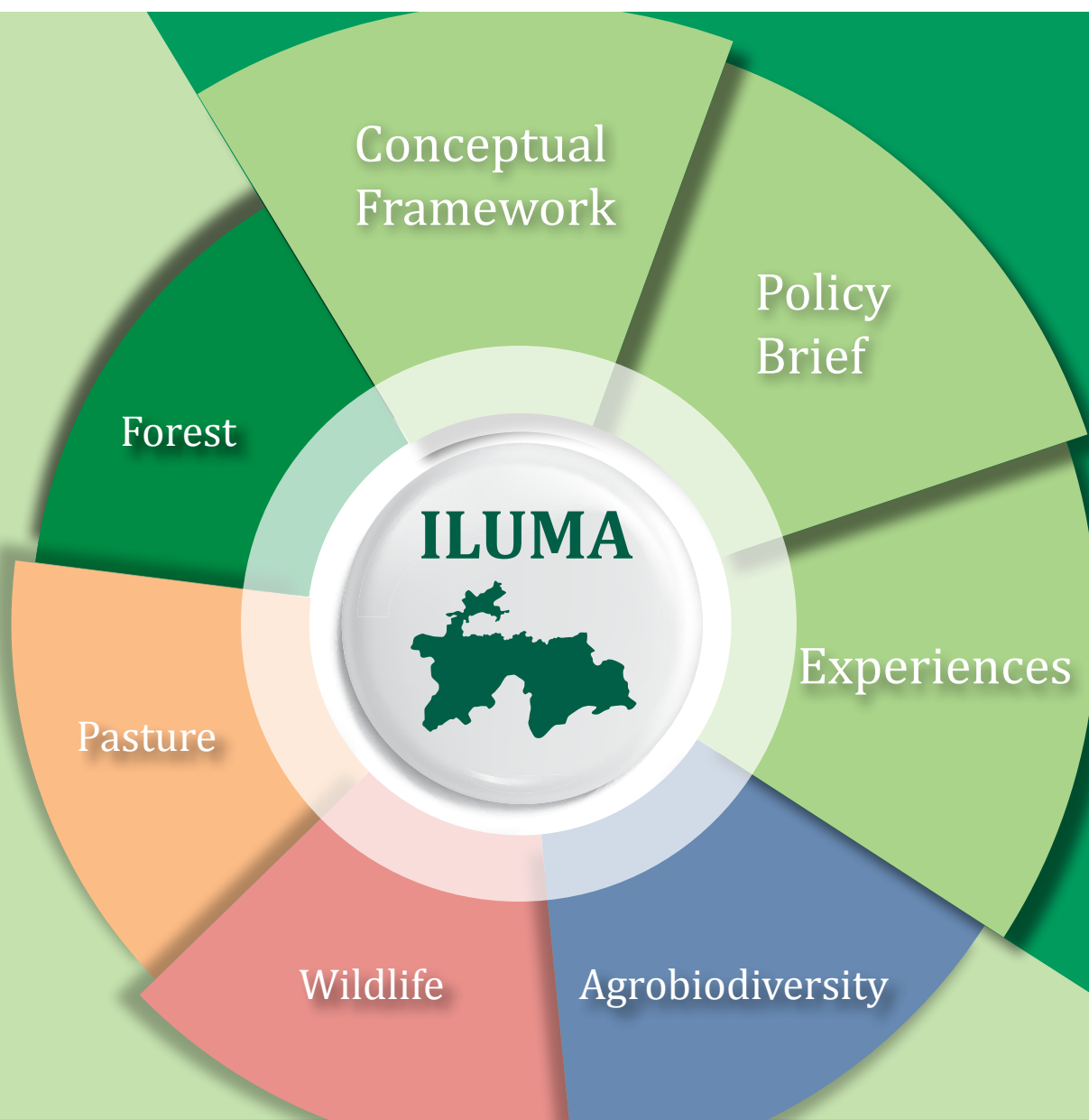


# Integrative Forest Management in Tajikistan for Integrative Land Use Management Approaches (ILUMA)



# 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 Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH (German Federal Enterprise for International Cooperation) 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

<b>GIZ Experience for Implementation</b>	<p><b>Joint Forest Management (JFM)</b> 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.</p> <p><b>Reference material:</b></p> <p>JFM presentation SFA: <a href="#">K-Link / Website</a>  Training modules on integrative forest management: Website: <a href="#">EN, RU</a></p> <p>JFM manual: Website: <a href="#">EN, TJK</a>  Contract templates: K-Link / <a href="#">Website</a></p> <p>Template MP/ AP: K-Link / <a href="#">Website</a>  JFM movie: K-Link / <a href="#">Website</a></p>								
Key Elements of the Experience	Guiding principles and the way how they are related to ILUMA dimensions								
<p><b>Leasing Contract</b>  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.</p>	<table border="1"> <tr> <td data-bbox="504 931 683 1070">  </td><td data-bbox="684 931 1444 1070"> <p>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).</p> </td></tr> <tr> <td data-bbox="504 1072 683 1211">  </td><td data-bbox="684 1072 1444 1211"> <p>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.</p> </td></tr> <tr> <td data-bbox="504 1214 683 1352">  </td><td data-bbox="684 1214 1444 1352"> <p>Calculate the potential benefits to determine a fair share between state forest enterprise and forest tenant.</p> </td></tr> <tr> <td data-bbox="504 1355 683 1570">  </td><td data-bbox="684 1355 1444 1570"> <p>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.</p> </td></tr> </table>		<p>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).</p>		<p>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.</p>		<p>Calculate the potential benefits to determine a fair share between state forest enterprise and forest tenant.</p>		<p>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.</p>
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<p><b>Management Plan</b>  Develop for a 5-year period forest management goals together with forest tenant and forest expert.</p>	<table border="1"> <tr> <td data-bbox="504 1572 683 1711">  </td><td data-bbox="684 1572 1444 1711"> <p>Implement planning and monitoring forest management activities within the management plan.</p> </td></tr> <tr> <td data-bbox="504 1713 683 1845">  </td><td data-bbox="684 1713 1444 1845"> <p>Consider the economic means of the forest tenant and the potential for support from the forest enterprise for forest rehabilitation.</p> </td></tr> </table>		<p>Implement planning and monitoring forest management activities within the management plan.</p>		<p>Consider the economic means of the forest tenant and the potential for support from the forest enterprise for forest rehabilitation.</p>				
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<p><b>Annual Plan</b>  Specify the yearly activities, developed annually together with the forest engineer.</p>	<table border="1"> <tr> <td data-bbox="504 1848 683 1984">  </td><td data-bbox="684 1848 1444 1984"> <p>Regularly monitor AP to collect statistics for the development of integrative landscape plans.</p> </td></tr> </table>		<p>Regularly monitor AP to collect statistics for the development of integrative landscape plans.</p>						
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<b>Technical Consultation</b> 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.
<b>Forest User Groups (FUG)</b> 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





<b>GIZ Experience for Implementation</b>	<b>Afforestation on communal land</b> 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.	
	<b>Reference material:</b> Background on an <a href="#">Irrigation project</a> in Penjikent: <a href="#">K-Link</a> / <a href="#">Website</a> Forest Management techniques: <a href="#">K-Link</a> / <a href="#">TAJ</a> , <a href="#">RU</a> , <a href="#">EN</a> Management Planning Table: <a href="#">Website</a>	
<b>Identifying land use rights</b> 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.
<b>Environmental assessment</b> 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.
<b>Management plans</b> 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.

<b>GIZ Experience for Implementation</b>	<b>Living Fences</b> 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.	
<b>Key Elements of the Experience</b>	<b>Guiding principles and the way how they are related to ILUMA dimensions</b>	
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.
<b>Key Elements of the Experience</b>	<b>Energy-Efficient Technologies (EE Stoves, solar heaters, improved house insulation)</b> are a solution to reduce the pressure on natural resources, as well as to improve the quality of people's lives.	
	<b>Reference material:</b> Documentation on thermal insulation: <a href="#">K-Link / Website</a> <a href="#">Reduced pressure on forest resources by improved thermal insulation in private houses: Wocat / Website</a>	
<b>Key Elements of the Experience</b>	<b>Guiding principles and the way how they are related to ILUMA dimensions</b>	
<b>Marketing and community awareness</b> 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.
<b>Microloans</b> A step-by-step description of the particularly complex cycle of microloans (financial and technical) for thermal insulation needs to be followed.		<ul style="list-style-type: none"> <li>• Ensure financial literacy of clients, or potentially provide financial literacy training.</li> <li>• Train clients in business plan development.</li> </ul>
		<ul style="list-style-type: none"> <li>• Ensure the microloan organisation has adequate financial literacy in loan management and provide training if needed.</li> </ul>
<b>Microloan product</b> “Warm comfort” offers a microloan for thermal insulation materials and construction services with discounts.		<ul style="list-style-type: none"> <li>• Ensures potential benefits for MLOs, clients/local population.</li> <li>• Ensure that clients have the possibility to repay the loan from the savings on electricity costs or from other sources.</li> </ul>






## Cornerstone 3: Afforestation / Reforestation

<b>GIZ Experience for Implementation</b>	<p><b>The Saving Book Approach (SBA)</b>          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.</p> <p><b>Reference material:</b>          SBA Manual: <a href="#">K-Link</a> / <a href="#">Website</a></p>
<b>Key Elements of the Experience</b>	<b>Guiding principles and the way how they are related to ILUMA dimensions</b>
<b>Identification of area and community</b> 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.	<div data-bbox="534 840 646 952"> </div> <div data-bbox="694 840 1436 963"> <p>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.</p> </div>
<b>Three party Contract</b> 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).	<div data-bbox="534 1142 646 1254"> </div> <div data-bbox="694 1142 1436 1209"> <p>Ensure that forest users, local forest enterprise, and MLO know their roles and responsibilities within the contract.</p> </div> <div data-bbox="534 1276 646 1388"> </div> <div data-bbox="694 1276 1436 1344"> <p>Ensure financial literacy of clients, or potentially provide financial literacy training.</p> </div> <div data-bbox="534 1422 646 1534"> </div> <div data-bbox="694 1422 1436 1545"> <p>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).</p> </div>
<b>Regular monitoring</b> 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.	<div data-bbox="534 1641 646 1753"> </div> <div data-bbox="694 1641 1436 1709"> <p>Specify the roles and responsibilities of monitoring in the contract.            Ensure regular monitoring visits.</p> </div> <div data-bbox="534 1776 646 1888"> </div> <div data-bbox="694 1776 1436 1843"> <p>Consider hiring a local NGO to support the three contracting parties in monitoring.</p> </div> <div data-bbox="534 1910 646 2022"> </div> <div data-bbox="694 1910 1436 1977"> <p>Consider that environmental events or disasters might influence the activities as specified in the work plan.</p> </div>










## Cornerstone 4: Forest Governance & Management Planning








<b>GIZ Experience for Implementation</b>	<p><b>Forest management planning</b></p> <p>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.</p> <p><b>Reference material:</b></p> <p>Methodology for forest management planning: <a href="#">K-Link</a> / <a href="#">Website</a></p> <p>Forest typology: <a href="#">K-Link</a> / Website: <a href="#">EN</a>, <a href="#">RU</a></p>	
Key Elements of the Experience	Guiding principles and the way how they are related to ILUMA dimensions	
<p><b>Forest cover assessment</b></p> <p>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.</p>		<p>Cultivate practical experience using GIS and remote sensing among partner institutions (learn-by-doing). Organise regular trainings about GIS and remote sensing.</p>
		<p>Monitor deforestation and forest cover change. Develop a land cover/forest cover classification system.</p>
		<p>Consider the national forest definition and translate it into criteria understandable by GIS software.</p>
		<p>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.</p>
<p><b>Forest inventories</b> 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”).</p>		<p>Provide information and training for relevant state agencies.</p>
		<p>Conduct a vulnerability and risk assessment in the project intervention area. Develop sustainable and climate-resilient forest management plans.</p>
		<p>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.</p>
		<p>Develop a forest information system (see: TajFIS experience). Document the methodologies and tools for forest mensuration.</p>
		<p>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.</p>














<b>Business plans for local State Forest Enterprises</b> 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.
<b>GIZ Experience for Implementation</b>	<b>Forest sector development strategy</b> 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.  <b>Reference material:</b> Forest Sector Development Strategy for Tajikistan: K-Link: <a href="#">EN</a> , <a href="#">RU</a> , <a href="#">TAJ</a> / Website: <a href="#">RU</a> , <a href="#">TAJ</a> Action Plan: K-Link: <a href="#">RU</a> , <a href="#">TAJ</a> / Website: <a href="#">RU</a> , <a href="#">TAJ</a>	
<b>Key Elements of the Experience</b>	<b>Guiding principles and the way how they are related to ILUMA dimensions</b>	
<b>An action plan for implementation</b> 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.).










<b>GIZ Experience for Implementation</b>	<p><b>A forest inventory</b> 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.</p> <p><b>Reference material:</b> Methodology for forest inventory: <a href="#">K-Link</a> / <a href="#">Website</a> Forest monitoring: <a href="#">K-Link</a> / <a href="#">Website</a></p>	
Key Elements of the Experience	Guiding principles and the way how they are related to ILUMA dimensions	
<b>Definition of the inventory objectives and information desired</b> , 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.
<b>Remote sensing surveys</b> 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).
<b>Development of sampling design and methods</b> 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.
















<b>Data collection (field surveys)</b> 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.
<b>Data analysis and publication of the results</b> 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.
<b>GIZ Experience for Implementation</b>	<p>The Tajik Forest Management Information System (<b>TajFIS</b>) 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).</p> <p><b>Reference material:</b></p> <p>Reporting system for TajFIS: <a href="#">K-Link</a> / <a href="#">Website</a></p> <p>Documentation of the workshop: <a href="#">K-Link</a> / <a href="#">Website</a></p> <p>The workshop process: <a href="#">K-Link</a> / <a href="#">Website</a></p>	
<b>Key Elements of the Experience</b>	<b>Guiding principles and the way how they are related to ILUMA dimensions</b>	
<b>Involving stakeholders</b> 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.

<b>Requirement analysis</b> 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.
<b>Piloting TajFIS</b> , 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 <a href="#">K-Box</a> (see K-Link). 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.
<b>GIZ Experience for Implementation</b>	<p><b>Business Process Model and Notation (BPMN)</b>  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.</p> <p><b>Reference material:</b></p> <p>Textual descriptions of working processes of the State Forest Enterprises: K-Link / <a href="#">Website</a></p> <p>Graphical descriptions of working processes: K-Link / <a href="#">Website</a></p> <p>Analysed normative-legal base, regulating the working processes, and proposals for optimisation: K-Link / <a href="#">Website</a></p>	

Key Elements of the Experience	Guiding principles and the way how they are related to ILUMA dimensions	
<b>Training events for BPMN</b> 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.
<b>Textual description of the working processes of SFE</b> 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.
<b>Graphical description of the working processes of SFE</b> 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.
<b>Analysis of legal bases of work processes</b> 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.
<b>GIZ Experience for Implementation</b>	<p><b>Day-to-day Technical Support to the Forest Agency,</b> 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.</p> <p><b>Reference material:</b></p> <p>VET professional education programme: K-Link / <a href="#">Website</a></p> <p>Training modules on integrative forest management: K-Link / <a href="#">Website</a></p> <p>Two-pager introduction to K-Link and K-Box: <a href="#">K-Link</a> / <a href="#">Website</a></p>	

Key Elements of the Experience	Guiding principles and the way how they are related to ILUMA dimensions	
<b>VET – Professional training program ‘Forester’</b> 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.
<b>Training module on the integrative forest management</b> 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.
<b>Knowledge Management with K-Box and K-Link</b> , 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

<b>GIZ Experience for Implementation</b>	<p><b>Dissemination of Innovative technologies</b>          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.</p> <p><b>Reference material:</b>          Ppt on CC ‘Zindagi’ <a href="#">K-Link</a> / <a href="#">Website</a>          Collaboration with MLO: <a href="#">K-Link</a> / <a href="#">Website</a>          Support to private forest extension services: <a href="#">K-Link</a> / <a href="#">Website</a></p>						
<b>Support for local cooperatives</b> 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.	<table border="1"> <tr> <td data-bbox="499 651 683 772">  </td><td data-bbox="691 651 1445 772">           Support local cooperatives or the establishment of cooperatives in order to disseminate innovative technologies among memberships         </td></tr> <tr> <td data-bbox="499 779 683 1070">  </td><td data-bbox="691 779 1445 1070">           Support local cooperatives in defining a financially lucrative business model so as to finance their organisational and membership's costs.         </td></tr> </table>		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.		
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<b>Support for local NGOs</b> such as ‘Camp Tabiat’, which is specialised in environmental management protection as well as on climate change adaptation measures.	<table border="1"> <tr> <td data-bbox="499 1077 683 1198">  </td><td data-bbox="691 1077 1445 1198">           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.         </td></tr> <tr> <td data-bbox="499 1205 683 1326">  </td><td data-bbox="691 1205 1445 1326">           Ensure the NGO is well-accepted by the local population and knows the cultural specifics of the region in which it is operating.         </td></tr> <tr> <td data-bbox="499 1332 683 1460">  </td><td data-bbox="691 1332 1445 1460">           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.         </td></tr> </table>		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.
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