / Website Report on the reflection of biodiversity in the legal framework: EN: K-Link / Website RU: K-Link / Website

A **policy analysis** provides an overview of the most relevant legislation, policies, plans, and regulations of Tajikistan concerning biodiversity and ecosystem services in agrarian landscapes. This analysis highlights the opportunities and limitations in the legal framework and the related policy implications and includes recommendations for policymakers.		Ensure implementation of laws and regulations. Support the government in developing new or in updating laws. Support the government in developing adequate by-laws. Ensure and support an adequate reporting structure for the government.
		Support national institutions in implementing laws and regulations, Enable different institutions, local NGOs, and the private sector to exchange in a constructive dialogue regarding laws and regulations.
		Synthesize and if necessary simplify information regarding laws, regulations, etc. for all stakeholders, and share the information accordingly.

The **involvement of the local farmers** in policy development and implementation has proven to be crucial. The project supported exchange visits of governmental working groups to project fields sides and arranged town hall meetings where different perspectives and ideas can be exchanged.		Organise exchange visits from national to the local levels, as well as town hall meetings in the relevant districts, so as to ensure the local opinions, challenges, and ideas are reflected in the development of new laws and regulations.
		Ensure that new laws are understood to ensure compliance.
GIZ Experience for Implementation	Tajikistan is party to several **international commitments** relevant to the issue of land use management. These commitments include: 1) The Convention on Biological Diversity (CBD), an international legally binding treaty that aims to conserve biodiversity, ensure the sustainable use of biodiversity, and that the benefits of the genetic resources use are shared fairly and equitably, signed by Tajikistan on 27 January 1998. 2) The Cartagena Protocol, signed by Tajikistan on 12 May 2004. 3) The Nagoya Protocol on Access and Benefit-Sharing, signed by Tajikistan on 12 October 2014.	
Key Elements of the Experience	**Guiding principles and the way how they are related to ILUMA dimensions**	
Tajikistan has ratified **the Convention on Biological Diversity**, as well as the **Nagoya and the Cartagena protocols**. Consequently, Tajikistan is obliged to contribute to the Aichi Targets and report to CBD on an annual basis. GIZ has supported the National Centre for Biodiversity and Biosafety (NBBC), the Tajik counterpart to the CBD, helping it to look beyond protected areas and conduct a baseline study on biodiversity and ecosystem services in agrarian landscapes.		Involve different institutions and governmental bodies in dialogue so as to foster a strong inter-sectoral exchange. Align your work and interventions with international conventions and treaties to which the country is already committed.
GIZ Experience for Implementation	Mainstreaming biodiversity on the national level **Reference material:** Training material IES “Integrating Ecosystem Services into Development Planning” for Trainers EN: K-Link / Website RU: K-Link / Website Training material IES “Integrating Ecosystem Services into Development Planning” for Participants EN: K-Link / Website RU: K-Link / Website	
Key Elements of the Experience	**Guiding principles and the way how they are related to ILUMA dimensions**	

GIZ has developed a guide for development planners and policymakers on **Integrating Ecosystem Services (IES) into Development Planning.** The training advocates a step-wise approach through which it is possible to recognise, demonstrate and capture the value of biodiversity and ecosystem services for development planning in economies where agriculture plays a major role. The training combines theoretical and practical elements.		Cultivate understanding about the importance of biodiversity and ecosystem services on national and local levels.
		Involve different state institutions working on biodiversity and agriculture in a more general sense, so as to facilitate dialogue, exchange and collaboration among institutions.
		Make knowledge on biodiversity and ecosystem services available via different platforms, both on- and offline.
Regular **Steering Committee meetings** with the political partner, the Ministry of Agriculture, as well as with other related governmental bodies, such as the Committee for Environmental Protection and the State Forest Agency, allow for an inter-ministerial dialogue and exchange.		Encourage inter-ministerial dialogues through meetings, conferences, or other means. Engage national-level stakeholders in project planning and monitoring.



Wildlife

for Integrative Land-Use Management Approaches (ILUMA)

Wildlife

Sustainable Management of Wildlife in Tajikistan

1. What is this land use practice about?

About 90 percent of the territory of Tajikistan is mountainous and almost 25 percent of the country has the status of a protected area. The diverse and rare wildlife species of the mountainous region are its most valuable resources as well as an integral part of the mountainous ecosystem. All wildlife is owned and managed by the state. However, due to budgetary constraints, funding of the protected areas and implementation of wildlife protection laws are rather weak. Wild animals, particularly wild sheep (argali Ovis ammon and urial Ovis vignei) and wild goats (ibex Capra sibirica and markhor Capra falconeri heptneri) are hunted for subsistence, commerce and sport. The international hunting of mountain ungulates provides significant revenues for the state budget. At the local level, the population of the remote and mountainous areas rely upon subsistence farming, such as livestock keeping, for sustaining their livelihoods. The wildlife is a source of food and income for household; in certain areas, it is the only option to survive.

Since independence and the subsequent Civil War in 1992-1997, poaching has been widespread. A key driver of the phenomenon has been a high level of food insecurity coupled with the wide availability of fire arms. Fossil fuel and electricity shortages have also forced people to cut trees and shrubs for fuelwood. Such uncontrolled logging has had a negative impact on the wildlife habitat. Unemployment and limited sources of alternative income has made hunting a profitable revenue source, covering not only daily costs of living and providing food, but also covering costs for important family events such as weddings. Illegal and unsustainable hunting has led to a drastic reduction of wildlife populations in numbers and distribution areas. Nevertheless, prohibiting the local population from hunting the wild animals around them has not proven to be the right solution to combating poaching – on the contrary, it has distanced them from legal activities even further.

2. Cornerstones of the wildlife management

Sustainably-managed wildlife resources with the participation of direct users, i.e. local communities, and close cooperation with state authorities and the scientific community is one of the 'cornerstones' of wildlife management. This approach can establish a management model that ensures the conservation of wild animals and their sustainable use. The Community Based Wildlife Management approach (CBWM) piloted and implemented by GIZ in Tajikistan during 2008-2014 was based upon the principles of sustainable wildlife management and has been among our more successful land use experiences. Two important success factors of CBWM are long terms rights for the concessions as well as the protentional to bring the communities a minimum economic benefit to sustain their livelihoods. Sustainable wildlife management can be a source of money to pay for people's basic needs, invest in wildlife conservation measures and contribute to the enhancement of local infrastructure. Hunting of wildlife is allowed through issuing of permits exclusively in an assigned area, and only by the organisation that manages the area. The added value of the CBWM approach is the capacity development on technical and management skills for the responsible governmental institutions and the local user groups. Support is also provided to update the relevant legal framework based upon the lessons learnt from testing the management models and identifying the challenges to be tackled and opportunities to harness. This will ensure political support, better decision-making and long-term sustainability of the measures for wildlife conservation and sustainable management.

Cornerstone 1: Community-Based Wildlife Management

GIZ Experience in Implementation	**Community-based wildlife management** is aimed at conservation and sustainable management of wild animals through the participation of local communities and the private sector in the management of hunting grounds. **Reference material:** Website: Factsheet: Sustainable Management of Wildlife in Central Asia. The Current Situation of Wildlife Management in Central Asia. Practitioner's Guidebook: How to Run a Wildlife Management Organisation and Conduct Trophy Hunts for International Clients: EN, TJK	
Key Elements of the Experience	**Guiding principles and the way how they are related to ILUMA dimensions**	
Identification of potential and existing opportunities for establishing Community-Based Wildlife Management		Counter adverse negative impacts brought about by illegal and unsustainable hunting of ungulates as a source for food and revenue. Ensure sufficient forage for ungulates despite an increasing livestock population. Avoid livestock overgrazing and habitat degradation. Protect targeted wildlife species: Argali Sheep Ovis ammon, Markhor Capra falconeri heptneri, Severtsov Argali Ovis ammon severtsovi, Siberian Ibex Capra sibirica, Snow Leopard Panthera uncia Urial Ovis vignei.
		Ensure sufficient economic benefits and opportunities for the local population in rural areas.
Community mobilisation and awareness-raising		Technical advice and training on population surveys, management planning and provision of services to tourists and trophy hunters.
		Collaborate directly with traditional hunters, state-authorised bodies (e.g. Forestry Agency) and protected nature areas department, scientific-research institutions, private conservancies[1] and hunting concessions.
		Provide basic equipment (uniforms, field and optical equipment).
		Facilitate involvement and empowerment of traditional hunters and other interested community members (monitoring, tourism services, etc.).

1 Conservancies – an area of wildlife habitat that is owned and managed by families or associations of local village hunters.

Allocation of concession		Ensure development of institutional structures, as well as provide support in assigning hunting areas via technical consultation. Develop management plans for sustainable wildlife management.
		Conduct field assessments to identify the population status of target species and their distribution areas. Identify exact borders, fewer access routes to the hunting ground, and abundant resources within the defined territory to feed the wildlife.
		Specify hunting models and areas based upon commitments of local users. Carefully select traditional community hunters.
		Assess hunting user rights to the model hunting area. Ensure active stakeholder engagement and political dialogue. Support improving regulatory and legal frameworks (e.g. revision and adoption of the law 'On Hunting') based upon best practices and lessons-learnt.
		Designate reproduction zones with full party restrictions of human activities.
Signing a contract, thereby assigning long-term rights and responsibilities to users on specific areas.		Ensure fair allocation of land use rights for managing wild animals in a specific hunting ground for a period of 10 years.
		Ensure distribution of benefits based upon a 30/70 scheme, of which 30 percent is used for the community development and 70 percent for conservation and wildlife management.
Capacity building to develop technical and managerial skills for sustainably managing the wildlife, monitoring the population, tackling poaching, etc.		Conduct trainings of state and non-state local partners in the principles of sustainable management of hunting grounds and the wildlife. Develop skills in monitoring and rehabilitation of animals.
Income-generating practices through the establishment of benefit-sharing mechanisms, thereby providing opportunities for generating income from non-extractive (eco-tourism, trekking) and extractive (hunting tourism) use of wildlife species.		Ensure communities receive benefits from hunting and tourism (e.g. guided hikes, wildlife photography, game viewing), such that wildlife conservation positively impacts the development of rural communities. Include costs of wildlife management, and rewards for participating traditional hunters, as well as provide support the socio-economic development of communities. Attract international hunters and tourists (e.g. through communication over a website, social medias, etc.).
Planning and monitoring to ensure sustainable management based upon appropriate planning and monitoring tools.		Develop management plans for 5 -10 years together with the groups that regulate protection, monitoring and hunting. Develop annual work plans and include information on the type of activities planned, timing for execution, and expected results. Ensure preparation of an annual report by the relevant authority based upon the annual work plan.
		Develop guidelines for monitoring mountain ungulate populations. Conduct annual surveys for data collection. Establish a GIS database for appropriate planning of the surveys and storing and analysing survey results. Ensure a good database that supports decision-making and enhances supervision over the hunting activities at local and national levels.

Methodologies and methods for implementing integrative land use approaches

The success of the implementation of an integrative land use management approach does not solely depend upon the approach itself. How the approach is implemented, and which methodology and methods are used, are equally important. In this section, we will introduce a selection of methodologies used within our approaches. Choosing the right methodology depends upon the context, which can vary not only between countries, but even within a single country. Always, the methodology of implementation must be adapted to fit the given context.

Methodologies and methods include cross sectoral / overarching topics, such as climate change, raising awareness about environmental problems and the value of ecosystem-services, and ensuring the inclusiveness of an approach. Accounting for climate change within a project and climate-proofing each implementation measure to be suitable for the current and future climate is indispensable. Depending upon the local environmental conditions and topography of the region of implementation, either the a) *Open Standards-based framework for planning* or b) the Climate Risk and Vulnerability Assessment should be applied. The first focuses upon climate-proofing adaptation measures according to their climate robustness, while the second focuses upon potential risks arising from climate change. A further core area of work is awareness-raising. Heretofore, there has been little awareness about adaptation needs and options, both on the local and national level. Consequently, environmental education is central for all stakeholders of the project implementation. An overall participatory form of implementation, including regional, national, district and local level stakeholders, can guarantee the success of the implementation and the aspired sustainability. Only if all stakeholders are part of the process, their opinions considered, and the project planned, implemented and monitored in a participatory manner, can we expect the continuation of the introduced integrative land use management approaches past a project phase.

Open Standards-based framework for planning and implementing[1]

Before starting any field activities, it is important to scope the environment. In a setting where climate change has severe impacts upon the landscape, it is recommended to follow the *Open Standards-based framework for planning and implementing Ecosystem-based Adaptation* (OS-based EbA)[2].
The Open Standards-based EbA framework is a methodology for participatory strategy development, planning and adaptive management of ecosystem-based and other complementary climate change adaptation measures. It was derived from the CMP Open Standards for the Practice of Conservation and consists of nine essential steps. The framework has been designed for use by communities with support from an experienced facilitator to guide the process. The full facilitators guide takes readers through nine steps and provides information and tools to facilitate ta workshop. It also includes a climate vulnerability assessment that evaluates the vulnerabilities of ecosystems, as well as vulnerabilities of people who depend on them, via ecosystem services. The Open Standards-based framework puts a special emphasis upon a participatory approach. This means that the local community is consulted and forms a part of the decision-making process for each step. This is ensured by a team of facilitators that go through the adaptation cycle together with the local community. Another pillar of the Open Standards-based framework is the integration of localised climate information: i.e. detailed climate projections for the pilot region are derived from global models, allowing for precise knowledge of predicted climate change impacts. This allows for science-based decision and policymaking.

Climate Risk and Vulnerability Assessment (CRVA)

Climate Risk and Vulnerability Assessments (CRVA) aim to quantify risks and identify adaptation options that can be integrated into the project design. A CRVA

[1] https://panorama.solutions/en/solution/open-standards-based-framework-planning-and-implementing-ecosystem-based-adaptation

[2] https://link.springer.com/chapter/10.1007/978-3-319-72874-2_2

can help determine the impact of climate change, the costs of the impact, which adaptation options are technically and realistically feasible, as well as the cost of adaptation[3] . CRVAs can be done for any sector, including for those in which climate change impacts are not (yet) routinely considered. This might, for example, be the transport or tourism sector. The CRVA is a well-established tool that helps to raise awareness for projected climate change impacts also among policymakers that have not yet considered climate change as relevant for their sector.

The complementarity of OS-based EbA and CRVAs was tested as part of the pilot study in the Jabbor Rasulov district of Tajikistan. This study illustrated that a CRVA can benefit from the EbA, in particular by strengthening the ecosystems and ecosystem services' perspective in the former. Furthermore, a CRVA's findings (which concern impact chains) serve only as a starting point for the identification of adaptation options. Thus, the complementary assessment of the state of ecosystem services via the OS-based EbA provides an appropriate entry point for selecting EbA measures, albeit as part of a separate next step requiring additional expertise.

Environmental education

Environmental education is a process in which individuals gain awareness of their environment and acquire knowledge, skills, values, experiences and resolve that enables them to act - individually and collectively - to solve present and future environmental problems. As a result, individuals develop a deeper understanding of environmental issues and acquire the skills needed to make informed and responsible decisions. The main aim of environmental education at the grass-root level is to make individuals and communities understand the complexity of interrelations between humans and natural environments. This enables individuals to understand environmental problems, derive solutions to these problems and act based upon acquired capacities and opportunities to participate responsibly at all levels. Thus, environmental education serves as an instrument for both a) protecting and enhancing the environment and b) improving the quality of life of human communities.

For each measure and target stakeholder, GIZ aims at providing capacity-building training that widens the understanding and increases the awareness of people on climate change, land use problems and/or the value of ecosystem-services. A special training that has been applied and further developed for the region is a 3-5-day course on *integrating ecosystem-services into development planning*[4]. This course provides an overview of all ecosystem-services and engages the participants through a case study and role-playing in which they solve a variety of environmental problems and related conflicts of interests.

Participatory planning and monitoring

Participatory planning and monitoring processes focusing upon the engagement of all stakeholders empower beneficiaries and project stakeholders to develop interventions in a way they consider most suitable. The beneficiaries themselves set the direction for change, plan their priorities and decide whether the intervention has made progress and made relevant changes. It sets in motion social processes of decision-making and consensus-building regarding the use and protection of different land use types. Participatory planning, implantation and monitoring consequently ensure the sustainability of the approach.

Two examples of participatory methods applied in the project are the Joint Forest Management approach and Farmer Field Schools.

Joint Forest Management

With the Joint Forest Management (JFM) approach implemented in Tajikistan, GIZ has introduced a participatory forest management approach that focuses strongly on the participation of local communities in forest management. This participatory forest management approach enables the local population – either individuals or groups – to become involved in forest management and support the rehabilitation of degraded natural forests over the long term. The local population signs a contract for the land use rights with the State Forest Enterprises for a period of 20 years, with the possibility of prolongation. This encourages the tenants to sustainably manage and rehabilitate their forest plot of usually 1-2 hectares. In addition to the contract, management and annual plans serve as tools for forest management planning and monitoring activities and results. They are developed jointly by the State Forest Enterprises and the respective tenant for each individual plot. Typical tasks specified in the annual plan include measures to protect the plot from livestock overgrazing, planting of trees, harvesting and pruning. Further, the annual plan specifies the harvest

[3] A guidebook developed by GIZ in collaboration with Eurac Research and United Nations University – Institute for Environment and Human Security (UNU-EHS) helps planners and practitioners in designing and implementing climate risk assessments in the context of Ecosystem-based Adaptation projects. It provides a standardized approach to assess risks within social-ecological systems based on two application examples (river basin and coastal zone management) by following the methodology of the GIZ vulnerability sourcebook (2014) and its Risk Supplement (2017). It helps to improve adaptation planning by considering both ecosystem-based and conventional options in the form of integrated 'adaptation packages':
https://www.adaptationcommunity.net/wp-content/uploads/2018/06/giz-eurac-unu-2018-en-guidebook-climate-risk-asessment-eba.pdf

[4] http://www.aboutvalues.net/trainings/

shares of the State Forest Enterprises and the forest tenant according to a fair sharing principle defined in the contract. The management plan is developed for a five-year period and specifies long-term goals, such as the installation of an irrigation channel or diversifying a forest plot.

Farmer Field Schools

GIZ has worked with Farmer Field Schools (FFS) to actively involve farmers in the process of learning through the exchange of knowledge, experience and best practices in agriculture. This process must be facilitated at the beginning, although in the long run FFS can be maintained by the farmers themselves either formally or informally.

Methods to be applied within the scope of FFS are:

- Group training, including presentation of videos to distribute useful information about the approach.
- Field visits for assessing crop condition and identifying problems on the ground.
- Learning-by-doing / practical training in the field for discussing problems with trainers and other farmers and putting the new techniques into practice.
- Exchange visits or study tours involving farmers from other areas so that they can gain theoretical and practical knowledge to apply to their plots.
- Field days involving non-target farmers into project activities and motivating them to replicate innovative techniques promoted by the project in their own plots.

Conclusion and outlook

The majority of Central Asia's people depend directly upon the land they live upon – and yet, mismanagement of land resources, including overgrazing, deforestation, and monocultures, have taken their toll on the land's productivity. Increasing land degradation, desertification and biodiversity loss are challenges the region is facing and urgently needs to address. Climate change will only serve to exacerbate these problems, as increased temperature and shifting precipitation patterns will further decrease the productivity of arable land.

Sustainable land management can alleviate environmental problems, but technical solutions alone will not suffice. To conserve and restore ecosystems and their functions, a wider perspective needs to be applied that incorporates the human factor. ILUMA offers precisely such a perspective to tackle these challenges by accounting for multiple dimensions that encompass the human and non-human elements of the situation. Only if all dimensions are addressed can we ensure implementation of truly integrative land use management approaches that in turn guarantee sustainability.

The aims of GIZ's ILUMA conceptual framework introduced are manifold:

- To deepen the discussion on integrative land use schemes in Central Asia, together with Central Asian governments, as well as with donors, development partners, civil society and other relevant stakeholders. Ultimately, the goal is to agree upon common standards regarding sustainable land use practices, particularly in the face of climate change.

- To support Central Asian governments in their efforts to develop national and regional policy frameworks, and to strive to create an improved institutional setting for sustainable land use, thereby also contributing to economic development.

- Together with Central Asian partners, donors and development partners, to develop programs at a scale that is appropriate and powerful enough to make a real impact, such as multi-donor development funds.

- To support land users in sustainably managing their land resources by applying a landscape perspective and using the dimensions as guiding principles on integrative land use management.

- To use ILUMA as a knowledge and experience management tool.

- To use ILUMA to set up suitable systems to monitor and evaluate the effects (environmental, societal, etc.) of current and future forms of land use, as well as to adapt existing policies and communication / mediation channels accordingly so as to be able to respond to problems in a timely manner.

All experiences in land use management in Central Asia can be redeployed as valuable, tested-in-practice information for policy-makers. Not only can the lessons learned be used for developing realistic and innovative policies, but can also serve as hands-on examples for practitioners on the ground, potentially bridging an important knowledge and experience gap, and thereby, in turn, improving the effectiveness of policies.

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