

TECHNICAL PROPOSAL TEMPLATE

CONSULTANT'S ORGANIZATION AND EXPERIENCE

A - Consultant's Organization

Centre for Development and Environment (CDE), University of Bern, (www.cde.unibe.ch)

The Centre for Development and Environment (CDE) has recently become a university centre of excellence. CDE's main focus is on management of natural resources, integrating regional development, and interventions for mitigating the impacts of global change, with a view to promoting sustainable development.

CDE works mainly through long-term partnerships, based on disciplinary, interdisciplinary and trans-disciplinary approaches that aim to link research, knowledge generation, outreach and implementation. CDE has adopted a holistic perspective with regard to sustainable development, including water management, soil and water conservation and sustainable land management. With its multidisciplinary team, CDE's expertise is in geography, anthropology, agriculture, soil science, forestry, civil engineering, environmental economics, and GIS/earth observation.

CDE is the lead institution for the Swiss National Centre of Competence in Research (NCCR) North-South, a 12 year programme focusing on research partnerships for sustainable development. CDE also hosts the secretariat of WOCAT (World Overview of Conservation Approaches and Technologies), a global network sharing knowledge on sustainable land management and soil and water conservation (further information see below). In addition to research, CDE's mission comprises contributing to sustainable development through education and training, by developing concepts and tools for implementation, and by providing policy advice. CDE also runs the recently established International Graduate School North-South, a collaborative program between the universities of Basel, Zurich, and Bern.

In the implementation of this project CDE will provide its international expertise in project management. It will use its experience of working in Central Asia to bring the relevant actors from academic institutions, government bodies and communities together to collate, analyse, and ultimately produce recommendations for the Pilot Programme for Climate Resilience.

National Centre for Competence in Research (NCCR) North-South (2001-2013) (www.north-south.unibe.ch and www.nccr-central-asia.org)

Launched in 2001, the NCCR North-South is one of twenty National Centres of Competence in Research implemented by the Swiss National Science Foundation. Additional support is provided by the Swiss Agency for Development and Cooperation. The programme Management Centre is hosted by CDE.

The NCCR North-South concentrates its efforts on interdisciplinary research, in partnership with institutions in developing countries. CDE has been initiating and supervising in Central Asia numerous PhD and MSc studies, focusing on various issues of sustainable land management. This included the PhD study by Gulniso Nekushoeva, Tajik Soil Institute, "Assessing land

conservation in the loess hills of Central Tajikistan – comparative case studies”, which is based on the WOCAT methodology as well as the PhD study by Bettina Wolfgramm on tools for soil monitoring at larger scales. In the current NCCR North-South Phase 3 (2009 to 2013), studies in Tajikistan are conducted within Research Project RP11 focusing on “Land Resource Potential”. With case studies in Tajikistan, Ethiopia and Kenya, this research project aims to develop a comprehensive methodology for assessing the impact of Sustainable Land Management (SLM) strategies including carbon sequestration, leading to informed decision-making and win-win solutions that harmonise human needs and environmental protection. Currently, research studies by 1 BSc and 4 MSc students, 2 PhD and 1 PostDoc researcher, Tajik and Swiss, are being conducted to assess land degradation and conservation at the local and regional level.

The NCCR North-South research team in Tajikistan will provide inputs to the literature review, documentation of SLM practices and their analysis. Additionally, the research team will use synergies with the PPCR project when developing methods and tools for assessing potentials of SLM practices for adaptation to climate change.

World Overview of Conservation Approaches and Technologies (WOCAT),
(www.wocat.net)

WOCAT is a global network that operates through partnerships with different institutions and organizations in over 50 countries worldwide and can rely on more than 15 years of experience in documenting and evaluating SLM practices. WOCAT’s vision is that land and livelihoods are improved through sharing and enhancing knowledge about sustainable land management. WOCAT’s goal is to prevent and reduce land degradation through SLM technologies and their implementation approaches. WOCAT provides tools that allow SLM specialists to identify fields and needs of action, to share their valuable knowledge in land management. Furthermore these tools support making decisions in the field and at the planning level, and in up-scaling identified best practices. WOCAT has developed a well-accepted framework for documentation, monitoring, evaluation and dissemination of SLM knowledge, covering all steps from data collection, to a database and to using the information for decision support. The advantage of a standardized documentation with harmonized terminology is that comparisons and analysis between and among different land management techniques is easier and straight forward.

The WOCAT team will provide backstopping during the collection of best practices, peer review and analysis of all the documented and submitted case studies (technologies and approaches) for Tajikistan.

CAMP Kuhiston, (www.camp.tj)

CAMP Kuhiston is a Tajik non-profit, non- government organization that was officially registered in 2006. As an organization specialised in natural resource management it promotes sustainable land use management through seminars and the implementation of projects in the mountain regions of Tajikistan. Through community participatory approach and liaison with several academic institutions CAMP has continued to develop and disseminate trainings on all levels of society within Tajikistan. CAMP is also part of the Central Asian Mountain Partnership network and has recently contributed to the Climate Change Forum in Kazakhstan.

CAMP will provide logistical support on the ground, access to academic and government institutions, and use its AGOCA (Alliance Central Asia Mountain Communities) network to harness local level input through workshops.

University of Central Asia (UCA), (www.ucentralasia.org)

Founded in 2000 by the governments of Kazakhstan, the Kyrgyz Republic and Tajikistan and His Highness the Aga Khan, the University of Central Asia (UCA) is a private, secular university designed to foster the socioeconomic development of Central Asia. Established to provide an internationally recognized standard of higher education in Central Asia, UCA is committed to producing graduates with the knowledge, skills and creativity to provide leadership and innovation to the region's development.

UCA will provide support on and peer review of land practices and policies in Tajikistan and other Commonwealth of Independent States (CIS) countries. Furthermore, their web-based data warehouse will provide the platform for making accessible literature and other information on SLM and climate change relevant for Tajikistan.

Helvetas, Swiss Association for International Cooperation (International NGO), (www.helvetas.ch)

Helvetas, founded in 1955 as Switzerland's first private organization for development cooperation, has a long term working history in Central Asia, including Tajikistan. In its Tajik Programme Helvetas is currently implementing two projects in the access to justice and legal aid sector, funded by the Swiss Agency for Development and Cooperation (SDC) as well as own projects in agricultural development and promotion of organic value chains. The "Access to Justice & Judicial Reform" project aims at improving access to justice for poor and marginalized people in Tajikistan and improved implementation of the UN Human Rights treaties.

The "NetLAC – Network of Rural Legal Aid Centres" project promotes the rights of the rural population affected by agrarian sector reform through capacity building support for legal aid centres. Central element of the project is to establish a network organisation (RDN) that supports member legal aid centres to improve their services throughout the country. Support offices of the network have been established in the Khatlon, Sogd, and RRS Oblasts. The legal aid centres build the capacity of local legal experts and provide advice to agricultural actors at all levels of society on land legal issues including, but not limited, to unified land registration, land titling, farm restructuring, freedom to farm, debt resolution, resolution 111. This established capacity building network organisation (RDN) provides the basis for gaining and assessing key information with regards to impact of legal and policy land frameworks at micro, meso and macro level of society, from community to national government level.

In the frame of the current proposal Helvetas will be able to assess weaknesses, deficiencies of the legal land framework and key areas for improvement with regards to implementing sustainable land use methods throughout the country.

The Hebrew University of Jerusalem, (http://www.huji.ac.il/huji/eng/aboutHU_e.htm)

Zvi Lerman is the holder of the Sir Henry d'Avigdor Goldsmid Chair in Agricultural Economics and is professor in the Department of Agricultural Economics and Management, at

the Hebrew University of Jerusalem, Israel, where he teaches financial management, accounting, and the economics of cooperatives.

Since 1991 his research has focused on land reform and farm restructuring in transition economies. He conducted farm-level surveys in various countries of the former Soviet Union and Central Eastern Europe, covering large farm enterprises, family farms, and rural households. The field work was financed by the World Bank, FAO, and USAID.

His book 'Agriculture in Transition: Land Policies and Evolving Farm Structures in Post-Soviet Countries' summarizes a decade of experience with agrarian reforms in Europe and Central Asia. A recent edited volume Russia's Agriculture in Transition: Factor Markets and Constraints on Growth presents in its 15 chapters the results of a 3-year collaborative research project with the participation of an international team of 20 researchers.

Mr. Lerman and David Sedik were commissioned by FAO to publish their research findings on 'The Economic Effects of Land Reform in Tajikistan' in October 2008. Mr. Lerman will be responsible for using his experience to evaluate the legal and policy aspects of the land framework within Tajikistan and provide input to the guidance of the local legal team and integrate their combined findings with respect to Sustainable Land Management Practices.

COMMENTS AND SUGGESTIONS ON THE TERMS OF REFERENCE AND ON COUNTERPART STAFF AND FACILITIES TO BE PROVIDED BY THE BANK

C - On the Terms of Reference

Potential Modifications to the Proposal:

1. The terms of reference suggest as preferred start date of the project the 5th January 2011. This gives a relatively short timeframe between award date and project start. Our team proposes that project start is delayed for several weeks to provide sufficient time to organise international personnel as well as international and national representatives that will be invited to the workshop at national level and, as important, to ensure access to some of the rural communities after the winter weather towards the end of the four month period. The proposed start date is 1st February 2011.

2. On the 29th and 30th of October there was a conference on Climate Change within Tajikistan held in Dushanbe. One of the pertinent comments was that funds from the PPCR were not trickling down to local organisations. Therefore within our submission we propose to form a team rather than use just three experts. The team will include local NGO CAMP Kuhiston, representatives from the Soil Institute and local staff working for Helvetas, Swiss Association for International Development. Through this process there will be local capacity building and sharing of experiences. Furthermore, we foresee to actively involve and reimburse institutions with practical SLM experience in Tajikistan for inventorying SLM practices.

Also, we propose to hold workshops for local level and national level stakeholders to ensure a more complete and representative set of data.

3. Strong synergies are anticipated between the proposed PPCR project and the currently ongoing NCCR North-South Research Project RP11 on Land Resource Potential. Thus, Julie Zaehring, Research Assistant at CDE and RP11, and Christian Hergarten, PhD researcher and Team Member of CDE's geoprocessing unit, would provide seven months of input to the project at no additional costs for the PPCR project, as it would be beneficial to the ongoing research. The close collaboration will allow development and testing of methods and tools for monitoring and scenario modelling of resilience of SLM practices including investments needed in SLM practices, and will generate additional output crucial for the project:

a) We believe there is scope to develop recommendations for the modelling of data sets. We, therefore, propose to add a Geographical Information System (GIS) component. GIS based scenario modelling for estimating cost effectiveness of resilient adaptation strategies which will allow elaborating and testing recommendations for investments in SLM projects resilient to climate change and extremes.

b) Development of a pilot network of SLM case studies for each major land use system, which can be monitored with regard to resilience to climate change. Baseline data will be based on the WOCAT documentations and databases and additional soil chemical and physical information.

D - On Counterpart Staff and Facilities

The team might require World Bank support in securing ‘Work Visas’ for Tajikistan for the International Staff.

It may also be envisaged that the team may struggle to access specific personnel in Tajik government ministries and may require World Bank’s facilitation in the arrangement of some meetings especially in light of the four month time frame.

DESCRIPTION OF APPROACH, METHODOLOGY AND WORK PLAN FOR PERFORMING THE ASSIGNMENT

a) Technical Approach and Methodology

1) Background

The current major land use systems in Tajikistan are; irrigated and rainfed cropland, grazing lands, and forests and all will be impacted by changes in climatic conditions depending upon their location within the country.

In Tajikistan, the increasing pressure on available land combined with poor management of land use systems has led to widespread unsustainable land management. As a consequence, the quality of the land and soil has diminished with the main degradation types being: fertility decline due to soil nutrient mining, soil erosion due to bad vegetation cover management, and inadequate forest management partly due to demands for fuel and timber.

The underlying causes are manifold; however, the on-going land reform process is a crucial one. While the land reform in Tajikistan has assisted in the recovery of the agricultural sector, it has been the household plots and 'kitchen gardens' where the productivity has significantly increased. However, the land reform has not replicated the positive impact experienced in other CIS countries. There is still a large percentage of land managed by collective farms or collectively organized dekhkan farms. These have considerably lower agricultural productivity (Lerman and Sedik 2009).

For the coming years, it is expected that Tajik agriculture faces varying climate change impacts which, on the whole, will deteriorate production conditions and thus adversely affect the economy and rural livelihoods. Already, climate change is associated by the local population to environmental changes, such as drying up of springs on pastures, increased number of floods and mudslides, events of extreme cold and drought as in 2008, and shortened growing seasons in the Pamirs.

It is expected that climate change and weather extremes will exacerbate agricultural productivity decline on already degraded land. However, SLM systems will provide a level of resilience to climate change, within certain parameters and conditions. It is envisaged that SLM systems have the potential, to increase land productivity, improve rural livelihoods, and improve ecosystems.

In country experience to date already demonstrates that there are good opportunities for sustainable land management in Tajikistan. Traditional food and fodder plots (Liniger and Critchley 2007), Soviet terraced systems - now often turned into agroforestry systems, intensively used household plots (Lerman and Sedik 2009), jointly managed forest in GBAO (Forest agency of GBAO and GTZ), improved management of common pasture land by pasture committees (Caritas) or through schools (Welthungerhilfe in Baljuvon), and on irrigated cropland BioCotton projects (Helvetas) show promising results.

As in many other regions, climate projections for Central Asia do not fit the spatial and temporal scales needed to link them to agricultural processes, practices or planning and are yet unable to produce the details required for impact assessments (Ifejika Speranza 2010). Furthermore, impacts may be mainly in the form of extreme events and may also change from

short term predictions to long term predictions. Thus, evaluating and planning for adaptations has to focus on rural livelihoods being resilient to changes at a broad level.

It is, therefore, important that legal land reform, institutional land management policies and SLM practices are synergised to provide effective approaches to climate resilience. It is noted through CAMP Kuhiston's experience in conducting soil and water, and pasture management courses that the population is willing to learn, and adapt their techniques and methodologies. However, the implementation of improved practices is hampered by lack of full tenure rights, government policy with regards to cotton, potatoes and tree planting quotas, and by the tax system that had a negative impact on ongoing sustainability efforts. In the regions of cotton growing such as Shartuz (Khatlon) and Spitamen (Sogd) it is also realised that many farmers continue to rent land from the government for cotton growing to enable them to repay previous debts on land and for harvesting of cotton brush for fuel. It is therefore, important that the reasons behind current land use practices are fully understood to allow changes in law, policy and SLM practices to be implemented effectively.

2) Overall goal

In Tajikistan, rural livelihoods are vulnerable to climate change and have limited capacities to adapt to these changes. In order to develop strategies for climate resilient adaptation of land management, knowledge is needed on the state of land resources in Tajikistan today, on SLM opportunities for climate resilient adaptation, and on the policy and technology interventions required for up-scaling of these SLM opportunities. In Phase 1 of the PPCR the necessary understanding shall be developed and recommendations formulated for specific SLM interventions in Phase 2. For the analysis to be conducted in Phase 1, we propose the overall goal as follows:

Identify best sustainable land management practices to improve rural livelihoods and resilience to climate change and make recommendations for a feasible policy and legal framework for their up-scaling.

3) Approaches

Resilient adaptation of land management to climate change faces extremely complex and multi-dimensional problems situated at the interface of the physical and social environments. Thus, it is crucial to identify the interrelations between human beings and their environment, to reveal how the different organisational levels interact and how local ownership can be created for sustainable development and climate resilience of rural livelihoods. The following four approaches will allow for developing both an improved cross-sectoral as well as sectoral understanding of SLM practices and policies, and to develop coherent and effective recommendations for future interventions at the local, the district and the national level:

- Focus will be on drawing from **existing valuable experience and SLM best practices** in order to learn from what already works. While a lot of efforts have been made to understand land degradation and weaknesses of policy and legal frameworks, it is crucial to learn from good practices, and the valuable experience existing among the various actors in Tajikistan.

- Adaptation requires a **combination of local knowledge with other knowledge systems** (Ifejika Speranza 2010). Different types of knowledge from traditional, to Soviet-time and newly created knowledge through recent projects shall be accessed and made use of. Furthermore, experiences from countries with similar environmental and / or socio-economic conditions, such as other CIS countries, but also China or Mongolia, and with regard to SLM policies also existing frameworks in e.g. Europe should be included in the analysis and knowledge management process.
- A **multi-level stakeholder approach** is necessary for taking into account the different perspectives and experiences. All stakeholder groups will be involved; farmers, practitioners and implementers (from NGO's and government institutions) as well as national and international policy makers. The participatory approach will be a leading element through the different work steps for inventorying and analyzing SLM opportunities in the existing legal and institutional setting for different regions within Tajikistan. Finally the information shall also be shared and made available within and outside of Tajikistan.
- **SLM practices and policies / legal aspects will be assessed in an integrative manner.** This will assure the creation of a coherent understanding of the state of land resources, the ecological, social, policy and economic contexts, and the institutions involved. The integrated assessment will be facilitated by jointly prepared and/or conducted workshops, by documenting SLM case studies with the WOCAT approach and technology questionnaires, and by conducting an integrated analysis of SLM practices and policies guided by the resilience check (Ifejika Speranza 2010). Close collaboration between SLM practice and policies experts will be assured through a team workshop at the start of the project for substantiating and refining the joint approach, and further regular communication and joint preparation of each work step.

4) Specific objectives, problems and challenges, and methods to address them

The following table provides an overview of the specific objectives of the project as announced by the World Bank. For each objective the problems being addressed are listed in order of their importance, and the method / technical approach to address them is indicated. Detailed descriptions of the methods mentioned are provided in section 5 below.

Problems / challenges being addressed	Methods / technical approach to address them
Objective 1) Compile an inventory of relevant past and on-going programs/projects/interventions and approaches to sustainable land management in Tajikistan	
Loss of valuable knowledge and experiences. This includes traditional knowledge, knowledge from Soviet times, and "technical / project created" knowledge from the last 10-15 years.	Bridge the gap between the different types of knowledge. Harmonise this knowledge by documenting experiences and results using the standardised and widely tested format of the WOCAT questionnaires, suitable to address all types of SLM knowledge.
Projects are often short term, many with duration of 1-2 years only; there is a high turn-over of staff at governmental and non-governmental organisations/institutions. This does not assure for continuity, which is necessary for building up experience with resilience of SLM practices to different climate extremes. Often also short projects do not allow for	<ul style="list-style-type: none"> - Show the value and providing incentives to properly document and evaluate also short-term projects. - Strengthen Capacity of local staff in knowledge management and standardized documentations, which can be used in the future, wherever they work. - Facilitate monitoring of SLM practices even by, even by other stakeholders or projects, in the future and will

Problems / challenges being addressed	Methods / technical approach to address them
proper project evaluation.	further allow/ facilitate information sharing.
A consultant, a project or programme alone does not have sufficient resources and capacities to collect experience across all land use systems and different regions within Tajikistan.	Achieving an inventory of SLM practices by using the same standard WOCAT tools by all actors. Supporting awareness and training workshops on the use of the WOCAT methodology and tools. Organising writing workshops to evaluate data and publish relevant outputs.
At national level, and even at local level, there is no up-to-date spatial information on the major land use systems in specific environmental conditions and the state of land degradation.	Elaborate a basic national dataset showing the major land use systems , based on freely available satellite imagery (MODIS).
Objective 2a) Analyze good practices from these initiatives in the context of adapting to climate change	
Existing reports from different projects are not comparable.	The WOCAT database will allow for direct comparison between various SLM practices and with regard to relevant issues such as agricultural productivity, food security, and resilience to different types of climate extremes, implementation and maintenance costs.
Non-availability of reliable climate change predictions	Identify regions with specific environmental conditions and characterise expected climate changes and extremes. Elaborate rough scenarios allowing evaluation of resilience of different SLM systems.
Mutual learning for developing the required knowledge on adaptation to climate change among farmers, planners, scientists and policy makers is missing to a large extent.	Local level workshops will provide the platform for analysing adaptation to climate change and extremes. Opportunities and risks of various SLM practices and SLM policies will be discussed among stakeholders from different backgrounds.
No monitoring of the resilience of SLM practices to climate change and extremes is currently being conducted.	Develop a pilot network of case studies for each major land use system, with SLM (protected areas) and areas without SLM (unprotected areas) for monitoring climate resilience of SLM practices. Baseline data will consist of the WOCAT documentations and database, and additional soil chemical and physical information.
Objective 2b) Share lessons learned from these initiatives in the context of adapting to climate change	
Existing information is not widely distributed.	Compile information on SLM experience and making it available through a publication for Tajikistan using the WOCAT format.
Low coordination among SLM actors especially with regard to evaluation of SLM practices and assuring continuity and knowledge transfer	Plan a series of national level workshops to bring together the different actors in the field.
Perceived low stakeholder involvement in the PPCR process so far (Climate Change Conference in Dushanbe, 29/30 Nov 2010)	Information exchange with SLM stakeholders from the beginning of the project and throughout the project. This will be achieved through 3 national workshops.
There is insufficient sharing and exchange of knowledge and experience between Tajikistan and the rest of the world	Using the standardized WOCAT format for documentation and entering the data into the global WOCAT database will facilitate the exchange of knowledge. Additionally, knowledge sharing with international partners of the WOCAT global network during the WOCAT International Symposium and Workshop in Kyrgyzstan, June 2011, will be facilitated.
Objective 3) Develop criteria for identifying changes in land management practices that in the aggregate have significant potential to build climate resilience and/or are particularly sensitive to climate change	
In view of implementing SLM practices, often, the link between the local and the regional scale is missing. An up-scaling SLM practice from plot level to large-area is not linear. There are bottlenecks such as availability of mulch, water, and manpower to be considered.	Planning at various levels requires linking local SLM interventions with the watershed and different administrative levels to show interactions and impacts. Specifically this involves: -Document SLM practices for specific environmental

Problems / challenges being addressed	Methods / technical approach to address them
Additionally, implications of policy and legal issues across administrative boundaries need to be considered.	conditions and locations within a watershed -Assess SLM practices regarding bottlenecks for up-scaling.
Assessing the contributions of local farm practices and individual measures to resilience of smallholder agriculture to climate variability and change is lacking.	Based on the resilience check by Ifejika Speranza (2010) develop criteria that allow checking of SLM best practices as well as policies both with local level and national level stakeholders.
Sound lists of criteria for assessing resilience/vulnerability in Tajikistan do not exist.	Review and select criteria from the vast resilience literature and test their applicability to Tajikistan during local and national level workshops.
Objective 4) Understand implications of land reform process and other land development policies on climate resilience strategies	
Information on the current situation on land tenure and farming processes for identification of legal and policy constraints is scattered, non-systematic, and non-comparable.	Compilation of laws and policies relevant to resilient adaptation of SLM, and systematic review and analysis of these laws and policies.
Available information is generally not linked to and existing policy and legal frameworks are not mainstreamed concerning climate resilience issues.	Analysis of policy and legal frameworks in view of opportunities and constraints of climate resilient adaptation through SLM practices.
National policies/laws and local policies/implementation are not aligned with the needs of farmers.	Grassroots interviews with farmers and other rural residents to understand the implementation of the policies on the ground and the problems they are facing draw from the on-going Helvetas household level survey Search for and review the analyses of previous rural surveys in Tajikistan (whether published or not).
Information on the current legal issues that affect farmers directly is not easily available nor well shared by policy makers.	Conduct interviews with officials, decision makers, donor representatives, and NGOs (in the capital and in regional centres) to understand the policies and the politics
No coherent legislation relating to land tenure, farm structure and farming practices that would allow for a enabling environment for spreading and up-scaling of SLM in Tajikistan.	Stock-tacking of existing legislation in Tajikistan and comparison with legislation in CIS countries , and possibly in the EU with regard to their policies for promoting SLM.
Objective 5) Make recommendations that identify investments in projects that will promote climate resilient land management technologies, that identify support for relevant policy processes, and that identify the balance of PPCR resources allocated to each of these two broad areas of work	
There is no coherent data available on SLM practices and related required policy or legal changes to support upscaling of these SLM practices.	Applying criteria for climate resilient adaptations to identified SLM opportunities. Develop recommendations for SLM interventions in an integrative manner , including the legal and policy framework.
There are few efforts for proper evaluation of land degradation prevention and mitigation strategies. Thus there is no guideline at what stage of degradation SLM interventions are the most effective and rewarding (at the stage of prevention and mitigation of land degradation or rehabilitation of already degraded land).	Proper evaluation of the cost-benefits and effectiveness of SLM practices is crucial. Low-cost strategies for mitigating negative climate change effects on land use systems in good conditions might play a more important role than costly measures to rehabilitate already degraded lands, and to increase their climate resilience.
Climate change predictions are not detailed enough to serve national level planning when adapting agricultural practices of various land use systems to climate change and extremes.	GIS modelling will allow testing of various climate change scenarios and the aggregated impact of combinations of SLM interventions on land condition and agricultural productivity.

5) Methods and Tools

The method and tools to be used are described in more details below. They are the following:

- The resilience check providing guidance for enhancing existing SLM assessments regarding adaptation to climate change.
- The WOCAT SLM knowledge management system for documenting, archiving, analysing, and disseminating data, information and knowledge.
- The DESIRE-WOCAT participatory decision support tool will be used for conducting local level workshops for identifying and testing SLM opportunities.

Additionally, it is proposed to use synergies with the NCCR North-South research project for SLM impact assessment and monitoring, including

- Comparative case studies for monitoring the impact and resilience of existing SLM practices
- GIS based modelling of climate change and extreme event scenario, and testing of the cost-effectiveness of single SLM practices or combinations of SLM practices over larger areas (e.g. within a watershed).

(A) The resilience check

The **resilience check** (Ifejika Speranza 2010) is a tool for assessing the contributions of farm practices to resilience of smallholder agriculture to climate variability and change. This check was developed for African agriculture with a focus on the farm and policy level. The check covers the following criteria: buffer capacity (robustness to uncertainty), self-organisation, adaptive capacity, efficiency, and gender.

The resilience check will provide general guidance when adapting existing tools and questionnaires to be used in this project. For example, selected indicators from the check will be used to steer the discussions in the workshops. Furthermore, the check will allow for integrated analysis of a preliminary set of recommended actions.

(B) World Overview of Conservation Approaches and Technologies (WOCAT)

WOCAT provides a well-established and credible framework for documentation, monitoring, evaluation and dissemination of SLM knowledge, covering all steps from data collection, to a database and to using the information for decision support. WOCAT tools provide a unique, widely accepted and standardised method of application.

Data collection: WOCAT has developed a set of questionnaires to analyse and evaluate SLM, including a Questionnaire on SLM Technologies (QT) and a Questionnaire on SLM Approaches (QA). The questionnaires each consist of three main parts: 1. General information; 2. Specification of SLM Technology and Approach; 3. Analysis of SLM Technology and Approach.

The **questionnaire on SLM technologies (QT)** addresses questions on technology specifications, where it is being implemented (natural and human environment) and what impact it has. Any SLM technology consists of one or more conservation measures in the following categories: agronomic, vegetative, structural and management. Further, a standard system for land degradation classification is used. The economic assessment plays an

important part in documenting establishment and maintenance costs. The final evaluation of strength and weaknesses of the technology provides crucial information for planners and practitioners, indicating also opportunities for improving the technology.

The **questionnaire on SLM approaches (QA)** addresses the ways and means used to promote and implement a SLM Technology and to support it in achieving more sustainable soil and water use. A 'SLM Approach' - as defined by WOCAT - refers to a particular land conservation activity, be it an official project/programme, an indigenous system, or changes in a farming system towards more sustainable soil and water use. It consists of the following elements: All participants (policy-makers, administrators, experts, technicians, land users, i.e. actors at all levels), inputs and means (financial, material, legislative, etc.), and know-how (technical, scientific, practical). An approach may include different levels of intervention, from the individual farm, through the community level, the extension / advisory system, the regional or national administration, or the policy level, to the international framework. Besides conservation activities introduced through projects or programmes, WOCAT includes indigenous conservation measures and spontaneous adoptions or adaptations of SLM Technologies. In the case of a project, WOCAT restricts itself to those elements within the project that are directly or indirectly relevant to land conservation.

The WOCAT questionnaires yield a comprehensive set of information. Detail of information needed was discussed in many projects and the questionnaires were curtailed/ trimmed several times and user-friendliness was increased. Today, the WOCAT questionnaires include the detail of information needed in most projects for planning of SLM interventions. It is thus recommended for this project to elaborate full WOCAT documentations, using the Technology and the Approach questionnaire.

For the project several **adaptations of the WOCAT questionnaires** are foreseen: (1) For capturing information on SLM measures that provide opportunities for adaptation to climate change and extremes, a specific section of the QT focuses on the tolerance or the sensitivity of the technology to e.g. temperature increase, seasonal rainfall decrease, dry spells. This section will be critically reviewed and further developed in order to assure that Tajikistan specific information will be captured. (2) A specific section of the QA will be extended to cover SLM policy issues relevant in Tajikistan. Additionally, the QA will be reviewed regarding the need to integrate additional questions crucial for resilient adaptation in Tajikistan.

Database: WOCAT provides a global database system on SLM Practices. The database system consists of the database on SLM Technologies and Approaches as well as of the Mapping database. The WOCAT databases are going entirely online, which means that a truly interactive database system has been developed.

Furthermore, the contents of the **WOCAT global database are also accessible through GoogleEarth**, allowing to identify SLM practise on the available imagery and to access a short summary of the SLM practice.

Information dissemination: The WOCAT global overview book "Where the land is greener" (Liniger and Critchley, 2007) is a milestone in the documentation of SLM knowledge presenting worldwide SLM initiatives that were all documented using the WOCAT tools. The same is true for the TerrAfrica publication on "Sustainable land management in practice" (Liniger et al., 2010) which presents guidelines and best practices of sustainable land

management technologies for Sub-Saharan Africa. The two books provide a format for publications presenting an analysis of SLM practices based on concrete case studies. The reader-friendly layout can be used for preparing a publication for Tajikistan, and assuring an attractive output from the project.

(C) DESIRE-WOCAT Decision Support Tool for stakeholder workshops

The DESIRE-WOCAT decision support tool provides a method combining participatory decision making with thorough assessment of existing local regional and global experiences based on WOCAT questionnaires and database.

The main aim of the DESIRE methodology is to provide a framework for a participatory process for the appraisal and selection of different options to mitigate land degradation. Tools and methods as described by (Schwilch 2008) will be adapted to the project and used for local level workshops. The methodology consists of three main steps:

In a first step, prevention and mitigation strategies already applied at the respective study site are identified and listed during a workshop with representatives of different stakeholders groups (land users, policy makers, researchers). The participatory and process-oriented approach initiates a mutual learning process among the different stakeholders by sharing knowledge and jointly reflecting on current problems and solutions related to land degradation and climate change effects and extremes.

In the second step these identified, locally applied solutions (technologies and approaches) are assessed with the help of the WOCAT methodology (see the previous chapter). Comprehensive questionnaires and a database system have been developed to document and evaluate all relevant aspects of land management technologies as well as implementation approaches by teams of researchers and specialists, together with land users. This research process ensures systematic assessing and piecing together of local information, together with specific details about the environmental and socio-economic setting.

The third step consists of another stakeholder workshop where promising strategies for sustainable land management in the given context are selected, based on the best practices database of WOCAT, including the evaluated locally applied strategies at the selected study sites. These promising strategies will be assessed with the help of a selection and decision support tool and adapted to the local conditions.

The output is a set of recommendations with SLM technologies adapted to the local environmental and social conditions, and feasible approaches for their implementation. In the framework of this project, a specific focus will be on appraising the resilience of the SLM practices to climate change and extremes.

Adapting and further developing methods and tools for assessing potentials of SLM practices for adaptation to climate change (in collaboration with the NCCR North-South)

In the framework of the NCCR North-South, currently the Research Project RP11 on *Land resource potentials and climate change* is being conducted in Tajikistan and Ethiopia, with associated PhDs in Tanzania and Kenya (see also Part C - Consultant's Experience). Thematically the two projects have significant overlaps, which will allow benefiting from synergies. While the development of methods and tools within RP11 will provide this PPCR

project with a set of tailor-made tools, the extensive dataset to be collected within this PPCR project will allow testing of the developed methods and tools.

- **Comparative case studies for monitoring climate resilience of relevant SLM practices**

So far knowledge on resilience of SLM practices is incomplete, allowing only estimates of the effects of climate change and extreme events on agricultural production, rural livelihoods and ecosystem services. While a one-time collection of information for the WOCAT documentaries provides a valuable knowledge base, repeat datasets and additional soil chemical analysis will provide evidence of resilience of SLM practices.

Based on existing research case studies for assessment of the impact of SLM practices on land degradation, a pilot network of monitoring sites allowing assessing the impact of climate change and extremes in the future shall be developed. In the framework of the NCCR North-South and work conducted since 2003, SLM practices were assessed regarding their effects on land degradation and ecosystem services. The impact assessments were conducted by comparing protected plots with surrounding (unprotected) plots in comparable environmental conditions nearby. The assessments included WOCAT documentations as well as detailed soil analysis. Such comparable case studies already exist in Faizabad, Varzob, Muminabad, Rasht, and sites in GBAO (Vanj, Shugnon, and Ishkashim). On these sites collection of relevant information will be repeated, and necessary additional information regarding climate change effects will be included.

In order to cover all relevant land use types in Tajikistan, additional SLM practices from the planned inventory will be selected and for these the necessary additional soil baseline data will be collected. An evaluation of the results gained and the experience from this project will allow recommendations for future monitoring of SLM practices and their effects.

- **GIS based scenario modeling for estimating cost effectiveness of resilient adaptation strategies**

In order to elaborate recommendations for investments in projects that will promote climate resilient land management technologies, GIS based scenario modeling for estimating cost effectiveness of resilient adaptation strategies shall be conducted. The output in form of maps will provide valuable baseline information for evidence based decision making in the context of sustainable land management planning supporting the elaboration of adaptation strategies.

In a first step, the prevailing land use system will be characterized and modeled based on the multi-temporal analysis of medium and high resolution satellite imagery (MODIS, Landsat). The resulting land use layer will be put into a crop simulation model (GEPIC model, see Liu et al. 2007 and Yang et al. 2005), which will allow predicting crop yields, soil erosion rates or the effect of management practices under given climate change scenarios.

In general terms, such simulation models are highly data driven and require detailed data input, which can be an important disadvantage, especially when being applied in areas where relevant data is scarce. To cope with this problem, local experts shall be consulted on the occasion of conducted workshops. This will allow discussion of scenarios based on IPCC predictions and on local observations. To increase the model robustness, data on resilience of existing land use systems collected in WOCAT case studies shall be included in the modeling process. In order to fill remaining data gaps, certain parameters (e.g. energy flux, vegetation cover condition) can also be modeled based on satellite imagery or derived from existing datasets (e.g. soil maps, global climwat dataset), which will support model building

substantially. Further on, existing datasets based on previous NCCR North-South studies done by Buehlmann et al. (2010), Wirz (2009) and Wolfgramm (2007) will be used for model calibration and validation.

Assessment of the effectiveness of documented local SLM practices, combined with the model calculations, will allow simulating the impact of practices in relation to their cost or labor. The final output of the spatial analysis and scenario modeling will comprise information on agricultural productivity and soil erosion rates under varying land management practices and climate change scenarios. Additionally, an economic analysis will be carried out based on the predicted scenarios, trying to estimate costs for adaptation as well as for losses due to climate change.

b) Work plan

The foreseen tasks and activities can be categorized into five major work steps, applying to both the assessment of SLM practices, and of SLM policies and legal aspects:

- 1) Literature review
- 2) Inventory of existing experiences
- 3) Participatory analysis of resilient agricultural adaptation
- 4) Collation of findings, analysis, and development of recommendations
- 5) Presentation, consultation, report writing, dissemination

Each work step is described below. A list of the detailed tasks and the time frame for their implementation is provided in the work schedule at the end of this section.

(1) Review

Literature reviews in the field of SLM practices and SLM policies will be conducted. A careful review of available information materials, including project documents, reports from governmental institutions (ministries, agencies and academia), and scientific publications will be reviewed to cover the following specific topics:

- Land use and degradation in Tajikistan
- Land tenure, land reform, and agricultural economy (crop and livestock production for a broad value-chain perspective), and the relevant policies in Tajikistan
- Relevant laws and national policies/strategies with a clear focus on core issues related to the planned project
- Sustainable land management practices in Tajikistan
- Climate extremes and Tajik agriculture today
- Projected climate change impacts on Tajik agriculture, including spatial assessments of land degradation and climate change impacts
- Implications of climate change projections for adaptation
- Farming systems and their buffer capacity (robustness to uncertainty), self-organisation (cooperation, flexibility in decisions), adaptive capacity (local ecological knowledge, feedback among different stakeholders), efficiency (cost-benefits of market and non-market values), and gender.

In addition to the literature review, a spatial database will be compiled allowing spatial determination of the major land use systems as well as overlaying topographic parameters (elevation, slope etc) and climate variables.

A preliminary overview will be presented at the **national level start-up workshop**. SLM actors from Tajikistan present in the meeting will be asked to identify important additional literature, especially also governmental documents.

The literature review will be the main focus during the first three months of the project. By the end of month three (end of April 2011), the literature overview will be completed and reference lists will be compiled. All literature will be made available / accessible through the UCA web-based data warehouse.

2) Inventory of existing SLM experiences

2.1) For the inventory of existing **SLM practices**, we will build on the following components:

A) Taking into account and if necessary update or finalize **already existing WOCAT documentations** collected either by CAMP Kuhiston over the years 2002-2005 or by NCCR North-South researchers from Tajikistan and Switzerland. These are presently available in different formats and state of work: as information for farmers on posters (25 posters), fully documented in the WOCAT database (10 examples), published in the WOCAT global overview book “where the land is greener” (Liniger and Critchley 2007) (2 case studies), or as documentations in progress within the PAMS project in Rasht (2 case studies by CAMP Kuhiston and Nekushoeva, Soil Institute), within the PALM adaptive research project in GBAO (9 case studies by Nekushoeva, Soil Institute and Wolfgramm, CDE) and the PhD study of Nekushoeva in Faizabad and Varzob districts (6 case studies).

B) Building on the **experience of SLM projects from Tajikistan** conducted over the last 15 years, as well as relevant experience from Soviet times: Over the last 15 years a number of projects focusing on improving land management have been conducted, this includes large-scale projects supported by donors like the different Banks (World Bank, ADB, etc.) as well as small-scale and pilot projects by international or national NGOs. The later, even though small, might provide innovative ideas and valuable knowledge that should be equally evaluated as larger projects. Last but not least the major efforts in erosion prevention as well as in implementation of productive agricultural systems well adapted to the local climate conditions established in Soviet times, should not be left unconsidered: examples include the establishment of apricot orchards in Vanj valley, vineyards on the hill slopes of Central Tajikistan, and pistachio production in Dangara district. A list of selected projects conducted over the last 5 years:

- Community Agriculture and Watershed Management Project (CAWMP) in 4 major watershed, managed by the World Bank
- Watershed management in the Pyanj river basin (ADB funded)
- Joint forest management (JFM) in GBAO implemented by the Forestry Agency of GBAO and by the GTZ
- Watershed Management, Baljoan and Temurmaliq, Deutsche Welthungerhilfe
- PALM community-based land use planning according to simplified LADA methodology implemented by MSDSP

C) **Linking up to Central Asian programs and projects** that foresee WOCAT documentations in the near future: Different regional and national initiatives are currently planning to use or are evaluating WOCAT as their knowledge management tool in the field of SLM experiences. This includes as a major project in the region the Central Asian Countries Initiative for Land Management (CACILM) with their knowledge management and capacity building components conducted by GTZ in all five countries of Central Asia; the Humanitarian Section of the Swiss Agency of Development and Cooperation for their Disaster Risk Management Projects in Tajikistan and Kyrgyzstan; as well as the Helvetas BioCotton project in Kyrgyzstan.

For **new documentation** by national and international actors/organisations active in Tajikistan, using the **WOCAT** methodology the following work steps are foreseen:

- (1) WOCAT introductory and practical/ training workshop
- (2) documentation by different SLM actors and backstopping by CDE/CAMP team,
- (3) a 3-5 days writing workshop for finalizing the documentations,
- (4) reviewing process by a committee consisting of national and international experts (CDE, UCA, and possibly representatives of other organisations such as CACILM or Helvetas)
- (5) up-load of finalized case studies to the WOCAT on-line database, and WOCAT GoogleEarth

It is expected that besides the 16 case studies that are currently under way, additionally 20-30 new best SLM practices (20 Technologies and 10 Approaches) will be documented with the WOCAT questionnaires, covering all relevant land use types in Tajikistan: irrigated areas, rainfed areas, pastures and forests, as well as specific environmental conditions and related expected climate change impacts and risks. The deadline for finalized and reviewed documentations will be mid April, so as to make the documentations available for the subsequently conducted local level workshops (see step 3).

2.2) The inventory of existing **SLM policies and laws**, will build on the following components:

- Analysis of relevant policies, strategies and laws (including by-laws and implementation guidelines/action plans)
- Helvetas survey on rural legal issues: To elaborate a detailed understanding of the most pressing issues on the ground, Helvetas has elaborated a questionnaire for a survey among 600 farms. Further, the Helvetas project is supporting 15 NGOs to establish rural legal aid clinics. These NGOs will be able to provide key and up-to-date information.
- WOCAT Approach documentations on 20-30 SLM best practices in Tajikistan, will give valuable insights into well working projects that function under the current legal and policy framework.
- interviews with officials, decision makers, donor representatives, and NGOs (in the capital and in regional centres) to understand the policies and the politics,
- grassroots interviews with farmers and other rural residents to understand the implementation of the policies on the ground and the problems they are facing.

3) Participatory analysis of resilient agricultural adaptation

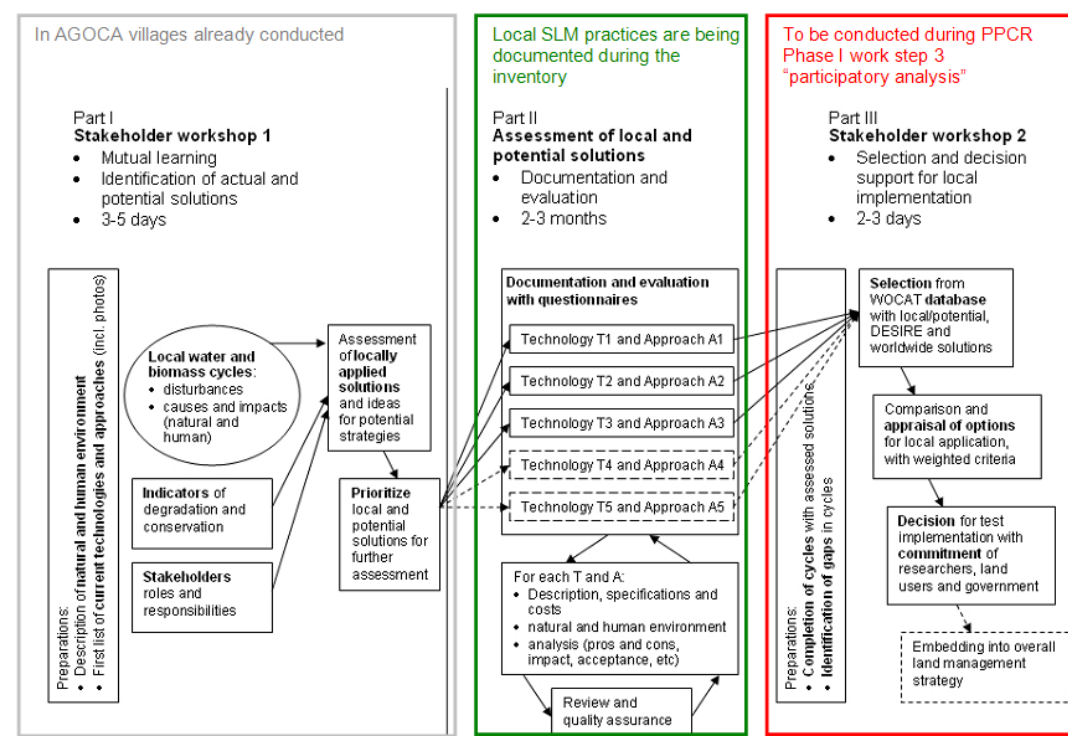
A **National level start-up workshop** will be conducted in the third week of the project. The goals of this workshop will be:

- Presentation of the work plan to all interested stakeholders. This shall include representatives of other PPCR components with overlapping interests, such as those covering the themes “climate science” and “analysis of river basin approach to climate resiliency”.
- Identifying relevant projects, literature or other sources of information on SLM practices and policies in Tajikistan, so far not published / not known
- Defining the major *land use systems* (land use systems according to the LADA approach being land use types in specific environmental conditions) relevant with regard to climate resilient adaptation based on a baseline map, and selecting relevant SLM experiences to be documented with WOCAT representing these major land use systems
- Presentation and discussion of the preliminary list of criteria for assessment of climate change resilient adaptation to be included in the WOCAT questionnaires

Workshops at the local level: SLM opportunities well adapted to climate change for the different land use types are to be discussed in workshops at the village level. This will include the discussion of best practices identified in Tajikistan, as well as practices from other countries with similar environmental and socio-economic conditions, and already documented in the WOCAT database (DESIRE-WOCAT decision support process). In the workshops also the legal and policy framework and proposed changes will be addressed. For efficient management of this series of workshop, they will be conducted in the villages of the Alliance of Central Asian Mountain Communities (AGOCA) and in few additional villages to cover all relevant environmental and socio-economic conditions. Each workshop will take 2 days and will be conducted by two experienced moderators from the CAMP Kuhiston team.

The figure below shows the DESIRE-WOCAT framework (Schwilch et al 2008) and its implementation in the PPCR Phase 1.

With the proposed participatory approach it can be hypothesized that selected SLM measures are environmentally effective, socially acceptable and financially viable. Successful prevention and mitigation strategies consist of technical measures combined with the framework of their implementation (the implementation approach). The key to success lies in a concerted effort by all concerned stakeholders, where special attention needs to be paid to the process of selecting potential strategies. Otherwise land users will neither accept nor properly implement the measure, and success of the PPCR Phase 2 is in danger.



4) Collation of findings, analysis, and development of recommendations

The analysis will be based on all materials collected during the literature review, the inventory of SLM best practices, the legal and policy assessment, as well as the results from the local level workshops. The WOCAT database facilitates statistical analysis across the different SLM case studies.

Strategies will be developed for the four major land use systems; irrigated and rainfed cropland, pastures, and forests.

Proper evaluation of the **cost-benefits and effectiveness of SLM practices** is crucial. Low-cost strategies for mitigating negative climate change effects on land use systems in good conditions might play a more important role than costly measures to rehabilitate already degraded lands, and to increase their climate resilience.

GIS modelling will allow testing of various climate change scenarios and the aggregated impact of combinations of SLM interventions on land condition and agricultural productivity. Furthermore, GIS based scenario modelling will greatly support developing investment strategies for SLM interventions. It allows simulations of various combinations of SLM practices, of their aggregated effects on agricultural productivity and other ecosystem services, and expected implementation and maintenance costs per hectare.

For the **development of legal and policy recommendations**, SLM best practices will provide an important entry point. Together with the results from the Helvetas survey and interviews conducted with different stakeholders, they will serve to elaborate a list of (market-oriented) desiderata for land tenure, farm structure, and farming practices that will support up-scaling of SLM technologies. In a second step the legal experts will examine how the current legal and

policy system deviates from these desiderata. Stock will be taken of the existing legislation relating to the identified SLM related issues in Tajikistan and also in other relevant CIS countries and possibly Western countries. In the third step, the holes and weaknesses in existing legislation in Tajikistan with regard to SLM will be identified by comparing the Tajik legal framework and the approaches taken in other countries (result of step two). This comparison will provide the bases for developing recommendations for policy and legal interventions.

5) Presentation, consultation, report writing, dissemination

The first draft of the project report will be prepared in the month 4 of the project. All material will be made available in English and Tajik. Draft reports will be shared among stakeholders active in the field of SLM practices and will be presented as a PowerPoint at the national level interim workshop. Discussions will take place in the plenum and for each land use system separately. Lessons learned in the framework of the Pamir-Alai Land Management (PALM) project will be taken into account and experienced moderators from the PALM project will be involved in the workshop.

Stakeholders will have the opportunity to provide comments in oral form during the interim workshop or later in written form. Furthermore, during months 5 and 6 of the project, bilateral meetings will be held by the Project Leader with important national level stakeholders in Tajikistan, for example representatives of the Ministry of Agriculture and specific donors such as the World Bank or the UK Department for International Development (DFID), to collect their comments.

The final project report and PowerPoint presentation will take into account all feedback obtained. Both outputs will be presented at the end of month 6, during a final national stakeholder meeting.

Additionally to the requested project report and PowerPoint presentation, the results shall be made available in an attractive format to SLM actors in Tajikistan, and in other countries where climate resilient adaptation through SLM practices is of interest. As the experience with publication of the global overview book “where the land is greener” showed, presenting state of the art knowledge in reader-friendly and colourful publication contributes in a major way to creating (renewed) interests in SLM practices. Thus, the results of the project shall be made available in a suitable / tailor made format to planners WOCAT provides an attractive and reader-friendly format for publishing SLM case studies as 4-page summaries like in the overview book “where the land is greener”, or as 2-page summaries like in the just now forthcoming TerrAfrica publication. The planned brochure shall include two parts, analysis and SLM best practices, following the example of the two books mentioned above, but much smaller in volume. The thirty page PPCR project report will be making up the first part. The brochure shall include around 100 pages and will be published in Tajik, Russian and English. Layout design and printing can take place in Tajikistan, where costs are low.

Furthermore, the results of the project will be shared with the global SLM network during the WOCAT International Symposium and Workshop in Kyrgyzstan planned to take place in June 2011.

List of deliveries:

As requested in the Terms of References for this project available from the World Bank:

- Final report for the World Bank (30 pages)
 - SLM practice inventory,
 - SLM practice analysis and recommendations for investment in technologies
 - SLM legal and policy analysis and identification of needs and options for policy reform (including strategies, channels, main stakeholders and potential partners)
 - Recommendations on the balance of activities
- Power point presentations presenting the main sections and results of the final report

Additionally:

- Additional 20-30 case studies included in the WOCAT on-line database accessible to the public
- All documented WOCAT technologies and approaches available on Google Earth
- Publication consisting of a first part providing the results of the analysis and policy implications and a second part with 4-page summaries of all the WOCAT documentations available for Tajikistan.
- Evaluation of a pilot network of comparative case studies for monitoring resilience to climate change and extremes of SLM practices
- Baseline maps showing the major land use systems and their general state of land degradation.

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- 1 Indicate all main activities of the assignment, including delivery of reports (e.g.: inception, interim, and final reports), and other benchmarks such as Client approvals. For phased assignments indicate activities, delivery of reports, and benchmarks separately for each phase.
- 2 Duration of activities shall be indicated in the form of a bar chart.

c) Organization and Staffing

The proposed project team includes Dr. Bettina Wolfgramm, as the project leader and international land management expert; Prof. Zvi Lerman, as the international legal expert; and Gulniso Nekushoeva as the local land management expert. Additionally, the three experts will each be supported by assistants; Julie Zähringer, Faridun Goibov (Helvetas), and Sady Odinashoev.

Since, the proposed work plan includes a number of participatory elements (elaboration of the inventory of SLM practices, and local and national level work shops) project implementation within the short time of 4 months is only possible when working with an experienced local project management team. Shane Stevenson will be the project manager responsible for coordinating all workshops, field trips, meetings and interviews. In this function, he will be mainly leading the team from CAMP Kuhiston, a Tajik NGO. CAMP Kuhiston will be responsible for arranging all services including facilitating workshops, moderation of local workshops, organizing transport, and translation.

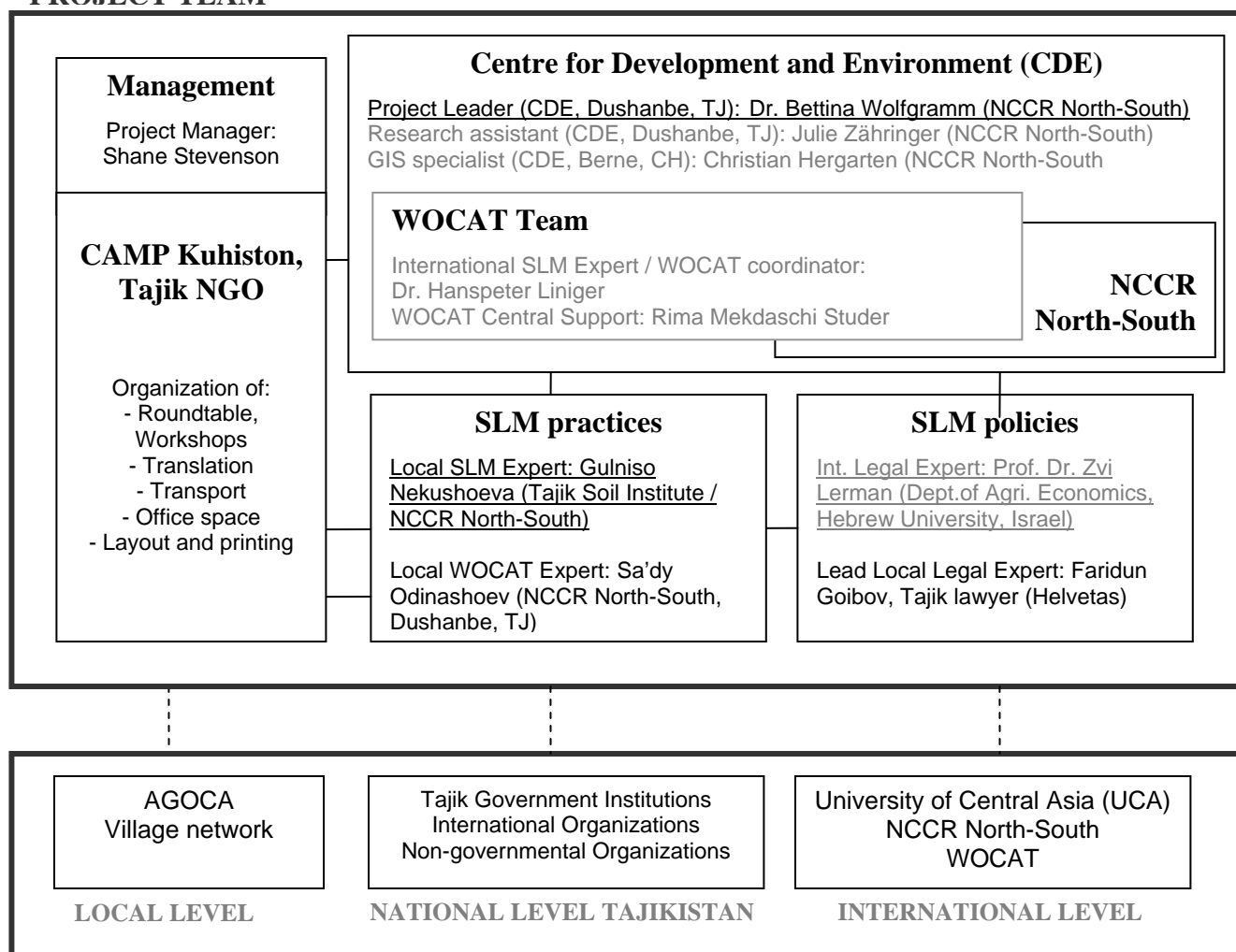
Additionally, project team will get crucial methodological and analytical backstopping from the coordination office of the WOCAT global network located at CDE in Berne, Switzerland. As a GIS specialist, Christian Hergarten, will be responsible for all GIS specific components of the project.

All project tasks have been clearly assigned: The Project Leader will be responsible for the overall project coordination and will be the contact person for the client. CDE will be responsible for thematic, methodological and analytical coordination, project integration, and responsible for the international network. CAMP Kuhiston will be responsible for all organisational and logistical aspects within Tajikistan, including the local network. This project team is well established and fully operational; CDE and CAMP Kuhiston have collaborated on numerous projects since, 2001. The NCCR North-South, CDE's research programme, has its Dushanbe offices within the CAMP Kuhiston premise. In the frame of a NCCR North-South "Partnership Action for Mitigating Syndromes (PAMS)", CAMP Kuhiston, CDE and researchers from the Tajik Soil Institute (including Gulniso Nekushoeva) worked as a team to build on their experience to effectively disseminate research findings to farmers, and review methodologies to improve the take-up and implementation rates.

CDE and Helvetas, both originated in Switzerland, have jointly worked on development projects before and will sign a memorandum of understanding for the purposes of this project.

The organigram below shows structure and composition of the proposed team. All collaborators highlighted in black are currently working in Tajikistan.

PROJECT TEAM



NETWORK

The proposed team for this project comprises of:

Bettina Wolfgramm, (Project Leader) has worked in Tajikistan since 2003 and completed her PhD Thesis on Land Use, Soil Degradation and Soil Conservation in Tajikistan. Bettina is responsible for the NCCR North-South research project in Tajikistan. Additionally, she has several years of project coordination and management experience in Tajikistan in the field of sustainable land management and land degradation assessments. This high level of experience combined with invaluable local knowledge and established network in the practices of sustainable land management will be of great benefit to the assessment.

Hanspeter Liniger (International Sustainable Land Management Consultant) is working for CDE and is responsible for World Overview of Conservation Approaches and Technologies (WOCAT). He has provide expert consultation in fifty countries and has provided invaluable support in decision making related to sustainable land management worldwide, development of tools methods, databases and outputs (books, brochures, training materials). He will provide a high degree of expertise and knowledge in the methodology, assessment, and ultimately the recommendation for future actions.

Julie Zähringer (Research Assistant) is currently working as a Consultant for “World Overview of Conservation Approaches and Technologies (WOCAT)” in Switzerland. This assignment fits in with her area of research and she will provide full time field support to the project in Tajikistan and build on her experiences working as a Consultant to the FAO project on Land Degradation Assessment in Drylands (LADA).

Rima Mekdaschi Studer (WOCAT Central Support) will act as the key contact within the WOCAT team. She will be responsible for input into the assessment and recommendations for sustainable land management practices. There will be a review on how similar schemes were implemented in other CIS countries, and how the legal and policy frameworks for sustainable land management practices impacted on the effectiveness of building climate resilience.

Chris Hergarten (GIS Specialist) has extensive experiences in land use classification and land degradation mapping using combinations of satellite imagery. He has worked in Tajikistan for his MSc thesis on land cover mapping for Gorno Badakhshan Autonomous Oblast, and is currently conducting PhD research in Central Tajikistan, aiming at developing a GIS based model for assessing the effects of SLM practices on soil condition. He will be responsible for all GIS related tasks.

Gulniso Nekushoeva, (Local SLM Expert) will provide expertise in the field of SLM practices. She is a senior researcher at the Tajik Soil Institute, and PhD researcher and collaborator of the NCCR North-South since 2003. She has documented land use systems in Faizabad, Varzob, Rasht, Vanj, Shugnan, and Ishkashim using the WOCAT questionnaires. She will provide input into the completion of new WOCAT documents, and will provide local knowledge on effective implementation and replication.

Sa’dy Odinashoev (Local WOCAT Expert) has implemented several soil and water conservation project in Tajikistan and is one of the few Tajik National familiar with the WOCAT process. He will responsible for collating data for analysis.

Zvi Lerman (International Legal Expert) will provide his international expertise and support on the SLM related policies and legal land framework in Tajikistan. He has worked extensively on the land code and land reform policies in Tajikistan for FAO and will build on this experience to develop further recommendations for reform and improvement.

Helvetas (Local Legal Experts), a Swiss NGO is establishing legal clinics and support services to deal with land issues in Tajikistan. Helvetas will provide support through its network and provide technical assistance with the provision of their team of Tajik Legal Land specialist, headed by Mr. **Faridun Goibov**, previously a lawyer at the Land Committee who was on the Project Management Unit (PMU) for the World Bank’s Project on Land Registration and Cadastre System for Sustainable Agriculture Project.

Shane Stevenson (Project Manager) will act as the project manager with in Tajikistan. He is an environmental expert who has collaborated with CAMP Kuhiston since June 2009. He provides invaluable project management experience in Tajikistan and in this time has a developed a network of many of the main actors in the country with regards to SLM projects. He also has implemented and provided monitoring on Sustainable Land Use Management projects within the country.

CAMP Kuhiston’s (Local NGO Support) core of competence is moderation of village community workshops in the field of natural resource management for an extensive range of client’s e.g. SDC, Caritas, Welthungerhilfe, MSDSP, UNDP, etc. Camp Kuhiston will be responsible on the ground logistics and for the community based AGOCA Alliance (a group of 14 villages located throughout Tajikistan) that will be used for the collation of community level information through participatory workshops.

TEAM COMPOSITION AND TASK ASSIGNMENTS

Professional Staff				
Name of Staff	Firm	Area of Expertise	Position Assigned	Task Assigned
Bettina Wolfgramm	Centre for Development and Environment	Soil and Water Conservation; Land degradation assessments using GIS and remote sensing approaches; Land Cover and Land Use Change, Project Management	Project Leader	1) Project lead, including coordination among CDE and associated partners, time management, and reporting 2) Responsible for literature review on the current environmental status of land resources and impacts of climate change on land and water resources 3) Responsible for the collation of findings, analysis, and development of recommendations, including the development of a decision support method and tools, setting up comparative case studies for SLM impact assessment and monitoring, analysis across WOCAT case studies, including statistical analysis, GIS based scenario modelling, and the integrative assessments of SLM practices and policy framework. 4) Responsible for presentation, consultation, report writing, and dissemination: including conducting the consultation process among SLM actors in Tajikistan, elaboration of the draft and final versions of the report and PowerPoint presentation. 5) Preparation of a publication on analysis of and examples of SLM practices, and representation of results in the WOCAT International Symposium and Workshop in Kyrgyzstan in June 2011.
Hanspeter Liniger	Centre for Development and Environment	Professional focus on evaluation of natural resource management (soil and water conservation) and its local and regional impacts on water and soil productivity;	International SLM Expert / WOCAT Coordinator	1) Support in the development of a decision support method and tools for identifying resilient adaptation of land management to climate change and extremes 2) Support in conducting the national level start-up workshop and contributing the WOCAT introductory and practical workshop 3) Participate in the integrative assessments of SLM practices and policy framework 4) Contributor to the intermediate and final reports and presentations 5) Lead in the evaluation of experiences, development of

		dryland management; training of professionals and supervision of students.		recommendations and knowledge sharing of the first phase of PPCR component on SLM in Tajikistan with international partners of the WOCAT global network during the WOCAT International Symposium and Workshop in Kyrgyzstan, June 2011 (WOCAT funded) 6) Using the experience gained as coordinator of WOCAT and principle investigator within the EU-DESIRE project to assure proper training and use of various methods and tools, as well as facilitating links to partners and collaborators to support this project.
Julie Zähringer	Centre for Development and Environment	SLM documentation with WOCAT, land degradation assessment in drylands	Research Assistant	1) Supporting the inventory of existing experiences, and especially backstopping of local SLM actors when documenting SLM best practices with WOCAT. 2) Reporting on local level workshops 3) Supporting setting up of comparative case studies for impact assessment and monitoring of SLM best practices 4) Supporting the analysis across WOCAT case studies, including statistical analysis 5) Support to the mid-term and final workshop, as well as for presenting the SLM component of the PPCR Tajikistan at the WOCAT International Symposium and Workshop in Kyrgyzstan in June 2011
Rima Mekdaschi Studer	Centre for Development and Environment	WOCAT management team, focus on sustainable land management; adaptation to climate change; knowledge management	WOCAT Central Support	1) Maintenance of global databases (technologies and approaches) 2) Contributing to the development of tools for identifying resilient adaptation of land management to climate change and extremes 3) Support in preparation of local level workshops based on the DESIRE Methodology, 4) Lead of the review committee of WOCAT documentations of SLM best practices 5) Support and backstopping in producing outputs such as an overview book on technologies and approaches 6) Support in the evaluation of experiences, discussions of recommendations and knowledge sharing of the first phase of PPCR component on SLM in Tajikistan with international partners of the WOCAT global network during the WOCAT International Symposium and Workshop in Kyrgyzstan, June 2011

Chris Hergarten	Centre for Development and Environment	Remote sensing and GIS for land use change and land degradation assessments	GIS Specialist	<ol style="list-style-type: none"> 1) Compiling spatial database for major LU and CC variables 2) Contributing to the development of a decision support method and tools (GIS based scenario modelling for estimating cost effectiveness of resilient adaptation strategies)
Zvi Lerman	The Hebrew University of Jerusalem	Extensive knowledge on land code and land reform policies in Tajikistan, land reform and farm restructuring in transition economies, farm-level surveys in various countries of the former Soviet Union and Central Eastern Europe	International Legal Expert	<ol style="list-style-type: none"> 1) Lead in conducting the literature review on the current status of legal and policy frameworks. 2) Lead in developing of legal and policy scenarios for improved conditions for testing at national and local level. 3) Contributing to integrative assessments of SLM practices and policy framework. 4) Lead in the legal and policy inputs into the first draft of report. 5) Inputs to the national level interim workshop. 6) Inputs to the final report preparation and presentation. 7) Inputs to the final PowerPoint preparation and presentation.
Faridun Goibov	Helvetas Tajikistan	Tajik lawyer specialised in land law issues.	Lead Local Legal Expert	<ol style="list-style-type: none"> 1) Contribute to the literature review on the current status of legal and policy frameworks. 2) Contribute to the development of legal and policy scenarios for improved conditions for testing at national and local level. 3) Contribute to the integrative assessments of SLM practices and policy framework
Gulniso Nekushoeva	Tajik Soil Institute	Tajik Soil Scientist, extensive experience in soil degradation and conservation assessments, SLM impact assessments using comparative case studies, documentation of SLM with WOCAT in Tajikistan	Local SLM Expert	<ol style="list-style-type: none"> 1) Contribute to the literature review on the current environmental status of land resources and on impacts of climate change on land and water resources. 2) Updating of selected existing WOCAT documentations. 3) Supporting the WOCAT introductory and practical workshop. 4) Supporting the writing workshop 5) Contributing to the analysis across WOCAT case studies, including statistical analysis. 6) Contributing to the integrative assessments of SLM practices and policy framework. 7) Contributing to the first draft of report. 8) Contributing to the final report preparation and presentation

Sa'dy Odinashoev	Centre for Development and Environment	Soil and water conservation in Tajikistan, documenting of SLM practices using WOCAT questionnaires	Local WOCAT Expert	<ol style="list-style-type: none"> 1) Updating of selected existing WOCAT documentations. 2) Backstopping other SLM actors when documenting their SLM practices using WOCAT 3) Supporting the writing workshop for finalizing documentations. 4) Supporting the conduct of local level workshops for testing criteria, scenario, and recommendations. 5) Providing support to setting up comparative case studies for SLM impact assessment and monitoring
Shane Stevenson	Independent	Extensive knowledge of the significant environmental issues in Tajikistan, liaising with all the significant actors with regards this issue, and developing and implementing projects that are specific to the context of Tajikistan	Project Manager	<ol style="list-style-type: none"> 1) Management of Local Tajik staff. 2) Internal and external coordination. 3) Client liaison. 4) Budget and Contracts 5) Work plan and Implementation 6) Literature review on impacts of CC on land and water resources. 7) Writing workshop for finalizing documentations. 8) Local level workshops for testing criteria, scenario, recommendations 9) Analysis across WOCAT case studies, including statistical analysis. 10) Integrative assessments of SLM practices and policy framework

Reference list

- Bühlmann E, Wolfgramm B, Maselli D, Hurni H, Sanginov SR, Liniger HP. (2010). *Geographic information system-based decision support for soil conservation planning in Tajikistan*. Journal of Soil and Water Conservation 65 (3): 151-159. doi:10.2489/jswc.65.3.151.
- Ifejika Speranza, C. (2010). *Resilient Adaptation to Climate Change in African Agriculture*. Bonn: German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE).
- Lerman, Z. and D. Sedik (2008). *The Economic Effects of Land Reform in Tajikistan. Report prepared for the European Commission under the EC/FAO Food Security Programme—Phase II Food Security Information for Action*. Rome: FAO.
- Liniger, H. and W. Critchley (Eds.). (2007). *Where the land is greener - case studies and analysis of soil and water conservation initiatives worldwide*. Bern: Stämpfli.
- Liniger, H.P., R. Mekdaschi Studer, C. Hauert and M. Gurtner (Eds.). (2010). *Sustainable Land Management in Practice. Guidelines and Best Practices for Sub-Saharan Africa: TerrAfrica, WOCAT and FAO*.
- Schwilch, G., Bachmann, F., Gabathuler, E., and Liniger, HP. (2008). *A methodology for appraising and selecting strategies to mitigate desertification based on stakeholder participation and global best practices*. Paper presented at ISCO conference 2008.
- Wirz, C. (2009). *Assessing impacts of different grassland systems on land degradation and conservation in Faizabad (Tajikistan)*. University of Bern, Bern.
- Wolfgramm, B. (2007). *Land Use, Land Degradation and Soil Conservation in the Loess Hills of Central Tajikistan*. Universität Bern, Bern.