

**Central Asia**

**Climate Adaptation and Mitigation Program for the Aral Sea Basin**

**Environmental Management Framework: Volume IV**

**Republic of Uzbekistan**

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## **ABBREVIATIONS**

CAMP4CA	Climate Adaptation and Mitigation Program in Central Asia
CCSCA	Climate Change Secretariat for Central Asia
CIGP	Climate Investment Grant Program
CEP	Committee for Environment Protection
DEP	Department of Environmental Protection
EE	Ecological Expertise
EA	Environmental Assessment
EIA	Environmental Impact Assessment
ECA	Europe and Central Asia
EMF	Environmental Management Framework
EMP	Environmental Management Plan
FAO	Food and Agricultural Organization
GIS	Geographic Information Systems
GAP	Good Agricultural Practices
GOK	Government of Kyrgyzstan
LEE	Law on Ecological Expertise
LEP	Law on Environmental Protection
ICSD	Interstate Commission on Sustainable Development
ICT	Information and Communication Technology
IPM	Integrated Pest Management
NCU	National Coordinating Unit
OP/BP	Operational Policy/Best Practice
NGO	Non-Governmental Organization
RSC	Regional Steering Committee
PEE	Personal Protection Equipment
SCE	State Committee for Environment
SCEPF	State Committee for Environment Protection and Forestry (Tajikistan)
SEE	State Ecological Expertise
TOT	Training of Trainers
TWG	Technical Working Group

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## EXECUTIVE SUMMARY

*Project objective.* The Climate Adaptation and Mitigation Program for Central Asia (CAMP4CA) is aimed at supporting the integrated development of climate-smart information, institutions, and investment capacities throughout the countries of Central Asia. This is expected to be achieved through strengthened coordination mechanisms; improved information gathering, sharing, and analysis for decision support; and demonstration of innovative, climate-smart action for potential scale up. In particular, the project will support two main components, the first that is aimed at supporting the establishment and operation of a new institutional platform for regional dialogue and collaboration on climate-change related issues, namely a Climate Change Secretariat for Central Asia (CCSCA). The second is aimed at supporting climate investments for national rural production, land resource management, and other resilience and mitigation investments in Kyrgyz Republic, Tajikistan, and Uzbekistan, for testing and scaling-up climate-smart approaches and technologies.

*Project Location.* The Climate Investment Subproject Program (CIGP) would be conducted in selected areas of participating countries that are vulnerable to climate change. These areas are expected to include each of the major agro-ecological systems (rangelands, mountains, irrigated and arid) of the participating countries, which will be further narrowed based on the criteria below. The final selection of project areas will be made at the project outset based on climate vulnerability such as extent of land and vegetation degradation, expected water shortages, and predicted increase in temperature; located in the parts of the country with the highest share of bottom 40% population; and areas having the largest concentration of population outside municipal centers.

*Project category.* In accordance with the Bank's safeguard policies and procedures, including OP/BP/GP 4.01 *Environmental Assessment*, the project is classified as Category B for which an Environmental Assessment (EIA) with Environmental Management Plan (EMP) is required. As before Appraisal it is not possible to identify which CIGPs will be financed, the appropriate EA instrument is the Environmental Management Framework (EMF) which would specify all rules and procedures for the CIGP sub-projects Environmental Assessment (EIA).

*Purpose of Environmental Management Framework.* The purpose of the EMF is to provide the World Bank's and the participating governments rules and procedures for project Environmental Impacts Assessment (EIA), identify the significant environmental impacts of the project (both positive and negative), to outline rules and procedure for the CIGP sub-projects environmental screening and to specify appropriate preventive actions and mitigation measures (including appropriate monitoring plan) to prevent, eliminate or minimize any anticipated adverse impacts on environment. The EMF report was prepared based on the following: (i) analysis of the existing national legal documents, regulations and guidelines; (ii) World Bank safeguard policies, as well as other guiding materials; (iii) existing EMFs for similar World Bank projects, and (iv) experience of EMF implementation of ongoing World Bank funded projects in the CAMP4CA countries. Based on the EMF, each participating country will revise and adjust the document to suit their specific needs and conditions.

*EA Institutional capacities to perform environmental safeguards.* The evaluation of the EA institutional capacity has shown that most national institutions and implementing entities although having basic capacities to perform their duties concerning EA and enforcing the EMF provisions, there is need for additional capacity building activities. In this regard the Project will support additional staffing, capacity building and training activities to ensure the environmental requirements and the EMF provisions would be fully implemented. A special attention will be paid to training of Environmental Safeguard Specialists in the National Coordinating Units (NCUs) of each participating country so as manage the CIGP environment assessment review, approval, oversight and monitoring process in subprojects. Special capacity building activities will be conducted for potential subproject recipients and the participating banks, which will arrange investment financing.

*Potential environmental impacts.* The project will support mostly small-scale types of agricultural and horticultural activities, agro-forestry and rangeland management and alternative energy production systems. None of these activities are expected to cause significant environmental impacts which may fall under the Category A projects and for which a full EIA would be required (it was decided none of category A subprojects will be supported under the proposed CIGP grant investment line). However, the majority of sub-projects might cause some level of environmental impacts that would fall under the Category B projects in accordance with the Bank OP/BP 4.01 (small scale agriculture and horticulture improvements; small scale rehabilitation and maintenance of rangelands and off-grid renewable energy activities, plantation of new agro-forestry and orchards etc.), for which the Bank requires a simple and/or a partial Environmental Assessment and/or preparing an Environmental Management Plan. It is also expected that many of the subprojects supported by CIGP grants will not have environmental impacts and will fall under the Category C in accordance with OP/BP 4.01 (especially those related to purchasing of new agricultural machinery, small farm infrastructure, water management, rehabilitation of agricultural lands, etc.). Furthermore, it is expected the selected CIGP subprojects will not be located in protected areas, critical habitats or culturally or socially sensitive areas, which will be ensured during the CIGP subprojects screening and EIA.

The potential adverse environmental impacts of proposed types of CIGP subprojects might be summarized as follows: (a) *agricultural production*: soil erosion, loss of soil productive capacity, soil compaction, soil pollution, surface and underground water pollution, loss of biodiversity; (b) *small scale construction and/or rehabilitation of the existing premises*: soil and air pollution; acoustic, construction wastes; (iii) *on-farm irrigation and water management*: increased soil erosion and water table rise, construction-related impacts; (iv) *pasture and rangeland management*: soil erosion and soil compacting through extensive use, loss of native fodder species; (v) *sloping land horticulture*: soil erosion and soil movement; (vi) *participatory forestry and agro-forestry*: soil erosion, loss of biodiversity; and (vii) *off-grid renewable energy production*: reduction of downstream flows, water table fluctuations, land erosion, etc. All these impacts are expected to be easily mitigated through good project design and implementation practices.

*Potential social impacts.* The CIGP sub-projects will generate a great number of both direct and indirect positive impacts. Direct positive impacts will be generated by increased production, products and goods which would result in creation of new jobs and respectively, more

employment and increased income. Indirect positive impacts will relate to overall improving of business environment, introduction of advanced agricultural technologies and techniques, 6 contribution to poverty reduction and food safety. Potential indirect adverse social impacts can be related to increase water pollution due to more usage of chemicals in agriculture.

*Environment Management Framework (EMF).* The document outlines EA procedures and mitigation requirements in line with both national and World Bank policies for the CIGP subprojects which will be supported by the project. It provides details on procedures, criteria and responsibilities for CIGP subprojects EA, including, screening, review and approval, implementing, monitoring, supervision and reporting. The document also includes environmental guidelines for different types of proposed CIGP subprojects providing analysis of potential impacts and generic mitigation measures to be undertaken for subprojects in key support sectors at all stages - from identification and selection, through the design and implementation phase, to the monitoring and evaluation of results. Lastly, the EMF includes a section on pest management that outlines the procedures for ensuring the safe handling, storage and use of pesticides and promotion of integrated pest management as an alternative option for the use of pesticides.

## 1. Background

### 1.1 Country Context

The five Central Asian countries<sup>1</sup>, which are among the Europe and Central Asia (ECA) region's most vulnerable to climate change, face common climate challenges, affecting key resources and sectors such as water, land, biodiversity and ecosystems, agriculture, energy, and human health. Average annual temperatures across the region have increased since the mid-20th century by 0.5°C in the south to 1.6°C in the north and impacts are already being observed, from melting glaciers in upland areas to droughts and floods in the lowlands. Under current greenhouse gas trajectories, climate change is expected to intensify over the coming decades, leading to more variability and instability in the region's water resources and rising costs for development sectors. Building resilience to climate change is a priority in Central Asia, including by tackling the non-climatic drivers of vulnerability in the region, such as inefficient infrastructure, unsustainable land and water management, rural poverty, and low adaptive capacity to ongoing and future changes.

The greatest risks from climate change in Central Asia are focused on the agriculture, energy, and water resources sectors (see Box 1), and extend across national borders, through connectivity in land and water systems as well as social and economic interactions (e.g., migratory flows, food and energy markets). For example, the Syr Darya River, one of the two largest rivers in Central Asia, originates in the mountains of Kyrgyz Republic and is mainly fed by glacier and snow melt. The river then flows through Uzbekistan, Tajikistan, and Kazakhstan, where it is utilized for large-scale irrigated agriculture, particularly cotton and wheat production, and ends in the Aral Sea. While the water flow could increase in the short term (as a consequence of glacier melt), the hydrologic changes in the long run (from changes in snow/ice accumulation and melt, enhanced evaporation and crop water requirements, and uncertain precipitation changes) could have dramatically adverse social, economic, and environmental consequences on irrigation-dependent agriculture across Central Asia. The story is similar for the other major Central Asian river, the Amu Darya River, that originates in the mountains of Tajikistan and Afghanistan. The region's vulnerability will be further exacerbated by inefficient water use, lack of infrastructure, limited enforcement of regulations, as well as environmental degradation.

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<sup>1</sup> Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan.

### **Box 1: Climate Change Impacts in Central Asia: Water Scarcity Challenges for Agricultural Production**

While rising temperatures are expected throughout Central Asia, reaching an increase of 7°C relative to 1951-1980 by the end of the 21st century in a 4°C warmer world, precipitation projections for the region are highly uncertain, with models often not agreeing on the direction of change. The main impacts on water resources are therefore expected through changes in the cryosphere and its water storage potential.

In Central Asia, glaciers are projected to lose up to 50% in volume in a 2°C warmer world, and potentially up to 75% in a 4°C warmer world. Concurrently, a 25% decrease in snow cover is expected in the Northern hemisphere with 4°C warming. Glaciers in the region have already shrunk by one-third in volume since the beginning of the 20th century.

For the Amu and Syr Darya river basins, glacier area retreat in glacial extent for the period 2007-2050 (in a 2°C warmer world) is projected to decline by 54 to 65% over the period 2007-2050 in a 2°C warmer world (Lutz, A. F. et al. 2013). Projections of volume loss for the end of the century are in the range of 50 to 78% in a 4°C warmer world (Marzeion et al. 2012). While glaciers store water over decades to centuries, the seasonal snow pack stores water mainly at a shorter intra-annual time scale. With a projected smaller fraction of precipitation falling as snow, expected snowpack changes pose another threat to freshwater availability. Snowmelt contributes more than glaciers currently to Syr Darya (70 percent from snowmelt and 9 percent from glacier melt) and Amu Darya (45 percent of mean annual flows from snowmelt and 25 percent from glacier melt) basins (Savoskul and Smakhtin, 2013).

In the coming decades, river runoff is projected to increase due to enhanced glacial melt rates, and to then decrease through the second half of the century. By around 2030, this increase is expected to level off, as rising land surface temperatures lead to higher evaporation. By the end of the 21st century a noticeable decrease in the runoff of the Syr Darya is expected, and even more so for the Amu Darya given its higher share of glacier melt water. Critical for water resource availability, the timing of peak flows is projected to shift towards spring, resulting in a 25% reduction in discharge during the mid-summer period (July and August) in a 2°C warmer world. As a result, less water will be available during the crop-growing season.

Reductions in water availability are predicted to occur along with an increasing demand for irrigation water of about 30% in 4°C warmer world. Combined with increased heat extremes that negatively affect crop productivity, substantial risks for irrigated and rainfed agricultural systems can also be expected.

## **1.2 Sectoral and Institutional Context**

Many of the key development sectors in Central Asia are vulnerable to climate change. For example, in agriculture, which is critical for the largely rural livelihoods in the region, cropping system productivity (including in both rainfed and irrigated systems) is sensitive to variations in rainfall, hydrologic flows modulated by snow accumulation and melt, system storage, as well as evapotranspiration. Energy systems are sensitive to hydrologic changes (e.g., in the case of hydropower), demand changes (e.g., in warmer areas in summer), the impact of extreme events on transmission systems, as well as sensitive to mitigation actions (e.g., in the case of fossil fuels). Across sectors (e.g., food/nutrition, energy, water, health), women tend to be more



affected by climate change, owing in particular to their unequal access to, and control over, resources, particularly in rural areas, making them more vulnerable to poverty and climate change. Climate change will exacerbate such problems, calling for responses that consider a gender perspective in achieving sustainable, climate-resilient development.

However, the fundamental information, institutional, and investment infrastructure required to manage these existing and evolving climate risks effectively are inadequate from a regional perspective, especially in the post-soviet era. Information needs include: improved climate and water resource monitoring systems (that are often dilapidated and outdated) and public domain access to such information (which is currently extremely poor), improved integration of a rich variety of earth observation data, improved analytical tools, and improved generation of public-domain knowledge products and services. On Institutions, this includes a need to modernize the capacity of critical institutions managing climate and water monitoring and analysis and sectoral planning and operations, improved regional networking and awareness-building, improved research on targeted knowledge gaps, and improved consideration of climate issues in sectoral and regional planning. Investments are urgently needed to identify and implement “climate-smart” actions in key sectors, and to pilot integrated and innovative resource management approaches for climate resilience.

The emerging climate change impacts in Central Asia are becoming well-recognized and the countries are focusing on reducing vulnerability and moving towards climate-smart development. For example, there is a Bank-financed activity underway to initiate modernization of the region’s hydro-meteorological services that are critical for early warning. Kazakhstan has initiated work on the Clean Technology Fund, including an innovative Carbon trading program, and Tajikistan has developed a Strategic Program for Climate Resilience, with five investment and capacity-building activities. However, climate change does not yet receive high priority in terms of designing critical measures - both at the national and regional levels. Hence, a coordinated and integrated approach toward climate resilience and poverty reduction is needed. This will help improve the effectiveness of national climate actions, as well as maximize synergies across the sectors and countries. In particular, a coordinated approach will enhance (i) complementarities (e.g., agricultural trade, regional power markets, insurance mechanisms, etc.); (ii) economies of scale (e.g., shared research and knowledge efforts); (iii) strategic planning and financing (e.g., access to climate finance, collaboration with development partners); and (iv) innovation and experience-sharing (e.g., replication and scaling-up across countries of successful pilots).

Acknowledging that climate risks transcend borders between Central Asian countries, the inaugural Central Asia Climate Knowledge Forum, held in June 2013 in Almaty, Kazakhstan, emphasized the need for countries to collaborate in effective and scaled-up resilience. Since then, the Forum has emerged as a platform to encourage learning, dialogue, and collaboration among Central Asian countries on climate-resilient development, including establishing the building blocks of a regional program for climate resilience. The 2nd Central Asia Climate Knowledge Forum, held in May 2014 in Almaty, Kazakhstan, concluded with a call from all five Central Asian countries for a regional program on climate resilience to strengthen climate-smart information, institutions and capacity for cross-sectoral and cross-country planning, and investment preparation and implementation, in order to increase regional collaboration in the

long-term. All five countries agreed that a regional program for climate adaptation and mitigation is extremely timely and can build on, and strengthen, existing experience and initiatives in the region. Work by the Central Asia Technical Working Group on Climate Change<sup>2</sup> also indicated that the countries are facing similar sectoral challenges where resilience must be strengthened (e.g., agriculture, water, energy, health, forestry, and biodiversity) as well as gaps for addressing these challenges (e.g., knowledge and capacity, lack of an enabling regulatory framework, and access to finance and technology). These commonalities lend themselves well to a systematic and integrated approach at the regional scale that can improve the effectiveness of the response in each country, by maximizing synergies across sectors.

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<sup>2</sup> A group of technical experts nominated by the Governments of the five Central Asian countries to work across borders and sectors on climate-smart solutions

## 2. Program Description

In Central Asia, climate change risks transcend national boundaries, through inter-connections of land and water systems as well as social and economic interactions, and regional-scale solutions are needed for effective and scaled-up resilience. At the Second Central Asia Climate Knowledge Forum in May 2014, all five Central Asia countries called for a regional program on climate action, to be prepared by the World Bank in partnership with Central Asia countries and development partners. The Climate Adaptation and Mitigation Program for Central Asia (CAMP4CA) meets this call and aims to establish a platform for greater collaboration on climate-related issues, which will support the integrated development of climate-smart information, institutions, and investment capacities in Central Asia.

### 2.1 Program Objectives

The **objective** of the Climate Adaptation and Mitigation Program for Central Asia (CAMP4CA) program is to support the integrated development of climate-smart information, institutions, and investment capacities throughout the countries of Central Asia. This is expected to be achieved through strengthened coordination mechanisms; improved information gathering, sharing, and analysis for decision support; and demonstration of innovative, climate-smart action for potential scale up.

### 2.2 Key Results

Progress towards achieving the PDO will be measured using the following indicators and end of project targets:

- Climate Change Secretariat for Central Asia established and functioning to provide overall program coordination and ensure collaboration among national counterparts
- Number of participating countries that upscale climate investment programs, based on improved knowledge of technologies, costs, and impacts
- Number of regional climate coordination networks supported under program, enabling intra-government, sectoral, NGO, etc. cooperation
- Percentage of users satisfied with climate assessment IT platform
- Government sectoral specialists and broad set of NGO stakeholders participate in regional climate coordination mechanisms
- Number of villages supported in introducing climate resilience measures
- Percentage of female beneficiaries will be at least 30%

### 2.3 Scope of the Program

CAMP4CA will consist of two interrelated components:

- **Component 1 – Climate Knowledge Services and Implementation Facilitation** will support the establishment and operation of a new institutional platform for regional

dialogue and collaboration on climate-change related issues, namely a Climate Change Secretariat for Central Asia (CCSCA). It is expected that this Climate Secretariat will be established under the Interstate Commission on Sustainable Development (ICSD), a formal regional institution, comprising all five countries and established under charter in 1993 through Presidential signature. The Secretariat will facilitate regional knowledge sharing and provide overall implementation under the program.

- **Component 2 – Climate Investments** will provide support for national rural production, land resource management, and other resilience and mitigation investments in Kazakhstan, Kyrgyz Republic, Tajikistan, and Uzbekistan, for testing and scaling-up climate-smart approaches and technologies. Investments may also be financed in Turkmenistan at a later stage during program implementation, subject to country financing for the program. Results of the national pilots will be shared through activities supported by the Secretariat to ensure that lessons learned benefit all countries in the region. These investments would be financed through a Climate Investment Grant Program (CIGP), or loans as may be preferred by the participating countries, in selected climate vulnerable sites, with the aim of increasing climate resiliency as well as improving rural livelihoods.

## **Component 1: Climate Knowledge Services and Implementation Facilitation**

### **Sub-Component 1.1: Climate Knowledge Services**

This sub-component will contribute to the development of a unified, regional analytical platform for climate-smart development in Central Asia, with improved data, information, knowledge, and decision-support tools. Under the oversight of the Regional Steering Committee (RSC) and in close collaboration with national entities, the Climate Secretariat will develop activity programs to enhance regional climate knowledge services. The Secretariat will also oversee the delivery of such activity programs. These programs could include the following types of climate knowledge services:

- ***Strengthening the IT platform*** for Central Asia climate data and information to facilitate public-domain collection, sharing, and maintenance of datasets relevant for climate-smart assessment. This platform will build on existing systems to collate, analyze, disseminate, and use climate-change relevant data. The platform (including supporting ICT hardware, software, connectivity, datasets, access to expertise, and training) would facilitate data computerization, collation of comprehensive spatial (GIS, remote sensing) and temporal datasets from global, regional, and local sources, and real-time collation (including from earth observation and hydro-meteorological systems, crowd sourcing information, and feedback). The platform would also offer interfaces and tools for data visualization, contextualization, and interpretation, such as GIS to layer data and map risks and hotspots, screening and modelling tools to support analysis for climate adaptation and mitigation. The platform would make available a comprehensive and up-to-date data and information base, which could be shared and leveraged through public-domain access platforms and the creation of a range of knowledge products and services.

- ***Targeted upgrading of climate-related monitoring systems.*** This activity would provide improved monitoring systems and data series to support project activities (e.g., snow, permafrost, and glacier/cryosphere surveys and monitoring, agricultural systems monitoring). In conjunction with other regional and national activities, this monitoring system is expected to facilitate the building of a shared public-domain knowledge base for climate resilience and low-carbon growth.
- ***Developing methodologies, approaches, and tools to support the use of the knowledge base for decision-support.*** This is expected to include developing/adapting climate screening tools for specific sectors, climate impact assessment and management analytical tools, and support for climate-related decision making. These approaches and tools would be developed in conjunction with other regional and national programs.
- ***Developing knowledge products*** such as web portals (including the CAMP4CA web portal that would be a conduit to access the knowledge base, products, tools, and documentation created with project support), mobile Apps, hardcopy and interactive Atlases, interactive toolkits, climate risk and vulnerability analyses (e.g., by sector or countries), and special analytical work (e.g., studies and surveys). This activity would seek to incorporate and build upon current experience in the region (e.g., that of CAEWDP and FLERMONECA), and operate in synergy with other initiatives (e.g., proposed Central Asia Water Resources Project). A special focus would be on knowledge products to improve information and awareness in the public domain: the Secretariat would for instance work with the countries to produce a Climate & Sustainability Report every two years on trends and indicators in the region for climate as well as environmental and socio-economic impacts.
- ***Capacity and coalition building***, which would include activities related to:
  - Modernization of offices: In synergy with other projects (e.g., the proposed Central Asia Water Resources Project) to modernize climate-related offices in terms of limited civil works, equipment, and processes, including for operational control/situation rooms, videoconferencing, computer training rooms, digital libraries, and office IT modernization as required.
  - Improved documentation and training material development: This would include preparing improved documentation about new techniques and technologies for climate-smart development, such as case studies from past and ongoing demonstrations/pilots (including from CAMP4CA investments and global experiences) to extract lessons and good practices in a structured and systematic manner in order to inform adaptive management, design of future investments, and scaling-up of demonstration investments. Dissemination material, targeting different audiences (e.g., decision-makers, entrepreneurs, youth, citizens) would also be prepared and on longer term, this material would constitute a regional repository of climate-smart solutions to inspire, inform, and enable transformation. Documentation and training material would be made available through hardcopy and electronic means (including via CAMP4CA web portal). Communication products would also include CAMP4CA newsletters, videos and other multi-media products, as well as 14

virtual communities of practice to highlight ongoing and proposed national and regional activities, achievements, and lessons.

- Training and knowledge exchange mechanisms:

- *Distance learning* (e.g., using video conference/online systems, webinars, etc.) as well as face-to-face training and discussion sessions and forums. Special hands-on courses (e.g., using GIS, models, online services, Apps) would be designed and delivered on a regular basis using computer training rooms at regional/national level. It is expected that this would help access, and contribute to, global good practice in shared-vision climate-smart development, build professional networks, and improve the capacity to mainstream climate change considerations into policy, investment, and livelihood decisions.
- *Field trips and workshops* to reduce transaction costs for knowledge exchange and cross-learning, with a special focus on cross-sectoral and cross-regional learning (e.g., bringing together technical staff from several countries' agriculture and environment ministries to share lessons from pilots and to discuss common approaches; making available international expertise on a specific topic of interest to a group of countries in the region; working with countries on reviewing development plans to assess climate vulnerabilities and options for resilient development investments).
- *Internship/Visiting Expert Program*: An innovative effort under CAMP4CA would be to develop mechanisms to engage young professionals (e.g., pursuing graduate studies in relevant fields) from Central Asia countries to work together on developing the knowledge base as well as knowledge and communication products on climate action. This is intended not only to in-source valuable cutting-edge skills to help address climate challenges, but also to develop professional networking among the next generation of specialists in the region. Efforts would also be made to facilitate a program of professional exchanges through short-term re-deployment and staff-exchanges in the region. Efforts would also be made to improve professional networking within Central Asia as well as with global expertise through facilitating membership in professional organizations, professional journal subscriptions, and participation in professional meetings.
- *Climate Change Knowledge Forum for Central Asia*, as a continuing annual event for knowledge and experience sharing across a broad cross-section of stakeholders (e.g., representatives from Central Asia governments, regional organizations, civil society organizations, national and regional knowledge and learning institutions, and development partners active in the region). The Forum, where the call for CAMP4CA was launched by the five Central Asia countries in May 2014, is expected to become a major regional platform for regular knowledge exchange and collaboration, including for engagement and consultations around CAMP4CA's results, opportunities for scaling up successful pilot investments with development partners and other interested stakeholders, and future orientations for the Program.
- *Climate Knowledge Collaborative Networks*, to catalyze information and knowledge exchange, collaboration around initiatives, and the emergence of

action-oriented communities and citizen feedback. This could be facilitated by 15 the CAMP4CA web portal, Apps, and other online knowledge networking tools. This will also build on communities of practice such as the Water-Energy-Climate Knowledge Network, initiated under CAEDWP, and the Central Asia Climate Resilience Community, a grouping of Civil Society Organizations set up following the May 2014 Climate Forum. These knowledge networks would be used to help design and implement a massive outreach campaign, for awareness-raising and consensus on climate action. In addition to media channels, this campaign could include: (i) training sessions to journalists; and (ii) “appathons” or other such competitions (e.g., Innovation Marketplace) to effectively engage the next generation in contributing to climate innovations.

- *Technical Helpdesk*: The project would also seek to develop a mechanism to institutionalize regional and national helpdesk functions to facilitate access to climate-related data, maps, tools, knowledge base, presentation and training material, reports and other knowledge products, and expertise.

### **Sub-Component 1.2: Climate Secretariat Services**

This sub-component would support the Climate Change Secretariat for Central Asia (CCSCA) in facilitating CAMP4CA implementation. This would include support for the operating costs of project management functions. Key functions include procurement and financial management (which will possibly be outsourced to a third-party fiduciary agent), as well as coordination, reporting, and monitoring and evaluation, to promote effective implementation and adaptive management of all CAMP4CA activities. The Secretariat would operate under the guidance of the Regional Steering Committee (RSC), and in close collaboration with National Coordination Units (NCUs), to ensure national ownership and effective regional coordination. The Secretariat would carry out the following activities:

- Review investment proposals, proposed by NCUs, for completeness and submit recommendations to RSC;
- Propose an annual workplan for RSC’s consideration and approval, covering in particular climate knowledge service activities as well as climate resilience pilot investments;
- Prepare every two years a *Climate & Sustainability Report for Central Asia*, for RSC consideration;
- Prepare quarterly and annual activity monitoring reports for RSC consideration;
- Send instructions (as per RSC guidance) to third-party fiduciary agent managing CAMP4CA resources, on procurement and disbursements under the program;
- Provide support for RSC meetings (e.g., prepare background documentation, strategy papers,<sup>3</sup> arrange logistics, etc.).

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<sup>3</sup> These papers could take the form of roadmaps, with concrete recommendations on information generation and dissemination, institutional capacity building, policy reform, investment in infrastructure, with an emphasis on areas where a regional coordinated answer would yield additional value. As an example, the papers could address: (i) modernization of systems for the provision of seeds and cultivars (since more diverse and adapted species can enhance resilience); (ii) provision to farmers of agro-meteorological information that matters (looking at needs and options in the chain monitoring systems and weather forecasting, climate change models, knowledge and skills, communication channels with farmers, options available to farmers); and (iii) regional risk-sharing mechanisms for the agricultural sector (including agricultural insurance scheme).

Financing will be provided for fixed and or short-term specialists to staff the Secretariat.<sup>4</sup> It is anticipated that countries later may second staff to support Secretariat functions. The Component would also support equipment and incremental operating expenses (including travel) for the Secretariat. In addition, consultant support and operating costs will be provided to NCUs to support these units in awareness raising and training activities under the program, investment proposal reviews, monitoring, reporting, environmental management, social development, and in other areas as per approved work plans.

## **Component 2: Climate Investment Grant/Loan Program (CIGP)**

**Project Area.** The CIGP would be conducted in selected areas of participating countries that are vulnerable to climate change. These areas are expected to include each of the major agro-ecological systems (rangelands, mountains, irrigated and arid) of the participating countries, which will be further narrowed based on the criteria below. The final selection of project areas will be made at the project outset. The following criteria would be used for selecting priority areas:

- Located in climate-vulnerable areas of Central Asia, based on the extent of land and vegetation degradation, expected water shortages, and predicted increase in temperature (alternative: extreme events, e.g., floods, droughts);
- Located in the parts of the country with the highest share of bottom 40% population (e.g., with the largest share of the bottom two quantiles of the population with the lowest incomes);
- Have the largest concentration of population outside municipal centers (i.e., the proposed activities would benefit a large number of rural population).

### **Sub-Component 2.1: Awareness, Capacity Building and Community Support**

The objective of this sub-component is to build the capacity of local institutions, private sector, NGOs, and other civil society organizations in areas relevant to the project (such as on various technologies for improved climate resilience in water, soil management, agro-forestry, etc.) and community development, to enable them to provide assistance to vulnerable communities in benefiting from project activities. The sub-component will also finance capacity building for communities to understand the importance, availability, and menu of climate resilience measures, and to apply for grants/loans to implement and scale up the relevant climate resilience measures at the community level.

A Technical Advisor<sup>5</sup> to the component will be hired to carry out the Training-of-Trainers (TOT) of service providers (i.e., Trainers-Consultants) – private sector, NGOs and other organizations that will have been hired on a competitive basis to work with the villages and communities. The project approach is participatory, to ensure transparency. The Trainers-Consultants will (i) raise awareness of communities on the importance of climate change effects and adaptation and mitigation measures; (ii) facilitate the community discussions to agree on the set of priority

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<sup>4</sup> Expected to include a Director, three technical specialists covering respectively agriculture, water, and climate change, a liaison/communication officer, an accountant, and two administrative support staff.

<sup>5</sup> Such as, selected centers of the CGIAR system and others.



measures for implementation; (iii) help with preparing a Summary Proposal for grant support, as well as the Full Proposal; (iv) assist the community, together with the Technical Advisor (if needed), in the implementation of the agreed investment measures; as well as (v) prepare a subproject results and lessons report for submission to the NCU for knowledge depositary and sharing. Farmers, farmer groups, private companies, water users associations, pasture management and/or user groups and other private business representatives will also be able to request support from the Trainers-Consultants in preparing applications for grant funding.

**Awareness Raising on Climate Change Issues.** The Trainers-Consultants will carry out a public awareness campaign in the project areas, to sensitize the potential target population of the expected climate change impacts, as well as inform the target population of the menu of available activities to adapt to and mitigate climate change. Among other things, the potential target beneficiaries will be informed of the grant program through this campaign which will include information dissemination on both the training activities and the investments funding. Information will also be disseminated through local authorities, local NGOs. Use of female interlocutors targeting potential female beneficiaries will also be explored.

**Beneficiary Training.** The beneficiaries would receive relevant training on the various climate resilience measures relevant to their situation and on how to apply for the funding from the investment program.

**Participatory Investment Proposal Preparation.** Two aspects of the proposed approach to the training and – subsequently – grant/loan proposal development are highlighted:

- i. Predominantly “*landscape-based*”, i.e., to the extent possible, an integrated set of measures for climate resilience will be developed. For instance, drip irrigation, which is a water-saving irrigation technology may be coupled with development of tree-crops or vegetables, to maximize the economic and financial viability of the proposed investment.
- ii. *Participatory*, in particular in respect of the community/village grants. Households from villages or groups of villages (*mahallas*), led by the Trainers-Consultants and the village elderly (*aksakals*) will prioritize the issues stemming from climate change, receive training on the appropriate adaptation and/or mitigation measures, and agree on the set of appropriate measures, the required grant/loan amount and the beneficiary contribution.

## **Sub-Component 2.2: Investment Grant/Loan Financing**

Loans (including microfinance) will be provided for Uzbekistan through financial institutions/banks supported through a special loan facility. The facility will ensure financing in the form of loans, leases and microfinance transactions (for example, for micro enterprises). The maximum amount of finance will not exceed \$300,000 per recipient, with a minimum of 10% of co-finance required from the borrower. To take part in the scheme, the banks will need to meet a number of eligibility criteria such as the availability of a satisfactory financial and management structure, sufficient equity, asset quality, and acceptable lending activity in the most recent year, adequate liquidity, and satisfactory management of technical personnel and other resources,

necessary for ensuring effective financial transactions. The project will provide technical assistance to these financial institutions to improve their skills in assessing investment subproject proposals envisioning the use of land, water, agriculture, and power.

**Eligible Investments** under the program are expected to primarily support the following areas:

- i. Crop diversification, climate-resilient seed/sapling variety and seed system support measures;
- ii. On-farm water resource management and efficiency improvement measures;
- iii. Land degradation control through agro-forestry and rangeland management measures;
- iv. Promotion of stability and sustainability of mountain ecosystems and livelihoods;
- v. Conservation agriculture.

As an example, investments to be supported could include:

- i. Improving productivity of field and horticultural crops, by adopting new and appropriate technologies:
  - Establishing simple low cost green houses
  - Fodder seed (both pulses and grass) production
  - Private nurseries
  - Vineyards and orchards
  - Improved cropping systems, such as crop diversification
  - Improved crop and tree varieties (wood lots)
  - Improved seed varieties (e.g., more tolerant to drought, pest, disease and salinity), including using community-revolving seed funds
- ii. Improving on-farm water management
  - Drip and plastic tube irrigation
  - Land leveling
  - Planting shelter belts
  - Irrigation scheduling
  - Alternate furrow irrigation
- iii. Improving pasture and rangeland management
  - Infrastructure to access and use remote pastures
  - Small machinery to produce and harvest fodder
  - Rehabilitation measures for degraded areas
- iv. Sloping land horticulture on the steep lands
  - Contour planting of fruit and nut trees on rainfed land
  - Terraced orchards (ring and basin systems)
  - Orchards with drip/basin irrigation, mulching
  - Use of live fences
- v. Pest and disease control
  - Biological controls
  - Integrated pest management (with use of bio-pesticides only)

- vi. Participatory Forestry and Agro-forestry Management
- vii. Improving farmers' access to weather forecasting information for decision-making
- viii. Off-grid renewable energy for remote rural communities.<sup>6</sup>

**Beneficiaries** of the investment sub-projects will be villages, or village communities (*mahallas*), as well as private farmers interested in introducing climate resilience measures located in the Project Areas.

The implementation of the investment program will be assisted by the Trainers-Consultants, and – if needed – the Technical Advisor; and monitored by the NCU. Beneficiaries will be monitored to ensure that implementation takes place as agreed, and once in operation, each investment will be evaluated to assess its costs and benefits. Detailed operational guidelines for the investment program will be developed before the project effectiveness.

### **Eligibility Criteria for Investments<sup>7</sup>**

- i. Located in the project area;
- ii. Is included in the eligible types of investment;
- iii. Is cost effective based on a cost-benefit analysis (long-term benefits outweigh the costs);
- iv. The Beneficiary has the necessary resources to ensure post-project sustainability of the investment;
- v. Sub-project can be replicated by other interested parties;
- vi. The required contribution of the Beneficiary has been confirmed.

## **2.4 Implementation Arrangements**

The proposed implementation arrangements will ensure a balance between national ownership and effective regional coordination (managed by the Secretariat). CAMP4CA implementation arrangements are expected to include:

Given its mandate to coordinate and manage regional cooperation on sustainable development in Central Asia countries, the Interstate Commission for Sustainable Development (ICSD) will serve as the implementing agency for the Program's regional, cross-cutting activities. The Program's proposed management arrangements will ensure a balance between effective regional and national coordination. These management arrangements are expected to include:

- a) A Climate Change Secretariat for Central Asia (CCSCA) under ICSD to provide overall program coordination in collaboration with national agencies. The CCSCA will be responsible for considering investment proposals submitted by national authorities, preparing annual work plans, and arranging activities involving climate information services. Staffing of the CCSCA will be initially contracted, and will

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<sup>6</sup> Primarily expected for Kazakhstan in Phase II of the project.

<sup>7</sup> Mitigation co-benefit from the sub-projects will also need to be calculated, however, it will not be a formal eligibility requirement.

- include a Director, technical specialists, a communications officer, an accountant, and two administrative assistants.
- b) National Coordination Units (NCUs), in each participating country, operating under the supervision of a national focal point and Technical Working Group (TWG), will be responsible for ensuring awareness raising and outreach of grant investment opportunities, providing training for grant proposal preparation, screening proposals, submitting investment proposals to the CCSCA based on focal point and TWG recommendations, monitoring investment implementation, and ensuring compliance with Bank safeguards.
  - c) The Component 2 of the Program follows the concept of community-driven development with village communities and other community groups, such as farmers, water user associations, and pasture user groups, taking responsibility for the choice, design, and management of rural investments and resource management plans. In support of sub-component 2.2, experienced NGOs will coordinate with local government, other local NGOs, and other supporting organizations, as needed, to provide facilitation support. This support will include participatory investment planning and implementation, and will help build the technical and administrative capacities of these groups. In addition, the annual climate knowledge forum will provide a platform for Civil Society Organizations to share information, best practice in climate smart actions and act as sounding board to the TWG.

Fiduciary responsibilities (financial management, procurement, and disbursement functions) may be outsourced to a third party, to help streamline implementation and support a more even implementation among the participating countries.

A Regional Steering Committee will also be established, comprised of representative from the five country focal agencies, a representative from ICSD, and the CCSCA Director, to provide general Program oversight, including approving yearly activities and budget, monitoring Program progress, and reporting to ICSD as well as relevant stakeholders.

### 3. National Environmental Assessment Policies and Regulatory Frameworks

This section identifies the countries' regulatory base for environmental assessment. It is followed by an analysis of the existing environmental policies and legislation, including regulations for environmental impact assessment, and comparison with the relevant World Bank policies to identify gaps and the needs and areas for strengthening.

*National Environmental Policies:* The main priority for the Republic of Uzbekistan during the on-going economic reforms is to ensure reliable social guarantees and measures for social security and environmental protection<sup>8</sup>. Nature protection policy and the implementing measures in the areas of rational use of the natural resources and environment protection are based on the following main principles:

- Integration of economic and ecological policy aimed at conservation and restoration of the environment as the essential condition for improvement of the living standards of the population;
- Transition from protection of individual natural elements to the general and integrated protection of ecosystems; and
- Responsibility of all members of society for environment protection and conservation of biodiversity

*Environmental Legislation and Policy:* Relevant environmental laws and regulations in the framework of the present project include:

- “*On Environmental Protection*” (1992), establishing a legal, economic and organizational framework for environment protection, ensuring sustainable development and defining principles including State Ecological Expertise (SEE);
- “*On the Protection of Agricultural Plants from Pests, Diseases and Weeds*” (2000) regulates activities on the protection of agricultural plants from pests, diseases and weeds, and the prevention of the harmful influence of plant protective substances on human health and on the natural environment;
- “*On Ecological Expertise*” (2001) provides for mandatory expert assessment of impacts on the environment and human health, as well as a legal basis for conducting expert assessments; and
- “*On Ecological Control*” (2013) regulates relations in the field of environmental control. The main objectives of environmental control are prevention, detection and suppression of violations of environmental regulations; monitoring of environmental situations that may lead to environmental pollution, unsustainable use of natural resources, endangering the life and health of citizens.

*State Organizations Responsible for Environmental Assessment and Management:* The State Committee for Nature Protection (Goskompriroda)<sup>9</sup> is the primary environmental regulatory

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<sup>8</sup>Karimov Islam. 1999. “Uzbekistan: Towards 21-st Century”, Report on the 14-th Session of Parliament (Oliy Majlis).

<sup>9</sup> In English translations also called ‘State Committee for Nature Conservation’, ‘State Committee for Natural Resources’, ‘Committee of Nature Control’, etc.

agency. It reports directly to the Oliy Majlis (Parliament), and is responsible, at central, oblast and raion levels, for coordinating the environmental and natural resources actions of other national government bodies. The mandate of Goskompriroda is based on the Regulation “On the State Environmental Committee of the Republic of Uzbekistan” as approved by Parliament on 26 April 1996.

*Goskompriroda* is responsible for environmental and natural systems protection. It oversees the national system of protected areas, can initiate liability/damage actions, and administers an Environmental Fund which receives pollution fees and penalties and supports pollution mitigation measures. There are also several scientific institutes attached to the Goskompriroda which conduct analysis on environmental and natural resources problems and measures to address these in support of Goskompriroda’s work.

*Goskompriroda* also issues permits for pollution discharge emissions and may prohibit projects and construction works that do not comply with (international) legislation. Fees are collected at the regional level for the use of resources, for licenses to discharge polluting material, and for waste disposal.

The structure of Goskompriroda takes the form of a central body in Tashkent, with regional (oblast) and local (raion) branches and agencies for scientific and technical support. Regional level organizations have the same structure as those at national level. Different departments take responsibility for environmental standards, environmental law, international relations, environmental funding, economics, publicity, and governmental ecological review.

*EIA Procedures:* State Environmental Expertise (SEE), i.e. preparation of or the review and approval (or rejection) of developments on environmental grounds, is regulated Law on Ecological Expertise (2000) and by Decree of the Cabinet of Ministers No 491.31.12.2001: “*On approval of the Regulation of the State Environmental Expertise*”.

According to Article 3 of the above mentioned law, ecological expertise is carried out in order to determine:

- compliance of projected economic and other activities with environmental requirements in the stages preceding decision making on its implementation;
- level of ecological danger planned or carried out business and other activities, which may have or had a negative impact on the condition of the environment and public health; and
- adequacy and reasonableness of the measures provided for the protection of the environment and rational use of natural resources.

The main responsible organization for state environmental review is the Main Directorate for State Ecological Expertise (Glavgoosecoexpertiza) of Goskompriroda. The Regulation stipulates 4 categories for development:

Category I –Corresponds to World Bank category A;  
Category II –Corresponds to World Bank category B;

Category III –Corresponds to World Bank category B or C;  
Category IV - Corresponds to World Bank category C.

According to Paragraph 11 of the Regulation, evaluation stages of the environmental impact should include the following basic issues (depending on the type and nature of work):

a) Draft statement on environmental impacts:

- environmental conditions prior to the implementation of the planned activities, population of the territory, land development, analysis of the environment's features;
- situational plan showing existing recreational areas, settlements, irrigation, reclamation facilities, farmland, power lines, transport communications, water, gas pipelines and other information about the area;
- envisaged major and minor objects, used technique, technology, natural resources, materials, raw materials, fuel, analysis of their impacts on the environment, environmental hazards of their products;
- expected emissions, discharges, wastes, their negative impact on the environment and ways of neutralization;
- warehousing, storage and disposal of wastes;
- analysis of the alternatives of the proposed or existing activity and technological solutions from the perspective of environmental protection, taking into account the achievements of science, technology and best practices;
- organizational, technical, technological solutions and activities, excluding the negative environmental impacts and mitigating the impact of the expertising object on the environment;
- analysis of emergency situations (with an estimate of probability and scenario of the prevention of their negative impacts); and
- forecast environmental changes and environmental impacts as a result of the implementation of the expertising object.

b) Statement on environmental impact:

- assessment of environmental problems of the chosen site on the results of engineering- geological investigations, modeling and other necessary researches;
- environmental analysis of technology applied to the issues identified on the site;
- the results of the public hearings (if necessary); and
- reasoned investigations of the nature-conservative measures to prevent the negative consequences of the expertising object.

c) Statement on Environmental Consequences:

- correction of the design decisions and other taken measures on the consideration of the DSEI by the bodies of Goskompriroda, as well as on the proposals made at the public hearings;
- environmental regulations governing the activities of the expertising object;

- requirements for the organization of work and the implementation of measures for environmental guiding of the operation of the object; and
- main conclusions about the possibility of business activities.

*Public Involvement:* The Sub-borrower is also responsible for conducting at least one public consultation(s) for category I and II. These responsibilities include: (a) public notification, (b) conducting the consultation and (c) recording the significant findings, conclusions, recommendations and next steps. The purpose of public consultation(s) is (are) to solicit views of groups or individuals who may be affected by the Sub-project regarding their environmental concerns. Affected groups or people should identify the environmental issues they believe to be significant. *Any significant issues, established during the public consultation, should be incorporated into the EMP.* Public disclosure provides affected groups or individuals the opportunity to examine the draft EMP document before it is finalized so that they can review and provide comments on the mitigating measures agreed upon and the responsibilities for implementing them. Since Uzbek and World Bank consultation and disclosure requirements may differ somewhat, World Bank requirements presented below are the primary ones and have to be followed.



#### 4. The World Bank Safeguard Policies

*Overview.* The Bank undertakes environmental screening of each proposed project for which it will provide funding in order to determine the appropriate extent and type of environmental assessments (EA). The Bank classifies a proposed project into one of four categories, depending on the type, location, sensitivity and scale of the project and the nature and magnitude of its potential environmental impacts. The four EA Categories are A, B, C, and FI. Category FI is applied to all proposed projects that involve investment of Bank funds through a participating financial intermediary (PFI) to be used for sub-projects of which the environmental impacts cannot be determined during appraisal of the World Bank project.

*World Bank's Safeguard Policies and their relevance to project.* There are key 10 Environmental and Social World Bank Safeguard Policies which are intended to ensure that potentially adverse environmental and social consequences of projects financed by Bank are identified, minimized and mitigated. World Bank Safeguard Policies have a three-part format: Operational Policies (OP) - statement of policy objectives and operational principles including the roles and obligations of the Borrower and the Bank, Bank Procedures (BP) - mandatory procedures to be followed by the Borrower and the Bank, and Good Practice (GP) - non-mandatory advisory material. World Bank's Safeguard Policies and their relevance to sub-projects to be funded under the Grant Investment Fund are indicated in the Table 1 below.

**Table 1. World Bank's Safeguard Policies and their relevance to investment grant subprojects**

Safeguard Policies	Relevance
<p><b><i>Environmental Assessment (OP/BP 4.01)</i></b>            This Policy aims to ensure that projects proposed for Bank financing are environmentally and socially sound and sustainable; to inform decision makers of the nature of environmental and social risks; to increase transparency and participation of stakeholders in the decision-making process</p>	<p><b>Yes</b>            This OP is triggered as the project will support pilot investments in key vulnerable sectors, - possibly in the area of re-vegetation and restoration of forests and their services, community forestry and pasture management for participatory, equitable, and improved use of natural shared resources etc. The exact domains for project financing will be decided during the initial stage of the project design. Although the pilot investments will be limited in scope, they may generate various environmental and social impacts related to: soil degradation; water and air pollution; biodiversity conservation; labor safety issues and health impacts, etc. It is also expected these potential impacts will be mostly temporary by nature and site specific. To address these impacts the participating countries prepared EMFs which specify the rules and procedures for subprojects Environmental Assessment. The EMFs also provide advises for</p>

Safeguard Policies	Relevance
	<p>setting up under the component 2 of a regional repository of knowledge and lessons from the region climate-smart agriculture, which might include information materials for training and advice on climate-smart agricultural technologies (e.g., soil, water and crop management for both rainfed and irrigated production systems, livestock and pasture management, global good practices), covering all aspects including production, post-harvest handling and processing, marketing, and financing. The EMFs will be disclosed and consulted in all participating countries.</p>
<p><b>Natural Habitats (OP/BP 4.04)</b>  This Policy aims to safeguard natural habitats and their biodiversity; avoid significant conversion or degradation of critical natural habitats, and to ensure sustainability of services and products which natural habitats provide to human society</p>	<p><b>Yes</b>  This OP is triggered as the project might support investments in key natural areas - possibly under the community forest activities. The EMF provides relevant advise on what is necessary to be taken into consideration during the subprojects EA to avoid conversion of natural habitats.</p>
<p><b>Forestry (OP/BP 4.36)</b>  This Policy is to ensure that forests are managed in a sustainable manner; significant areas of forest are not encroached upon; the rights of communities to use their traditional forest areas in a sustainable manner are not compromised</p>	<p><b>Yes</b>  This OP is triggered as the project might support re-vegetation and forest restoration and management of forests and their services. The EMF provides relevant advises what is necessary to be taken into consideration duringthe sub-projects EA.</p>
<p><b>Pest Management (OP 4.09).</b>  This policy is to ensure pest management activities follow an Integrated Pest Management (IPM) approach, to minimize environmental and health hazards due to pesticide use, and to contribute to developing national capacity to implement IPM, and to regulate and monitor the distribution and use of pesticides</p>	<p><b>Yes</b>  The project will not finance purchase of pesticides but it might generate a need for their increased usage, in particular in the case of agriculture activities and forestry nurseries development. No separate Pest Management Plan has been developed, but the EMF includes a section describing measures to ensure compliance with national laws and WB requirements relating to pesticide purchase and use, and to promote Integrated Pest Management (IPM) approaches and safe pesticide handling and disposal practices to reduce human and environmental exposure. Additionally the EMF includes a list of eligible pesticides in the participating countries and</p>

Safeguard Policies	Relevance
	guidance on their use.
<p><b>Physical Cultural Resources (OP/BP 4.11)</b>  This policy is to ensure that: Physical Cultural Resources (PCR) are identified and protected in World Bank financed projects; national laws governing the protection of physical cultural property are complied with; PCR includes archaeological and historical sites, historic urban areas, sacred sites, graveyards, burial sites, unique natural values; implemented as an element of the Environmental Assessment</p>	<p><b>No.</b>  There will be no impact on physical cultural resources as all proposed activities will be implemented on existing agricultural lands.</p>
<p><b>Indigenous Peoples (OP/BP 4.10)</b>  IP – distinct, vulnerable, social and cultural group attached to geographically distinct habitats or historical territories, with separate culture than the project area, and usually different language. The Policy aims to foster full respect for human rights, economies, and cultures of IP, and to avoid adverse effects on IP during the project development.</p>	<p><b>No.</b>  This Policy is not applicable under the Program in the Central Asia countries</p>
<p><b>Involuntary Resettlement (OP/BP 4.12)</b>  This policy aims to minimize displacement; treat resettlement as a development program; provide affected people with opportunities for participation; assist displaced persons in their efforts to improve their incomes and standards of living, or at least to restore them; assist displaced people regardless of legality of tenure; pay compensation for affected assets at replacement cost; the OP Annexes include descriptions of Resettlement Plans and Resettlement Policy Frameworks</p>	<p><b>Yes</b>  Involuntary Resettlement Policy OP 4.12 is triggered on a precautionary basis and a Resettlement Policy Framework has been developed for each participating country.</p>
<p><b>Safety of Dams (OP/BP 4.37)</b>  This Policy is to ensure due consideration is given to the safety of dams in projects involving construction of new dams, or that may be affected by the safety or performance of an existing dam or dams under construction; important considerations are dam height &amp; reservoir capacity</p>	<p><b>No.</b>  The program will support subprojects related to irrigation and water abstraction from reservoirs.</p>
<p><b>Projects on International Waterways (OP/BP 7.50)</b>  The Policy aims to ensure that projects will neither affect the efficient utilization and protection of international waterways, nor adversely affect relations between the Bank and its Borrowers and between riparian states</p>	<p><b>Yes</b>  Sub-project investments would be limited to rehabilitation or modification of existing minor schemes in ways which would not increase the amount of water abstracted or have any other impact on the water source or local hydrological regime (e.g. replacing conventional irrigation with drip irrigation in an existing irrigation scheme would be still eligible). Creating a new scheme which will lead to increasing water abstraction from the rivers will not be financed under the project. This determination would be</p>

Safeguard Policies	Relevance
	made in the screening process.
<p><b>Disputed Areas (OP/BP 7.60)</b>  The Bank may support a project in a disputed area if governments concerned agree that, pending the settlement of the dispute, the project proposed for one country should go forward without prejudice to the claims of the other country</p>	<p><b>None.</b>  Project activities are not to be implemented in disputed areas.</p>
<p><b>Disclosure Policy (BP 17.50)</b> supports decision making by the borrower and Bank by allowing the public access to information on environmental and social aspects of projects and has specific requirements for disclosure</p>	<p><b>Yes</b>  The EMF will be disclosed and consulted in the program countries before project appraisal and will be also disclosed in the WB Infoshop.</p>

In accordance with the Bank’s safeguard policies and procedures, including OP/BP/GP 4.01 *Environmental Assessment*, the project is classified as Category B, since its potential adverse environmental impacts on human populations or environmentally important areas--including wetlands, forests, grasslands, and other natural habitats--are small to moderate in scale. These impacts are site- and activity- specific; few, if any, are irreversible; and in most cases mitigation measures can be designed readily. A Category B environmental assessment examines the project's potential negative and positive environmental impacts and recommends measures to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance. As before Appraisal it is not possible to identify which CIGPs will be financed, the appropriate EA instrument is the Environmental Management Framework (EMF) which would specify all rules and procedures for the CIGP sub-projects Environmental Assessment (EIA).

The purpose of the Environmental Management Framework is to provide the World Bank’s and the participating governments rules and procedures for project Environmental Impacts Assessment (EIA), identify the significant environmental impacts of the project (both positive and negative), to outline rules and procedure for the CIGP sub-projects environmental screening and to specify appropriate preventive actions and mitigation measures (including appropriate monitoring plan) to prevent, eliminate or minimize any anticipated adverse impacts on environment. The EMF report was prepared based on the following: (i) analysis of the existing national legal documents, regulations and guidelines; (ii) World Bank safeguard policies, as well as other guiding materials; (iii) existing EMFs for similar World Bank projects, and (iv) experience of EMF implementation of ongoing World Bank funded projects in the CAMP4CA countries. Based on the EMF, each participating country will revise and adjust the EMP to suit their specific needs and conditions. The EMF describes the procedures for the subproject or climate resilience grant/loan environmental assessment, the documentation needed for different types of projects, and the roles and responsibilities of different stakeholders to be involved in the EA process. As the CAMP4CA has a community driven approach and capacity (including environmental capacity) at the community level is low, the EMF would also provide environmental knowledge management and training activities for the range of interventions likely under the project, including practical application of the environmental participatory analysis for the subprojects assessment and monitoring of results.

Each of the participating countries will adopt and revise this EMF to meet the country’s specific needs, including rules and procedures for environmental screening; guidance for preparing

subprojects EIA and/or simple EMPs as well as of EMP Checklist for identified small scale construction and reconstruction activities; possible mitigation measures for different types of sub-projects; requirements for monitoring and supervision of implementing of EIA/EMPs; and specific institutional arrangements for screening, review, approval and monitoring of impacts of activities and preparation of activity specific IEEs and EIAs. The country specific EMFs will also contain a series of measures to raise awareness and educate potential beneficiaries regarding safe pesticide handling and use of Integrated Pest Management and management and monitoring of the EA review and approval process. The EMFs will be integrated into the individual country Project's Operational Manual and will be used as part of all contracts involving proposed activities and selected sub-projects. The Bank is expected to provide a special training to the Safeguards Specialists to be appointed for each participating country, so they can promote compliance with the EMF and EMP. The subproject EMPs will be also integrated into the contracts for approved activities, both into specifications and bills of quantities and the Contractors will be required to include the cost in their financial proposals and bids.

The World Bank Safeguard Policy OP 4.09 on Pest Management stipulates that the Bank support a strategy that promotes the use of biological or environmental control methods and reduces reliance on synthetic chemical pesticides, and "in appraising a project that will involve pest management, the Bank assesses the capacity of the country's regulatory framework and institutions to promote and support safe, effective, and environmentally sound pest management. The Bank does not finance formulated products that fall in WHO classes IA and IB, or formulations of products in Class II, if (i) the country lacks restrictions on their distribution and use; or (ii) they are likely to be used by, or be accessible to, lay personnel, farmers, or others without training, equipment, and facilities to handle, store, and apply these products properly".

Although, the project will not finance pesticides, in some of the project's potential investments, the use of pesticides may be envisaged to repress weed competition in planted areas, and potentially pesticides to treat or prevent mass pest outbreaks and to protect yields from insects. The grant/loan recipients will prepare a brief annex to attach to their 40 investment proposal, that in prepare with the World Bank's OP4.09, will include clear justification of allowable pesticide and herbicide products, which: (a) must have negligible adverse human health effects; (b) must be shown to be effective against the target species; (c) must have minimal effect on non-target species and the natural environment; (d) the methods, timing, and frequency of pesticide application are aimed to minimize damage to natural enemies; (e) pesticides must be demonstrated to be safe for land users and animals in the treated areas, as well as for personnel applying them; (f) their use must take into account the need to prevent the development of resistance in pests; (g) the Bank requires that any pesticides be manufactured, packaged, labelled, handled, stored, disposed of, and applied according to standards acceptable to the Bank.

The project's proposed pasture management investments require application of World Bank Safeguard Policy OP 4.04 on Natural Habitats, which are defined as land and water areas where (i) the ecosystems' biological communities are formed largely by native plant and animal species, and (ii) human activity has not essentially modified the area's primary ecological functions. All natural habitats have important biological, social, economic, and existence value. Biodiversity outside of natural habitats (such as within agricultural landscapes) is not covered under this policy. *Critical natural habitats are:* (i) existing protected areas and areas officially proposed by governments as protected areas (e.g., reserves that meet the criteria of the World Conservation Union [IUCN] classifications), areas initially recognized as protected by traditional local

communities (e.g., sacred groves), and sites that maintain conditions vital for the viability of these protected areas (as determined by the environmental assessment process); or (ii) sites identified on supplementary lists prepared by the Bank or an authoritative source determined by the regional sector for environmental protection. Such sites may include areas recognized by traditional local communities; areas with known high suitability for biodiversity conservation; and sites that are critical for rare, vulnerable, migratory, or endangered species. Listings are based on systematic evaluations of such factors as species richness; the degree of endemism, rarity, and vulnerability of component species; representativeness; and integrity of ecosystem processes. In accordance with OP 4.04, the proposed project will support activities aimed at conserving natural habitats and their restoration, and prohibits those which would lead to the significant loss or degradation of any Critical Natural Habitats. The proposed project will not include activities in other (non-critical) natural habitats, where possible significant loss or degradation due to feasible alternatives to achieve the project's substantial overall net benefits need acceptable mitigation measures, such as compensatory protected areas.

The project's proposed re-vegetation, agro-forestry and forest restoration and management of forests and their services require application of World Bank Safeguard Policy OP/BP 4.36 on Forestry to ensure that forests are managed in a sustainable manner; significant areas of forest are not encroached upon; the rights of communities to use their traditional forest areas in a sustainable manner are not compromised. The project will not involve any conversion or degradation of critical forest areas or related critical natural habitats. On the contrary, relevant project activities would include planting of small scale woodlots and fruit tree orchards and improved management of rangelands which may be legally related to forest area but does not have significant tree cover - there would no conversion of land which currently has significant tree cover except for replacement of unproductive fruit trees. All reforestation activities on legally forest lands, including agro-forestry and community forestry activities will be coordinated with responsible departments in the respective countries that oversee the management of forests.

*World Bank Screening Categories and Environmental Assessment Procedures.* Environmental Screening is a mandatory procedure for the Environmental Assessment 4.01 OP/BP. The Bank undertakes environmental screening of each proposed project for which it will provide funding in order to determine the appropriate extent and type of the Environmental Assessment to be conducted. The Bank classifies a proposed project into one of four categories, depending on the type, location, sensitivity and scale of the project and the nature and magnitude of its potential environmental impacts<sup>10</sup>. These four Categories are A, B, C, and FI.

*Category A* projects is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may be sensitive, irreversible, and diverse, with attributes such direct pollutant discharges large enough to cause degradation of air, water, or soil; large-scale physical disturbances of the site and/or surroundings; extraction, consumption, or conversion of substantial amounts of forest and other natural resources; measurable modifications of hydrological cycles; hazardous materials in more than incidental quantities; and

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<sup>10</sup> See: Environmental Assessment Update Sourcebook, Environmental Department April 1993.

involuntary displacement of people and other significant social disturbances. The impacts are likely to be comprehensive, broad, sector-wide, or precedent-setting. Impacts generally result from a major component of the project and affect the area as a whole or an entire sector. They may affect an area broader than the sites or facilities subject to physical works. The EA for a Category A project examines the project's potential negative and positive environmental impacts, compares them with those of feasible alternatives (including the "without project" scenario), and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance. For a Category A project, the borrower is responsible for preparing a report, normally a full Environmental Impact Assessment (or a suitably comprehensive regional or sectoral EA).

*Category B* projects has potential adverse environmental impacts on human populations or environmentally important areas - including wetlands, forests, grasslands, and other natural habitats - which are less adverse than those of Category A projects. These impacts are site-specific; few if any of them are irreversible; and in most cases mitigation measures can be designed more readily than for Category A projects. The scope of EA for a Category B project may vary from project to project, but it is narrower than that of Category A assessment. Like Category A, a Category B environmental assessment examines the project's potential negative and positive environmental impacts and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance.

*Category C.* An EIA or environmental analysis is normally not required for Category C projects because the project is unlikely to have adverse impacts; normally, they have negligible or minimal direct disturbances on the physical setting. Professional judgment finds the project to have negligible, insignificant, or minimal environmental impacts. Beyond screening, no further EA action is required.

*Category FI.* A Category FI project involves investment of Bank funds through a financial intermediary, in subprojects that may result in adverse environmental impacts.

The Bank reviews the findings and recommendations of the EA to determine whether they provide an adequate basis for processing the project for Bank financing. When the borrower has completed or partially completed EA work prior to the Bank's involvement in a project, the Bank reviews the EA to ensure its consistency with this policy. The Bank may, if appropriate, require additional EA work, including public consultation and disclosure.

General examples of projects that fall under Categories A, B, and C is provided in the Table 2 below. However, this list is just a good starting point and framework for the screening decision. Because of other factors involved such as project sitting, the nature of impacts, and the need for the EA process to be flexible enough to accommodate them, the lists should not be used as the sole basis for screening.

**Table 2. Types of projects under the World Bank’s Categories A, B, and C**

<b>Category A Projects</b> <i>(projects/project components which may have diverse and significant impacts – normally require a full EIA)</i>	<b>Category B Projects</b> <i>(projects/project components which may have diverse and significant impacts – more limited environmental assessment is appropriate)</i>	<b>Category C Projects</b> <i>(projects which are unlikely to have direct adverse impacts – no EIA is required)</i>
Dams and reservoirs; Forestry production projects; Irrigation, drainage and flood control (large scale); Industrial plants (large scale*) and industrial estates, including major expansion, rehabilitation, or modification; Aquaculture and mariculture (large scale); Land clearance and leveling; Mineral development Port and harbor development; Reclamation and new land development; Resettlement and all projects with potentially major impacts on people; River basin development; Thermal and hydropower development; Manufacture, transportation, and use of pesticides or other hazardous and/or toxic materials	Agro-industries (small scale); Electrical; transmission; Irrigation and drainage (small scale); Renewable energy; Rural electrification;  Tourism; Rural water supply and sanitation;  Watershed projects (management or rehabilitation); Rehabilitation, maintenance, and upgrading projects (small-scale); Protected areas and biodiversity conservation; Rehabilitation or modification of existing industrial facilities (small scale); Rehabilitation of highways or rural roads; Energy efficiency and energy conservation	Family planning; Nutrition; Institutional development; Technical assistance; Most human resource projects

*Note:* \*Large scale here is defined as enterprises with annual sales of US\$ 3 million or more equivalent

*Screening criteria. The selection of the category should be based on professional judgment and information available at the time of project identification. If the project is modified or new information becomes available, Bank EA policy permits to reclassify a project. For example, a Category B project might become Category A if new information reveals that it may have diverse and significant environmental impacts when they were originally thought to be limited to one aspect of the environment. Conversely, a Category A project might be reclassified as B if a component with significant impacts is dropped or altered. The option to reclassify projects relieves some of the pressure to make the initial decision the correct and final one.*

Projects in Category B often differ from A projects of the same type only in scale. In fact, large irrigation and drainage projects are usually Category A, however, small-scale projects of the same type may fall into Category B. Projects entailing rehabilitation, maintenance or upgrading rather than new construction will usually be in Category B. A project with any of these characteristics may have impacts, but they are less likely to be “significant”. However, each case must be judged on its own merits. Many rehabilitation, maintenance and upgrading projects as well as privatization projects may require attention to existing environmental problems at the site



rather than potential new impacts. Therefore, an environmental audit may be more useful than an impact assessment in fulfilling the EA needs for such projects.

The selection of a screening category often depends also substantially on the project setting, while the “significance” of potential impacts is partly a function of the natural and socio-cultural surroundings. There are a number of locations which should cause to consider an “A” classification:

- in or near sensitive and valuable ecosystems - wetlands, natural areas, habitat of endangered species;
- in or near areas with archaeological and/or historical sites or existing cultural and social institutions;
- in densely populated areas, where resettlement may be required or potential pollution impacts and other disturbances may significantly affect communities;
- in regions subject to heavy development activities or where there are conflicts in natural resource allocation;
- along watercourses, in aquifer recharge areas or in reservoir catchments used for potable water supply; and
- on lands and in waters containing valuable natural resources (such as fish, minerals, medicinal plants; agricultural soils).

The World Bank’s experience has shown that precise identification of the project’s geographical setting at the screening stage greatly enhances the quality of the screening decision and helps focus the EA on the important environmental issues.

*World Bank Public Consultation and Disclosure requirements. For all Category A and B projects proposed for WB financing, during the EA process, the borrower consults all involved parties, including project-affected groups and local nongovernmental organizations (NGOs) about the 44 project's environmental aspects and takes their views into account. The borrower initiates such consultations as early as possible. For Category A projects, the borrower consults these groups at least twice: (a) shortly after environmental screening and before the terms of reference for the EA are finalized; and (b) once a draft EA report is prepared. In addition, the borrower consults with such groups throughout project implementation as necessary to address EA-related issues that affect them. For meaningful consultations between the borrower and project-affected groups and local NGOs, the borrower provides relevant material in a timely manner prior to consultation and in a form and language that are understandable and accessible to the groups being consulted. For a Category B project, the borrower provides for the initial consultation a summary of the proposed project's objectives, description, and potential impacts; for consultation after the draft EA report is prepared, the borrower provides a summary of the EA's conclusions. In addition, the borrower makes all EA reports available at a public place accessible to project-affected groups and local NGOs. Public availability of EIA reports for Category A projects is the prerequisite to Bank financing of these projects.*

Figure 1 presents the different steps in the project cycle and shows how the various EA phases fit in the project preparation process. The main EA phases concern screening, scoping, EA, and environmental management plan during and after implementation of the project - covering mitigation, monitoring and evaluation.

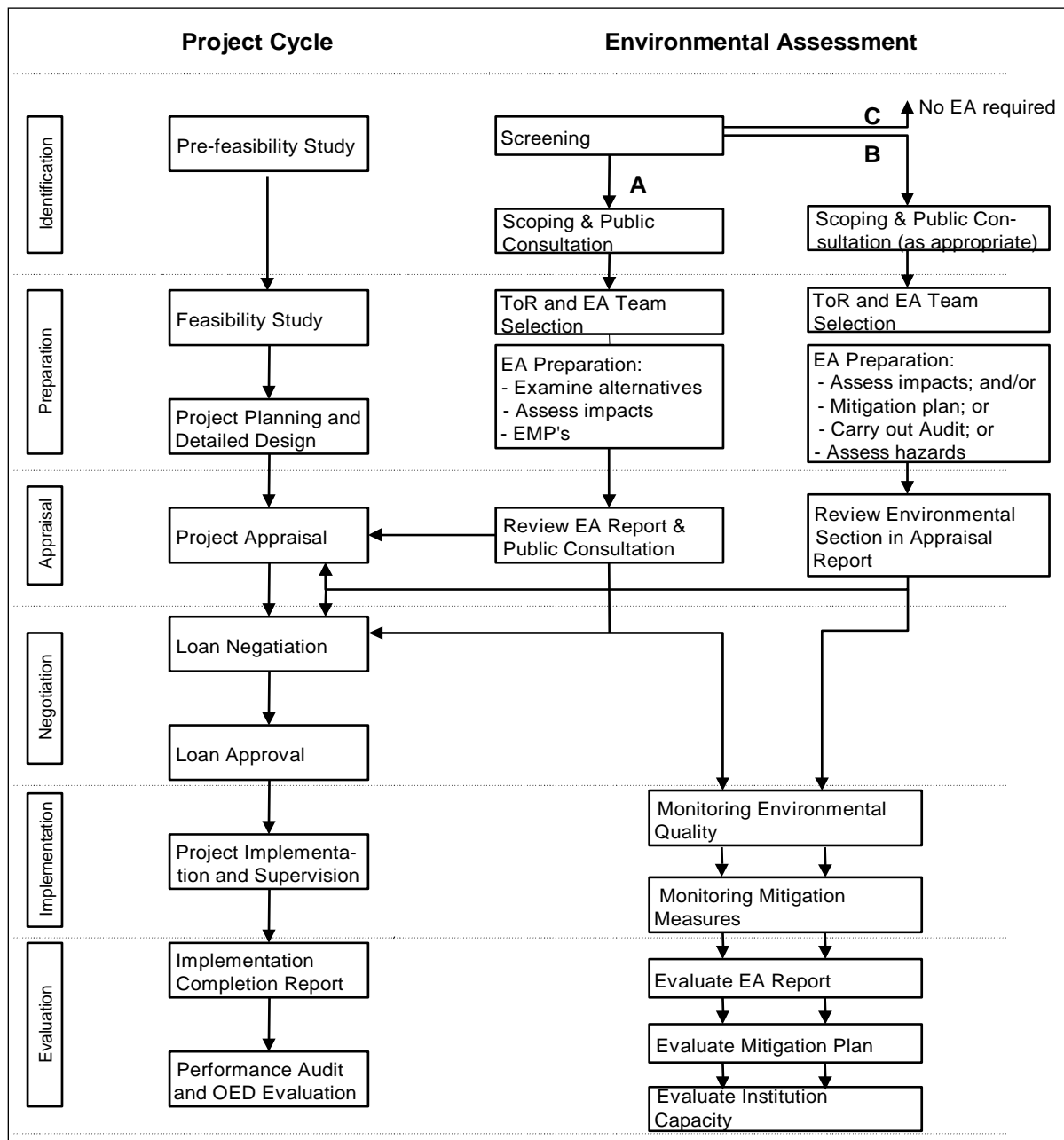


Figure 1. Environmental Assessment and the World Bank project cycle

## **5. Comparison of National Legislation and World Bank Environment Assessment Requirements**

*5.1 Overview.* While the basic provisions of the National EA rules and procedures are to some extent similar to the WB requirements, there are several important differences. These differences are related primarily to the following: (a) project environmental screening categories; (b) Environmental Management Plan; (c) EA disclosure and public consultation; and (d) EA reviewing process.

*5.2 Differences in screening categories.* As stated above, all projects in Tajikistan are divided into four categories, differing in terms of environmental risks. This classification is different from the World Bank's approach. In particular, it has two project categories (II and III), which correspond to the World Bank's Category B (Category I will always correspond to the World Bank's Category A). In most instances Categories II and III will correspond to the World Bank's Category B, however sometimes, when the respective projects affect critical natural habitats, they may correspond to the Bank's Category A. In general instances, where the World Bank's and national classifications are different, more stringent requirements will apply. This refers mostly in the case of deciding about Category B subprojects - the national EA legislation doesn't refer to small scale activities, including construction and rehabilitation of various buildings. In these cases the client will apply the WB criteria.

*5.3 Differences concerning EMP.* While the national legislation requires for all projects with potential environmental impacts relevant mitigation measures, it doesn't require a special EMP which should specify, along with the proposed mitigation activities a monitoring plan and reporting requirements, institutional arrangements for EMPs implementation as well as doesn't require needed capacity building activities and necessary expenses in this regard. However, in the case of grant subprojects, an EMP is a mandatory requirement and will be prepared by the borrower to comply with the WB requirements. This includes financing for training local authorities in EMP preparation.

*5.5 Differences concerning reviewing and approval of EA studies.* As mentioned above, the national EA reviewing process relates to the SEE, while according the WB requirements is a part of the whole EA process. The SEE seeks to examine the compliance of proposed activities and projects with the requirements of environmental legislation. The mentioned laws stipulate the mandatory cross-sectoral nature of SEE, which shall be scientifically justified, comprehensive, and objective and which shall lead to conclusions in accordance with the law. SEE precedes decision-making about activities that may have a negative impact on the environment. Financing of programs and projects is allowed only after a positive SEE finding, or conclusion, has been issued.

*5.6 Differences with regard to disclosure and public consultation.* Conducted analysis shows there is no harmonization between World Bank and national requirements in this regard. According to national legislation, the EA disclosure and public consultation is mandatory only for Category 1 and this decision is made by local authorities. At the same time, per the SEE law the public might organize at its own initiative a public ecological expertise. Public expertise is being conducting on the basis of NGO's written request toward local public authority. While

organizing such expertise, within seven days, the local public authorities should inform public association about taken decision concerning permission to do so. Public associations conducting ecological expertise are obliged to inform broad local public about beginning of expertise and its results. These associations have the right to obtain planned and project documentation as well as documentation on EIA and get acquainted with normative technical documentation on conducting of the state ecological expertise. The results of public ecological expertise are delivering to the bodies conducting the state ecological expertise and to the bodies which make decision of implementation of activity – the subject of expertise. The results and conclusion of public ecological expertise have recommendation character. The results of public ecological expertise can be published in mass-media, delivered to the local public authority, or other stakeholders. In the case of World Bank policy, the sub-borrower is responsible for conducting at least one public consultation for all Category B projects to discuss the issues to be addressed in the EMP or to discuss the draft EMP itself. The NCU will review any documentation of the public consultation conducted in the preparation of any national EA documentation to determine if it is consistent with the World Bank requirements. If the results of public consultation are satisfactory, there would be no further consultation requirement. However, if no public consultation was conducted or the NCU determines that the public consultation documentation is not adequate, the sub-borrower will be required to perform at least one public consultation to discuss the environmental issues of concern to the locally affected communities and include these issues in the content of the EMP. Documentation for the consultation should be submitted to the NCU as part of the sub-project file. Tajik/Russian language version of the EMP and the record of the public consultation should be located at in public location near the project site and, if available - on the sub-borrower website. Category B sub-projects would be made available to project-affected groups and local NGOs in an easily accessible NCU website.

## **6. Analysis of Potential environmental impacts and risks for the climate resilience investments**

The project will support a series of activities which might cause some adverse environmental impacts that would fall under the Category B subprojects in accordance with the Bank OP/BP 4.01 (small scale agro-industries; small scale rehabilitation, improving pastures and range management; plantation of new orchards and/or vineyards, small scale off-grid renewable, etc.). For such activities the Bank requires a simple and/or a partial Environmental Assessment and/or preparing an Environmental Management Plan. It is also expected that many of supported subprojects will not have environmental impacts and will fall under the Category B in accordance with OP/BP 4.01 (especially those related to purchasing of weather forecasting information). Furthermore, it is expected the selected subprojects will not be located in protected areas, critical habitats or culturally or socially sensitive areas, this will be ensured during the subprojects screening and EA.

The potential adverse environmental impacts of proposed types of subprojects might be summarized as follows:

- (i) *Agricultural production*: soil erosion, loss of soil productive capacity, soil compaction, soil pollution, surface and underground water pollution, loss of biodiversity;
- (ii) *On-farm water management*: contribution to surface water pollution, wastes generation, odor;
- (iii) *Pasture and rangeland management*: erosion and soil compaction, surface flows, loss of vegetation diversity
- (iv) *Sloping land horticulture*: change in physical structure of soil, surface erosion and ravine formation, loss of natural vegetation diversity
- (v) *Pest and disease management*: limited impacts
- (vi) *Participatory forestry and agro-forestry*: loss of forest diversity
- (vii) *Weather forecasting*: no impacts
- (viii) *Off-grid renewable*: reduction of downstream flows, erosion, loss of biological diversity, etc.

### **Potential social impacts**

The activities to be implemented under the project will generate a great number of both direct and indirect positive impacts. Direct positive impacts will be generated by increased production, products and goods which would result in creation of new jobs and respectively, more employment and increased income. Indirect positive impacts will relate to overall improving of business environment, increased production and secured enterprises domestic market position, introduction of advanced technologies and techniques, creating new opportunities for access to local (and foreign) markets, enhancement competitiveness of domestic production and products, contribution to poverty reduction and food safety, and improvement of country's socio-economic conditions.

## **Cumulative impacts**

Cumulative impacts are not likely to be an issue as attention will have to be given to selection of activities based on local environmental conditions. The impacts of activities under the investment grant/loan financing component of the project are expected to be prevented and mitigated through appropriate project design and good operational practices. Cumulative impacts are not likely to be an issue as the proposed activities will be distributed more or less evenly throughout the participating countries.

## **Potential Positive Impacts**

Climate resilience investments to be implemented under the project generate a great number of both direct and indirect positive impacts. Direct positive impacts will be generated by increased agricultural and livestock production, improved water management and renewable energy activities which would result in higher yields, creation of new jobs and respectively, and increased income. Indirect positive impacts will relate to overall improving of agricultural production and business environment, introduction of advanced agricultural technologies and techniques, enhancement competitiveness of domestic production and products, contribution to poverty reduction and food safety, improvement of country's socio-economic conditions and others. The potential impacts and proposed measures to alleviate such impacts are discussed in Table 2.

**Table 2: Impacts and Mitigation of Proposed Project Categories**

Activity	Aspects	Potential adverse and positive impacts	Mitigation measures
<p><i>I. Improving productivity of field and horticultural crops by adopting new and appropriate technologies</i></p> <ul style="list-style-type: none"> <li>- crop diversification,</li> <li>- nurseries,</li> <li>- vineyards and orchards,</li> <li>- improved seeds,</li> <li>- providing of watering,</li> <li>- use of sheets for covering of green houses,</li> <li>- community revolving funds.</li> </ul>	<p>Use of fertilizers and agrochemicals (pesticides, herbicides and insecticides), soil treatment techniques, etc.</p>	<p><b>Adverse Impacts</b></p> <p>Water and soil pollution can be caused by improper application in quantity and type of organic and inorganic fertilizers and agrochemicals.</p> <p>Non-biodegradable polyethylene sheets can pollute the soil surface.</p> <p>Poorly-managed over irrigation can cause erosion of soil, create ravines, rise in level of water table, salinity flooding and disruption of communication, inflow harmful elements from fertilizers and chemicals in to sub soil layers and pollute underground waters.</p> <p><b>Positive Impacts</b></p> <p>Rehabilitation and green cover with orchards and vineyards                      Keeping of bio balance and improvement of landscape.                      Improved productivity of land means better management of soil and water.</p>	<ol style="list-style-type: none"> <li>1. Use of recommended norms of mineral fertilizers, wider introduction and adoption of crop rotation.</li> <li>2. Pruning of twigs of tree crops and inter- row cultivation (to reduce weeds), use of composting.</li> <li>3. Use of appropriate procedures for transport, mixing, application, and disposal of agrichemicals.</li> <li>4. Use only standard doses of agrichemicals (pesticides, herbicides and insecticides permitted by FAO Codex) and selection of agrichemicals based on prevailing soil and weather conditions.</li> <li>5. Storage of agrochemicals in designated places and use containers only by recommended methods strictly following standard procedure and rules.</li> <li>6. Use the IPM for control of pests, use biological methods and biopesticides.</li> <li>7. Use recommended methods and rules for irrigation, properly maintain equipment and infrastructures.</li> <li>8. Use conservation tillage, terraces, and raised ridges that follow land contour, to reduce runoff.</li> <li>9. Selection of seeds with minimal level of pest and disease vulnerabilities.</li> <li>10. Provide regular information and training to communities on all the aspects of protection of environment.</li> </ol>
<p><i>II. Improving on-farm irrigation and water management - rehabilitation of existing canals</i></p>	<p>Digging of trenches and borrow pits, along the canals, secondary effect of transportation of construction materials</p>	<p><b>Adverse Impacts:</b></p> <p>During the construction formation of dust clouds, noise and solid waste, accumulation, and destruction of planted areas</p>	<ol style="list-style-type: none"> <li>1. Moistening of the surface area and providing suitable cover during the transportation</li> <li>2. Improve soil moisture retention by mulching, organic matter incorporation, soil cover, etc.</li> </ol>

## Environmental Management Framework

Activity	Aspects	Potential adverse and positive impacts	Mitigation measures
<ul style="list-style-type: none"> <li>- stabilization of slopes of contour ditches and irrigation</li> <li>- canals repairs and replacement of low powered irrigation pumps</li> <li>- planting shelter belts</li> <li>- irrigation scheduling</li> <li>- alternate furrow irrigation</li> </ul>		<p>Flow of additional waters from the sprinkles</p> <p>Increased soil erosion leading to ravine formation, subsidence and erosion of top soil along the slopes.</p> <p>Rising of the water table level, flooding of farm areas.</p> <p>Possible increase in land salinization</p> <p>Possible downstream impacts on water users.</p> <p><b>Positive Impacts:</b></p> <p>Better control of water flow all year round</p> <p>Improvement of effective natural resources management, greener landscapes, and improvement of microclimate</p>	<ol style="list-style-type: none"> <li>3. Suitable collection and transportation of garbage and solid wastes</li> <li>4. Restoration of soil surface and revegetation of banks with shrubs and grasses</li> <li>5. Select crops compatible with water availability</li> <li>6. Regulated flow diversion and maintenance of irrigation infrastructure</li> <li>7. Provision of high reliability and system operation to ensure optimum use of water</li> <li>8. The use of low saline quality water</li> <li>9. Apply appropriate construction guidelines and standards</li> <li>10. Provide farmers trainings in drip and similar irrigation techniques</li> </ol>
<p><i>III. Improving pasture and rangeland management:</i></p> <ul style="list-style-type: none"> <li>- improving production of fodders</li> <li>- rising mobility of livestock (including repair of shelters in the selected rayons, at points of waterholes for cattle)</li> <li>- pasture rotation and establishment of live fences, for example green fences</li> <li>- sustainable development of pastures</li> </ul>	<p>Proper use and improvement of pasture land and soil, reduction of weeds.</p> <p>Introduction of small construction works.</p> <p>Transportation and excavation of water holes, formation of small field roads, bridges, cause ways with pipes for animal passages.</p>	<p><b>Adverse Impacts</b></p> <p>Soil erosion is possible before the establishment of grasses, especially on steep slopes.</p> <p>Trampling of soil surface may cause reduction of grass and bushes, removing of barks and sets.</p> <p>Reduction of pasture lands and their contraction, at the construction points.</p> <p>Disappearance of bushes used for fencing, can lead to erosion.</p> <p><b>Positive Impacts:</b></p> <p>Reduction of rate of erosion</p> <p>Improvement and maintenance of bio-structures of bushes</p>	<ol style="list-style-type: none"> <li>1. Strict observance of trampling of pasture by livestock</li> <li>2. Regulation of livestock in accordance with the fodder capacity of pasture</li> <li>3. Selection of ways of incorporation of live green plantations and trees on grazing fields</li> <li>4. Construction of storages, sheds, small roads, cause ways</li> <li>5. Creating of special nurseries for multiplication and supply of planting stocks for erosion control and fences</li> </ol>



## Environmental Management Framework

Activity	Aspects	Potential adverse and positive impacts	Mitigation measures
		Decrease in the loss of productive layer on land, improving of microclimate	
<p><i>IV. Sloping land horticulture on the steep lands</i></p> <ul style="list-style-type: none"> <li>- plantations of fruit and nut tree plants on steep lands along the contour line</li> <li>- use micro terraced fruit gardens (ring- and basin shaped and hydrographic systems)</li> <li>- gardens with drip/ spot irrigation, mulching of land surface</li> <li>- use of live embankment (live bushes) Planting of perennial Grasshedges along the contour</li> </ul>	Installation of minitrenches to prevent formation of holes in the soil	<p><b>Adverse Impacts</b></p> <p>Change in physical structure of land use creating ravine erosion, landslides because of natural water course if not managed properly before vegetating.</p> <p>Use of salt water may cause salinization of soil. Irrigation can promote further sliding of soil and cause erosion.</p> <p>Disappearance of bio differences on cultivated areas.</p> <p><b>Positive Impacts</b></p> <p>Greening of watersheds with growing of economically viable trees/ plants.</p> <p>Protection of rainfed cultivable lands and more sustainable use of fragile land protected from further degradation.</p>	<ol style="list-style-type: none"> <li>1. Fast plantation of species, especially terraced rows by local types of plants.</li> <li>2. For irrigation to use appropriate quality of water and the necessary quantity.</li> <li>3. Provide high exploitation reliability of irrigation system.</li> <li>4. Create good drainage system for removing of surface and underground water.</li> <li>5. Provide training for sloping land horticulture, if necessary.</li> <li>6. Strengthen of standards for terracing and provide budget on maintenance.</li> </ol>
<p><i>V. Pest and disease control</i></p> <ul style="list-style-type: none"> <li>- biological control</li> <li>- Integrated measures for pest control (with the use of bio pesticides)</li> </ul>	Collection and transportation of biological controls and plants, preparing biopesticides and solutions.	<p><b>Adverse Impacts</b></p> <p>Limited adverse impacts provided</p> <p><b>Positive Impacts</b></p> <p>Ecologically clean and safe technology</p>	<ol style="list-style-type: none"> <li>1. Correct preparation and proper use of bio pesticides (choose the suitable varieties of bio-pesticide depending on pest target and choose appropriate formulations)</li> <li>2. Provide training as needed on IPM methods</li> </ol>
<p><i>VI. Participatory forestry and agroforestry management</i></p>	Planting and maintenance works	<p><b>Adverse Impacts</b></p> <p>During soil preparation there could be potential for soil erosion and landslides and degradation of biodiversity</p> <p><b>Positive Impacts</b></p>	<ol style="list-style-type: none"> <li>1. Training in species selection and management practices</li> <li>2. Careful selection of species and good management of trees and crops are needed to optimize the production and positive impacts and to minimize negative impacts</li> <li>3. Ensure gender sensitivity and role</li> </ol>

## Environmental Management Framework

Activity	Aspects	Potential adverse and positive impacts	Mitigation measures
		Major potential benefits are identified as soil water erosion reduction, nitrate leaching reduction, carbon sequestration enhancing and landscape diversity improvements	of women in such systems
<i>VII. Improving farmers' access to weather forecasting information for decision-making</i>		<p><b>Adverse Impacts</b></p> <p>None.</p> <p><b>Positive Impacts</b></p> <p>Improved farmer understanding of relationship between weather conditions on disease and pest conditions can lead to better management of such outbreaks and proper application of pesticides and other disease control chemicals</p>	1. Training on weather forecasting and linkage to disease and pest management, fertilizer and pesticide application etc.
<i>VIII. Alternative off-grid source of energy and effective use of energy supply for remote communities</i> - micro hydro power stations - bio-gas utilities - solar energy - micro Wind mills (to harness wind power)	Digging of trenches and pits, along the canals, transportation of materials Improper site selection	<p><b>Adverse Impacts</b></p> <p>Possible damage to reservoir and diversion canals, land erosion etc. Possible exposure to accidents and burning by helium during installations.</p> <p>Change in seasonal water-flow with potential impacts on downstream water users, fish, and aquatic organisms.</p> <p>Water table fluctuations</p> <p>Noise during operations</p> <p><b>Positive impacts:</b></p> <p>Support to preservation of forests and biodiversity on account of dependency on cleaner sources of energy</p> <p>Improved environmental situation</p> <p>Reduced indoor air pollution</p>	<ol style="list-style-type: none"> <li>1. Observance of design conditions, during construction and utilization of the constructed objects</li> <li>2. Avoid construction of micro-hydro facilities in sensitive aquatic habitats</li> <li>3. Choose run of the river rather than impoundment and dams</li> <li>4. Moistening of the surface and use of suitable cover during transportation</li> <li>5. Work only during the day time in the dwelling areas</li> <li>6. Suitable collection and transportation of garbage and solid wastes</li> <li>7. Restoration of the top spoil and replanting</li> <li>8. Mitigate noise and vibrations during operations</li> </ol>

All these impacts are expected to be easily mitigated through good projects design and implementation practices.

### 7. EIA Guidelines for Investment Sub-Projects

The EIA Guidelines for Investment Sub-Projects/Loans section of the EMF would serve as a guiding document for conducting Climate Resilience Investments (referred to as “Investments”) EA. Environmental assessment and monitoring procedures for the Investments are designed to ensure consistency with national environmental requirements as well as World Bank policy. Accordingly, it is proposed that each Investment will be assessed for its environmental impacts.

The key steps in the Environmental Assessment process is outlined below:

*Step 1: Environmental Screening and Project Categorization:* Environmental screening (Annex 1 Part 1) will involve a review of the Investments technical proposal. Typically the proposal would include an environmental section<sup>11</sup> describing the key environmental features of the project site, whether critical natural habitats, forests, or rare and endangered species are likely to be impacted, whether major water courses or groundwater sources will be affected, the type of natural resource abstraction and use the project will entail, waste materials and polluting substances likely to be generated during construction and operation, whether the project will involve pest management, etc. Depending on the nature and scale of the impacts, the Environment Officer of the NCU<sup>12</sup> (and/or participating banks) will inform the project proponents about the decision concerning further environmental documentation required for the sub-project. Three possibilities exist: (i) World Bank environmental category C, or Tajikistan's Category IV, or investments that are not included in any of the categories. No environmental appraisal measures are required for this category, save for a general EIA statement with a list of general and known environment protection measures aimed at ensuring efficient economic activities, (ii) World Bank environmental category B, which usually corresponds to national Category III or, very rarely, Category II. A limited Environmental Impact Assessment and/or a simple management plan (EMP) is required in most cases; and (iii) World Bank environmental category A Proposal, which is considered as ineligible and will be not financed under the project.

The participating banks and the NCU will screen applications and assign the environmental category (Annex 1 Part 2). Given the nature of eligible investments, most Investments are likely to fall under Category C, requiring no further action beyond the screening or an EIA Statement. In case questions regarding environmental impact or appropriate category, the NCU Environment Officer will contact the regional reviewing authority for advice and guidance. If an EIA and mitigation measures are needed, the respective documents need to be agreed by the applicant with the regional reviewing authority and the general environmental requirements must be reflected in the Investment Agreement. The results of the environmental screening are recorded in the application and maintained with the participating bank's files.

In determining the project category, the banks shall proceed from a land allotment statement issued by the district or city/town environmental inspector (if the project is a new project, in a new location with land allotment). The environmental inspector may and should determine the required type of EIA and necessary documents. In certain cases, where it is difficult to classify a project, environmental inspectors consult the region's ecological expertise bodies. During the screening of the Investments, for Investments classified as Category B, the banks will review the screening documents (and follow-up with a visit to the Investment location, if necessitated) and

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<sup>11</sup> The project Operational Manual will include the format and content of the environmental section of the community proposals.

<sup>12</sup> The arrangement for each country screening and environmental approval process will be determined by the institutional arrangements for project implementation established in the respective country.

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identify appropriate mitigation measures. If a site visit is necessitated, the bank's officer will complete the field visit check list (Annex 1 Part 4). The applicant will reflect the recommended mitigation measures proposed by the NCU Environment Officer in the application package. When the bank officer's visit or screening reveals a high or significant risk, the Investment applicant will hire a local consultant to conduct an EIA and prepare an EMP. The draft terms of reference for preparation of an EIA is provided in Annex 1 Part 5. The cost of the EIA can be included in the Investment amount. If the projects are of small scale and require simple EMPs (and are not subject of State Ecological Expertise of the State Committees for Environmental Protection) then the banks will review and approve the EMPs or simple EIAs (Annex 1; Part 3).

In cases, when possible significant adverse impacts are discovered during the Field Site Visit or Environmental Screening, the Environmental Screening and Field Site Visit Checklists are submitted to the regional ecological expertise departments, which issue a preliminary environmental statement listing potential environmental concerns and mitigation measures and determines whether technical expertise is required, either from the national competent authority or other source. If permits from ecological expertise authorities are needed, these are to be obtained by the Investment applicant and submitted to the bank with the Investment proposal. The ecological expertise authority will then issue its approval, if required. Only after the banks receive official approval from ecological expertise authorities for Investments that have significant adverse impacts, will the Investment be considered eligible for financial support under the project.

During the project implementation, the participating banks (and/or district environmental inspectors) should ensure that the environmental mitigation measures are implemented. In the case of non-compliance, the banks (and/or district environmental inspectors) as needed will investigate the nature and reason(s) for non-compliance, and a decision is taken about what is needed to bring an Investment into compliance, or whether financing should be suspended.

### *Sub-project Categories:*

*Investments assessed as Category A, (high environmental risks).* The project will not finance any Category A Investments.

In general cases, as stated above, this category will include all projects included in national Category I. However, it may also include some Category II projects that can generate significant impacts or be implemented in critical natural habitats. To solve this issue, it should be taken into account that the following investments should be considered as having “significant” impacts and respectively should be qualified as Category A projects: (a) significantly affect human populations or alter environmentally important areas, including wetlands, native forests, grasslands, and other major natural habitats; (b) “significant” potential impacts might be also considered the following: direct pollutant discharges that are large enough to cause significant degradation of air, water or soil; (c) large-scale physical disturbance of the site and/or surroundings; (c) extraction, consumption, or conversion of substantial amounts of forest and other natural resources; (d) measurable modification of hydrologic cycle; (e) hazardous materials in more than incidental quantities; (f) and significant involuntary displacement of people and other significant social disturbances. It is expected that the Investments will not fall into the above mentioned circumstances and therefore will not have significant environmental impacts. In the case a Investment that is presented for financing falls under a Category A project, it will be rejected.

To determine a project category, its location should also be considered. There are a number of locations which should be considered while deciding to qualify the project as Category A: (a) in or near sensitive and valuable ecosystems — wetlands, wild lands, and habitat of endangered species; (b) in or near areas with archaeological and/or historical sites or existing cultural and social institutions; (c) in densely populated areas, where resettlement may be required or potential pollution impact and other disturbances may significantly affect communities; (d) in regions subject to heavy development activities or where there are conflicts in natural resource allocation; along watercourses, in aquifer recharge areas or in reservoir catchments used for potable water supply; and on lands or waters containing valuable resources (such as fisheries, minerals, medicinal plants, prime agricultural soils); and (e) in or near areas with a history of industrial activity that utilizes or generates hazardous materials (i.e. potential significant legacy pollution issues). Similarly as above, the project will not support any Investments located in the proximity of mentioned areas.

*Investments assessed as Category B, (moderate environmental risks)* require Secondary Screening during appraisal, and simple mitigation and monitoring arrangements plans.

Annex 2 provides examples of Category A, B and C sub-projects. Based on the results of the screening and project categorization, if a project is classified as Category B project, the environmental requirements would be one of the following: (a) simple Environmental Management Plan Checklists for projects with minor impacts, particularly those that are typical for different small scale agricultural and horticultural activities and on-farm management and small scale construction and rehabilitation Investments<sup>13</sup>; (b) simple EA and EMP for investment projects which are located in areas near natural habitats or larger scale agriculture and horticulture, pasture management investments, as well as participatory forestry and agro-forestry investments; and (c) regular EIA and EMP, for more complex projects, including off-grid renewable micro-hydro and similar investments<sup>14</sup>. The first two category B Investments for each country will be subject to prior review and then post review by the World Bank.

*Step 2: Conducting the EIA and Preparation of EMP:* In those cases where such documentation is required, the project proponents (or involved consultants, acting on their behalf) will prepare the relevant documents for submission within the time indicated by the reviewing authority. The format of a typical EMP is provided in Annex 1 Part 5. Depending on the project's environmental impacts and its category, the environmental documentation could either be presented as an EIA section of the overall project documents for Category II and III projects, or as an EIA statement for Category IV (WB's Category C) .

*Step 3: Environmental Approval and Disclosure of EIA and EMP.* If the projects are of small scale and require simple EMPs (and are not subject of State Ecological Expertise) then the participating banks will review and approve the EMPs or simple EIAs (Annex 1; Part 3). In cases, when possible significant adverse impacts are likely (based on the determination made by the State Ecological Expertise) then the State Ecological Expertise reviews and approves the EIA and EMP. If approval of the SEE is needed, these are to be obtained by the Investment applicant and submitted with the Investment proposal. Only after the participating bank receives official approval from SEE for Investment proposals that have significant adverse impacts, will the Investment be considered eligible for financial support under the project. When approving such projects, the banks will specifically look that the EMP includes monitoring arrangements for the

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<sup>13</sup> A number of such control lists with typical mitigation measures for different types of grant investments were prepared within the World Bank's cotton sector recovery project in Tajikistan and can be used for this project.

<sup>14</sup> Such projects will be financed only within a sub-program for Kazakhstan.

proposed mitigation measures and ensures that the costs of environmental management are accounted for in the project costs.

In case of Category B Investments which involve new constructions, pasture improvement activities and/or alternative energy activities it is necessary to disclose the EIA/EMP document and to conduct public consultations with key stakeholders, including local population. This should be ensured by sub-project beneficiaries. The purpose of the public consultation is to inform locally affected groups about the Investment activities and offer them the opportunity to voice their views of any adverse environmental issues they feel may develop during subproject implementation. Any legitimate issue raised at the public consultation should be included in the EMP. In this way, the concerns of the people will be taken into consideration and reflected in the Investment implementation. In the case of rehabilitation of existing facilities, although there might be no need for a special public hearing the project beneficiary should provide information to all interested parties about the construction by installing a notice plate placed at the rehabilitation. Additionally all Investments specific information will be also publicly available on-line on the NCU website. Documentation of the public consultation outcome is critical and is included in the EMP. Such documentation should contain the (i) date and location of the consultations; (ii) list of individuals consulted; (iii) key issues raised during the consultations; and (iv) the manner in which project design address such issues raised. Overall, the opening of EIA documents will be conducted by *khukumats*, which should arrange, together with investment beneficiaries, public consultations with the local population.

Step 4: Supervision, Monitoring and Reporting: Once project implementation starts, the participating banks (and/or environmental inspectors) will supervise the implementation of the EMP through the course of project fulfilment and specify corrective measures as necessary. The reporting of progress of implementation of the EMP would be the responsibility of the investment recipients and such reports would be submitted to the participating banks and/or the SEE authority, as relevant bi-annually. Monitoring reports during project implementation would provide information about key environmental aspects of the project activities, particularly on the environmental impacts and effectiveness of mitigation measures. Such information enables the client and the Bank to evaluate the success of mitigation as part of project supervision, and allows corrective action to be taken when needed. The EMF identifies monitoring objectives and specifies the type of monitoring, with linkages to the impacts assessed in the EA report and the mitigation measures described in the EMF.

Specifically, the monitoring section of the Investment EMPs would provide: (a) details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements; and, (b) monitoring and reporting procedures to (i) ensure early detection of conditions that necessitate particular mitigation measures, and (ii) furnish information on the progress and results of mitigation. The banks will present short information about the EMF implementation and Investments environmental performances as part of the Progress Reports to be presented to the NCU by the client on a semi-annual basis.

### 8. Integrated Pest Management

While, the project will not fund the use of pesticides and other chemicals, it is likely that investment recipients in agriculture, rangeland and horticulture activities would use pesticides. The issues of pest management can be potentially raised by the project may relate to possible indirect effect of stimulating greater use of agro-chemicals associated with more intensive cultivation and/or higher crop value.

The objective of EMF in this regard is to encourage adoption of Integrated Pest Management (IPM) approach and increase beneficiaries' awareness of pesticide-related hazards and good practices for safe pesticides use and handling as well as to provide relevant training and information dissemination activities.

#### **Principles of the Integrated Pest Management<sup>15</sup>**

The primary aim of pest management is to manage pests and diseases that may negatively affect production of crops so that they remain at a level that is under an economically damaging threshold. Pesticides should be managed to reduce human exposure and health hazards, to avoid their migration into off-site land or water environments and to avoid ecological impacts such as destruction of beneficial species and the development of pesticide resistance. One important strategy is to promote and facilitate the use of Integrated Pest Management (IPM) through preparation and implementation of an Integrated Pest Management Plan (PMP).

Integrated Pest Management consists of the judicious use of both chemical and nonchemical control techniques to achieve effective and economically efficient pest management with minimal environmental contamination. IPM therefore may include the use of:

- a) Mechanical and physical control;
- b) Cultural control;
- c) Biological control, and
- d) Rational chemical control.

Integrated Pest Management is the use of multiple techniques to prevent or suppress pests in a given situation. Although IPM emphasizes the use of nonchemical strategies, chemical control may be an option used in conjunction with other methods. Integrated pest management strategies depend on surveillance to establish the need for control and to monitor the effectiveness of management efforts. World Bank Group in the Environmental, Health, and Safety Guidelines prepared in 2007 provides the following stages should be considered when designing and implementing an Integrated Pest Management Strategy, giving preference to alternative pest management strategies, with the use of synthetic chemical pesticides as a last option. As a first essential step, those who make pest management decisions should be provided with training in identification of pests and beneficial (e.g. natural enemy) species, identification of weeds, and field scouting methods to evaluate which pests are present and whether they have reached an economic control threshold (the density at which they begin to cause economically significant losses).

The World Bank refers to IPM as a mix of farmer-driven, ecologically based pest control practices that seek to reduce reliance on synthetic chemical pesticides. It involves (a) managing pests (keeping them below economically damaging levels) rather than seeking to eradicate them; (b) relying, to the extent possible, on non-chemical measures to keep pest populations low; and

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<sup>15</sup> This section is based on the World Bank Group in the Environmental, Health, and Safety Guidelines prepared in 2007.

(c) selecting and applying pesticides, when they have to be used, in a way that minimizes adverse effects on beneficial organisms, humans, and the environment. In general, IPM combines the following measures: pest monitoring (e.g., pest detection, pest population build-up monitoring to apply economic thresholds for pesticide application) and prediction based models (e.g., degree-day calculations, software solutions), cultural methods (e.g., resistant varieties, crop rotation, cultivation of alternate hosts, selection of planting sites, crop specific traps, adjusting the timing of planting or harvest, crop residue destruction or incorporation, pruning), mechanical methods (collection, hand weeding, barrier exclusion, trapping), physical methods (e.g., heat, cold, humidity, traps, sound), and biological methods (e.g., introduction of imported natural enemies and protection of indigenous natural pest enemies, dissemination and establishment of microbial control agents). IPM can also include the use of natural chemical methods (e.g., attractants, repellents, sterilants and growth inhibitors), plant extracts (e.g., neem oil extracts, pyrethrum extracts from *Chrysanthemum* flowers), genetic methods (e.g., release of sterile or genetically incompatible pests that disrupt natural mating), and regulatory means (e.g., plant and animal quarantines, suppression and eradication programs). These measures must allow the safe integration of pesticides as the last control resort within farmers' traditional cropping and pest management systems. Pesticide resistance management strategies include minimizing pesticide use, shunning tank mixes, avoiding persistent chemicals, and using long-term rotations of pesticides. These should involve alternating among pesticide classes with different modes of action to delay or mitigate onset of the existing resistance by pests.

### Alternatives to pesticide application

Where feasible, an effective IPM strategy will attempt to use alternatives to pesticides. This might include a range of biological, mechanical and physical, and cultural alternatives or approaches. It might also involve a more rational use of chemicals, when it is appropriate or as a last resort. Some possible considerations of alternatives to pesticide use are:

- Rotate crops to reduce the presence of pests and weeds in the soil ecosystem;
- Use pest-resistant crop varieties;
- Use mechanical weed control and/or thermal weeding;
- Support and use beneficial organisms, such as insects, birds, mites, and microbial agents, to perform biological control of pests;
- Protect natural enemies of pests by providing a favorable habitat, such as bushes for nesting sites and other original vegetation that can house pest predators and by avoiding the use of broad-spectrum pesticides;
- Use animals to graze areas and manage plant coverage;
- Use mechanical controls such as manual removal, traps, barriers, light, and sound to kill, relocate, or repel pests.

*Conservation of Pollinators.* Pollinators provide an essential ecosystem service, namely pollination. While, approximately 80 percent of all flowering plant species are pollinated by animals, including vertebrates and mammals, the main pollinators are insects. Maintaining and increasing yields in horticultural crops, seeds and pastures through better conservation and management of pollinators is critically important to obtain better farm incomes for horticulture farmers.

The main threats to losing pollinators' services stem from the following driving forces:

- Habitats required by many pollinators are being lost through *changing land-use patterns* such as increasing agricultural intensification. Pollinators require a range of resources



from their environment for foraging, nesting, reproduction and shelter. The loss of any one of these requirements can cause pollinators to become locally extinct.

- Excessive use or inappropriate application of pesticides and other agro-chemicals is known to have negative impacts on a range of pollinators.
- **Climate change** may potentially be one of the most severe threats to pollinator biodiversity. Substantial distribution changes are predicted for groups such as butterflies.
- **Invasive species** are globally recognized to have major negative impacts across a wide range of taxa.

In order to protect the decline in populations of pollinators, horticulture farmers will be advised to take measures for pollinator conservation that are directly linked to their farming practices. Practices that promote high diversity on-farm, and can form the basis for a more sustainable path of horticulture growth. The deliberate conservation of pollinators – and its synergy with integrated pest control – offers ways to maintain yields while reducing purchased inputs. Many of the measures that promote pollinators can also promote other ecosystem services such as soil improvement by cover cropping, increasing the abundance of diverse soil functional groups; habitat management of natural enemies for pest management; breaking cycles of damaging pests through greater crop diversity, or erosion control through contour plantings and hedgerows. However, the knowledge base for promoting such pollinator-friendly practices into farming systems is very scarce, and the project will support improved knowledge networks that can promote the exchange of such information across regions and crops.

### **Pesticide application**

In the event the use of pesticides is warranted, as a last resort option, users are recommended to take the specific actions to ensure a more safe and sound application of pesticides, a more rational use of chemicals, as well as to reduce and control any potential negative impacts on health and safety, and damage to the environment. If pesticide application is warranted, users are recommended take the following actions:

- Train personnel to apply pesticides and ensure that personnel have received applicable certifications or equivalent training where such certifications are not required;
- Review and follow the manufacturer’s directions on maximum recommended dosage or treatment as well as published reports on using the reduced rate of pesticide application without loss of effect, and apply the minimum effective dose;
- Avoid routine “calendar-based” application, and apply pesticides only when needed and useful based on criteria such as field observations, weather data (e.g., appropriate temperature, low wind, etc.);
- Avoid the use of highly hazardous pesticides, particularly by uncertified, untrained or inadequately equipped users. This includes:
  - Pesticides that fall under the World Health Organization Recommended Classification of Pesticides by Hazard Classes 1a and 1b should be avoided in almost all cases, to be used only when no practical alternatives are available and where the handling and use of the products will be done in accordance with national laws by certified personnel in conjunction with health and environmental exposure monitoring;
  - Pesticides that fall under the World Health Organization Recommended Classification of Pesticides by Hazard Class II should be avoided if the project host country lacks restrictions on distribution and use of these chemicals, or if they are likely to be accessible to personnel without proper training, equipment, and facilities to handle, store, apply, and dispose of these products properly;

- Avoid the use of pesticides listed in Annexes A and B of the Stockholm Convention, except under the conditions noted in the convention and those subject to international bans or phase-outs;
- Use only pesticides that are manufactured under license and registered and approved by the appropriate authority and in accordance with the Food and Agriculture Organization's (FAO's) International Code of Conduct on the Distribution and Use of Pesticides;
- Use only pesticides that are labeled in accordance with international standards and norms, such as the FAO's Revised Guidelines for Good Labeling Practice for Pesticides;
- Select application technologies and practices designed to reduce unintentional drift or runoff only as indicated in an IPM program, and under controlled conditions;
- Maintain and calibrate pesticide application equipment in accordance with manufacturer's recommendations. Use application equipment that is registered in the country of use;
- Establish untreated buffer zones or strips along water sources, rivers, streams, ponds, lakes, and ditches to help protect water resources;
- Avoid use of pesticides that have been linked to localized environmental problems and threats.

### **Pesticide handling and storage**

Contamination of soils, groundwater, or surface water resources, due to accidental spills during transfer, mixing, and storage of pesticides should be prevented by following the hazardous materials storage and handling recommendations. These are the following:

- Store pesticides in their original packaging, in a dedicated, dry, cool, frost-free, and well aerated location that can be locked and properly identified with signs, with access limited to authorized people. No human or animal food may be stored in this location. The store room should also be designed with spill containment measures and sited in consideration of potential for contamination of soil and water resources;
- Mixing and transfer of pesticides should be undertaken by trained personnel in ventilated and well lit areas, using containers designed and dedicated for this purpose;
- Containers should not be used for any other purpose (e.g. drinking water). Contaminated containers should be handled as hazardous waste, and should be disposed in specially designated for hazardous wastes sites. Ideally, disposal of containers contaminated with pesticides should be done in a manner consistent with FAO guidelines and with manufacturer's directions;
- Purchase and store no more pesticide than needed and rotate stock using a "first-in, first-out" principle so that pesticides do not become obsolete. Additionally, the use of obsolete pesticides should be avoided under all circumstances; A management plan that includes measures for the containment, storage and ultimate destruction of all obsolete stocks should be prepared in accordance to guidelines by FAO and consistent with country commitments under the Stockholm, Rotterdam and Basel Conventions;
- Collect rinse water from equipment cleaning for reuse (such as for the dilution of identical pesticides to concentrations used for application);
- Ensure that protective clothing worn during pesticide application is either cleaned or disposed of in an environmentally responsible manner;
- Maintain records of pesticide use and effectiveness.

**Pesticide Disposal**

Excess pesticides that are still usable and not deteriorated in quality should be disposed according to directions on the label. If it cannot be used, some manufacturing companies will accept the pesticide for reprocessing. If the above options are not available, check with the local solid waste management authority, environment or health agency whether there are options available for the disposal of the unwanted chemicals.

Pesticide containers also pose an environment problem if they are not carefully disposed or cleaned. Some recommendations for disposal of pesticides and pesticide containers are provided in Table 5.

**Health and Safety Issues**

By definition, pesticides are poisons, but the toxicity and hazards of different pesticide compounds vary greatly and might be different from organism to organism. Pesticide hazard depends not only on the toxicity, but also on the chance of exposure to toxic amounts of the pesticide. Pesticides can enter the body through oral ingestion, through skin, or through inhalation. There are a number of safety precautions that should be taken when manufacturing, transport, application, storage and handling of pesticides (refer Table 5).

**Typical hazards associated with chemical use and remedial measures:**

Similarly as in the case of the usage of pesticides, fertilizer usage may provide important benefits to horticulture development, but they also pose certain risks associated with accidental exposure of environment and of farmers during their inappropriate handling and usage. To ensure minimization of hazards associated with inappropriate handling, storage and usage of mineral fertilizers, a number of measures can be employed. Table 3 provides information about typical hazard scenarios that that may arise in conjunction with the procurement, handling and storage of pesticides/fertilizers as well as the recommended measures to control the potential risks.

**Table 3. Pesticide/Fertilizer Control Strategy**

Likely Hazard Scenario	Recommended Control Strategy
Spillage	Ensure all storage areas and/or facilities are secure and appropriate. Ensure all fertilizer products can be contained within the storage area and/or facility selected Provide appropriate equipment and materials to clean up a spillage
Transportation and delivery of goods	Cover any loads of fertilizer products whilst in transit Ensure that deliveries of fertilizer products are made at appropriate times Do not accept any containers of fertilizer products that are damaged and/or leaking. Ensure that any spillages that occur during delivery are cleaned up appropriately.
Drift of dust from storage areas and/or facilities	Keep fertilizer products covered and/or sealed Clean up spillages promptly Keep “in use” stocks to the minimum required Staff responsible for storage areas and/or facilities to will ensure that the drift of dust beyond the perimeter is kept to a minimum.
Storage areas - Floors	Keep floor surfaces swept clean of fertilizer to prevent tracking by people and/or vehicles beyond the perimeter. Sweep up and dispose of spillages in a timely and appropriate manner

Likely Hazard Scenario	Recommended Control Strategy
Cross contamination of product	Keep each fertilizer product will in a separate storage container and/or position within the facility and/or area.
Confusion of Product	Maintain an accurate storage manifest/register. Keep products and blends are segregated at all times. Ensure all storage bays and bins are clearly labelled. Ensure all storage, loading and blending plant and equipment is cleaned from all residues when changing from one product to another. Do not store product in bags that are not correctly stamped
Occupational Health and Safety	Contact between fertilizer products, people and livestock will be minimized.
Risk Assessments	Risk Assessments are required to be conducted on the procurement, storage and handling of fertilizer products.
Contact with people and livestock	Managers will develop, implement and monitor the effectiveness of hazard management procedures All persons using fertilizer products are to adhere to the hazard management procedures and adopt safe working practice and ensure that direct contact with fertilizer and the inhalation of fertilizer dust is minimized. Managers are to ensure that staff is made aware of any national and industry regulations which have to be observed.
Personal Protective Equipment	Staff must be provided with appropriate PPE when using fertilizer products.
Lack of appropriate warning safety signage and information	Managers must ensure that appropriate safety warning signs and/or information is displayed/ available regarding nature of hazards and risk control measures.
Poor housekeeping and/or routine maintenance	All staff is responsible for implementing sound housekeeping practices in storage areas and arranging regular routine maintenance for all equipment used.
Defective &/or unserviceable plant & equipment	Conduct regular inspection & testing of equipment and infrastructure to identify what maintenance requirements
Incorrect or inappropriate mixtures of product	Fertilizer blends to be prepared using the right raw materials in the appropriate proportions. All products will be loaded into spreaders etc. in the right condition to the right weight.
No training	Staff will undertake appropriate training.
Lack of appropriate records &/or documentation	All relevant records and documentation to be kept and maintained egg. training records, risk assessments, maintenance schedules, recipes for fertilizer blends, MSDS's etc.

**Pest Management Plan**

The entity which will be dealing with pest management within the projects to be supported under the project has to be guided by the Pest Management Plan (PMP). The content of the PMP should apply to all the activities and individuals working. It should be emphasized also that nonchemical control efforts will be used to the maximum extent possible before pesticides are used.

The Pest Management Plan should be a framework through which pest management is defined and accomplished. The Plan should identify elements of the program to include health and environmental safety, pest identification, and pest management, as well as pesticide storage, transportation, use and disposal. Management plan is to be used as a tool to reduce reliance on

pesticides, to enhance environmental protection, and to maximize the use of integrated pest management techniques.

The PMP shall contain pest management requirements, outlines the resources necessary for surveillance and control, and describes the administrative, safety and environmental requirements. The Plan should provide guidance for operating and maintaining an effective pest management program/ activities. Pests considering in the Plan may be weeds and other unwanted vegetation, crawling insects and other vertebrate pests. Without control, these pests provoke plants' deceases. Adherence to the Plan will ensure effective, economical and environmentally acceptable pest management and will maintain compliance with pertinent laws and regulations. The recommended structure of a *Pest Management Plan* is presented in the Annex 1 Part 6.

*Pest Management Operational Plan:* The objective of the Pest Management in the project is to promote environmentally friendly (hygienic, cultural, and biological or natural) control mechanisms and the judicious use of chemicals in pest control and effectively monitor pesticide use. Implementation of pest management activities under the Project would entail education, training and communication that is defined in a Pest Management Operational Plan. The pest management operational plan defines a broad menu of options for managing and monitoring pest control and pesticide usage under the project. The NCUs will be responsible for communicating the content of the Pest Management Operational Plan to farmers and Grant Investment recipients. It would establish channels of on-going communication with farmer associations, organize orientation workshops and training on IPM techniques as well as the pest management operational plan requirements, which will be at the forefront in terms of use of pesticides and are likely to be exposed to its various and gradual risk.

The NCUs will create awareness among project farmers of the importance of pest and pesticide management in the framework of this Pest Management Operational Plan and avenues created or available for obtaining appropriate pesticides among other things. Each country will prepare a Pest Operational Plan (based on the outline of a Pest Operational Plan provided in Table 4). The plan will also ensure that all farmers have access to information on relevant crop pests and diseases, potential IPM strategies regarding pest control, current list of registered and banned pesticides and information kits would be developed (in local understood languages) on methods for safe use, handling, storage and disposal of pesticides and the consequent environmental and health related impacts of improper use of these pesticides.

**Table 4: Pest Management Operational Plan**

Impact issue/pest and pesticide threat and risk	Desirable mitigation measures	Potential implementation tools	Indicative expected result	Indicative monitoring indicators	Responsibility/ Key implementing actors
Pollution of water resources and aquatic life	Control, manage and supervise pesticide use by farmers	Awareness of proper application and disposal of pesticides and oversight	Farmers trained in sound application and disposal methods	Number of farmers trained, Training records	
	Proper disposal of pesticide containers by resellers/farmers	Pesticide container collection and disposal plan/arrangements	Pesticide container disposal plan being implemented	Number of farmers/ resellers aware of pesticide container disposal needs	

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Impact issue/pest and pesticide threat and risk	Desirable mitigation measures	Potential implementation tools	Indicative expected result	Indicative monitoring indicators	Responsibility/ Key implementing actors
		in place by farmers	by farmer		
Improper use of pesticides by farmers and farm workers	Educate farmers and farm workers on proper use of pesticides and pesticide use hazards	Pesticide hazards and use guide leaflet for the project (include simple pictorial presentations)	Proper use of pesticides by farmers and farm workers	Number of cases of pesticide poisoning occurring under the project	
	Control and supervision of pesticide use on farms by farmers	Awareness of proper application and disposal of pesticides and oversight	Farmers trained in application and disposal of pesticides	Number of farmers trained, Training records	
Poisoning from improper disposal of pesticide containers	Educate farmers, farm workers and local communities on health hazards associated with use of pesticide containers	Pesticide hazards and use guide leaflet for the project	Farmers, farm workers, local communities educated on pesticide use	Number of cases of pesticide poisoning through use of pesticide containers;  Number of farmers returning empty pesticide containers at collection points;	
	Properly dispose pesticide containers	Pesticide container disposal procedures known by farmers	Pesticide container cleaning and disposal being properly implemented	Number of farmers, resellers trained in proper cleaning of pesticide containers	
Impact on post harvest losses due to pests	Farmers have adequate and proper storage facilities	Post-harvest loss reduction based on IPM techniques under implementation	Post- harvest losses avoided or minimized  Applied pesticides registered in conformity with IPM principles	Number of farmers trained in IPM techniques for postharvest storage;  Number and condition of storage facilities in use	
	Farmers monitor incidence of post- harvest pests	Post-harvest loss reduction plan based on IPM techniques in place		Number of cases of postharvest pests	
	Confirm status and integrity of pesticides at storage gate	Inspection of pesticides at farm/storage gate prior to use on		Records of pesticides applied kept by farmers	

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Impact issue/pest and pesticide threat and risk	Desirable mitigation measures	Potential implementation tools	Indicative expected result	Indicative monitoring indicators	Responsibility/ Key implementing actors
	prior to use	random basis			
Abuses in pesticide use	Ensure status and integrity of pesticides purchased and used under project	All pesticides kept in the original well labeled pesticide containers prior to use  No decanting of pesticides under this project by farmers  Random inspection of at farm gate prior to use	Only approved and registered pesticides used under project  Banned pesticides avoided  Expired pesticides avoided / Integrity of pesticide guaranteed at farm gate level containers	List of pesticides used in line with Uzbekistan list of registered and approved pesticides  Cases of pesticides found in non-original pesticides  Inspection records for pesticides at farm gate prior to use	
General health and safety of farmers/crops and environmental hazards	Farmers educated to adopt Good Agricultural Practices (GAP) based upon IPM techniques; and do not use chemical pesticides unless advised by Government regulations	IPM techniques with emphasis on cultural and biological forms of pest control	Compliance with best Pest/ pesticide management	Number of farmers trained in IPM techniques;  Number of farmers implementing IPM on their farms  Frequency of chemical pesticides usage	
	Provide PPEs to Farmers/ farm using personal protection equipment (PPE)	Health and safety policy for farm work	Farmers and accompanying dependents (children) protected against pesticide exposure in the fields	Quantities and types of PPEs are easily available under the project	
	Educate farmers/ farm workers in the proper use of pesticides	Pesticide hazards and use leaflet for the project (include simple pictorial presentations)	Farmers know and use pesticides properly; pesticide hazards and use guide leaflet or flyers produced	Number of farmers trained in pesticide use;  Number of farmers having copies of the pesticide hazard and use guide flyers;	
	Train farmers to	Obsolete and	Obsolete and	Relationship	

## Environmental Management Framework

Impact issue/pest and pesticide threat and risk	Desirable mitigation measures	Potential implementation tools	Indicative expected result	Indicative monitoring indicators	Responsibility/ Key implementing actors
	properly dispose obsolete and unused pesticides	unused pesticide disposal arrangements made by farmer	unused pesticide disposal arrangements implemented by farmer	between pesticide supply and usage	
	Educate farmers to obtain or purchase quantities of pesticides required at a given time and to avoid long term storage of pesticides	Pesticide use farmer plan	Only pesticides needed are purchased; long term storage of pesticides by farmers avoided	Relationship between pesticide supply and usage	
	Farmers trained and aware of emergency response to pesticide accidents and poisoning	Framer emergency response plan in place	Pesticide accidents and emergencies managed under the project	Number of pesticide accidents and emergencies	



### 9. EMF Institutional Arrangements and Capacity Building

National Coordination Units, in each participating country, operating under the supervision of the national focal point and TWG (technical working group), will be responsible for ensuring awareness raising and outreach of investment opportunities, providing training for investment proposal preparation, screening proposals, submitting investment proposals to the Climate Change Secretariat for Central Asia (CCSCA), based on TWG and focal point recommendations, monitoring investment implementation, and ensuring compliance with Bank safeguards.

The NCUs will receive capacity building in environmental management. It will be responsible for performance in planning and implementing measures necessary to address safeguard policy issues to the satisfaction of the Bank. The NCUs Environmental Officer would be overall responsible for projects safeguards issues.<sup>16</sup>

#### Major Responsibilities of the NCU

The NCUs will ensure that the project activities are being assessed from environmental point of view and that the EMPs are adequately implemented. In this regard this body will be responsible for:

- (b) coordination of environmental and EA related issues;
- (c) monitoring of the environmental impacts within the overall monitoring of the Investments implementation;
- (d) communication with the national EIA competent authority; and
- (e) ensuring the links between an EIA and Investments i.e. to support the proper implementation of the conditions given by an EIA within the Investments realization.

#### Key responsibilities of participating banks

The participating banks will play a decisive role in EMF implementation and will be responsible for ensuring environmental assessment for any investment subproject. They will be involved in the EIA process from subproject screening to implementation. They will screen subprojects and determine their category, as well as the type of documents the investment beneficiaries will need to prepare. Then they will need to study all environmental documents submitted by beneficiaries and make a decision on project financing. They will also monitor EMP performance and, if they find out that the respective beneficiary fails to perform the prescribed environment protection measures, they will have the right to cancel project financing. EIA documents for the first three Category B subprojects will be submitted to the World Bank for preliminary approval.

When assessing subprojects, the banks will need to ensure that they comply with Uzbekistan and the World Bank's environmental requirements, as well as this document. The banks will keep all environmental assessment documents in their files and provide them as requested by the NCU or the World Bank. In particular the banks will conduct the following:

- (a) Investment environmental screening;
- (b) carry out the evaluation of the Investment's eligibility from the environmental point of view;
- (c) provide necessary information on the environmental issues to the Investments applicants (especially inform them about the environmental criteria to be used, explain all obligations regarding the EIA procedure etc.);

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<sup>16</sup> The draft terms of references for this officer are provided in Annex 3.

(d) supervising independently or jointly with the National Environmental Agencies the mitigation and environmental protection measures stipulated in Environmental Management Plans.

### Capacity Building

*Training for the NCU Safeguard Specialists:* In order to ensure successful implementation of the EMF requirements it is necessary to provide a series of capacity building activities. In particular, it is proposed that prior to commencement of the investment grant program, the Climate Change Secretariat for Central Asia under ICSD would organize environmental safeguard training for all participating countries to ensure that the respective country environmental safeguard specialists are trained and capable of managing the environmental safeguard review and approval process for the investment programs. The conduct of the regional training would be contracted to a selected environmental NGO or a design institute with EA experience. The regional EIA training will broadly consist of the following topics: (i) Concept of EIA with relation to sustainable development framework; (ii) theory and practice of EIA; (iii) purpose benefits and justification of EIA in the context of development; (iv) EIA in project cycle; (v) introduction to EIA process, including screening, scoping, preparation of TORs and work plans, EIA study and reporting; impact analysis and prediction, etc.; (vi) EIA review process and decision making process; (vii) post EIA monitoring, supervision and reporting, etc. The contract for the training will also include the preparation of an Environmental Impact Training Resource Manual that could be used by the respective NCU environmental safeguard specialists for in-country training.

Subsequently, in-country training would be carried out the individual NCU environmental safeguard specialists. Depending on the specific implementation arrangements instituted at each country, training on safeguards could be extended to regional or sector staff, as appropriate.

*Training for participating banks.* To avoid duplication with similar projects in Tajikistan, it was decided that the investment program would be implemented using the scheme approved for another World Bank's activity, the Horticulture Development Project. That project also envisioned that a loan facility would be opened in two banks, to provide loans to farmers. Accordingly, before approving the current project, respective measures will be taken within the Agriculture Commercialization Project, to build the capacity of the participating banks in environmental assessment. The program will be similar to the training program for NCU specialists.

*Training for investees.* Another critical group to be exposed to the importance of the environment concerns includes entrepreneurs from agricultural, energy and other sectors receiving investments should be provided advices on use better available techniques to prevent/ mitigate impact and promote sustainable agriculture, rangeland and alternative energy technologies. The workshops for this group would include environmental awareness and a practical exercise to observe and learn about sustainable agricultural and rangeland management practices, alternative energy and best available techniques in integrated pest management.

The individual country NCU will develop the requirements for staffing, capacity building and training needs specifically for each country to ensure an efficient management of environment safeguard responsibilities.

In order to ensure successful EMF implementation, a series of capacity building activities are necessary for which the project has to provide adequate funding. A tentative budget for proposed capacity building activities and trainings for an individual is presented in Table 5 below. A more detailed budget to cover all EMF related activities (training, capacity building, awareness, independent review and monitoring of EMF implementation) will be developed by each country.

**Table 5: Estimated tentative individual country budget for capacity building activities**

Target Group	Purpose of Training	Number of Workshops/Activities	Costs of Workshop/Activity in USD
<b>A. Environment Management</b>			
1. NCU staff, and grant/loan approval entities	To ensure that NCU and other relevant grant/loan approving entities are aware about importance of the environment and know how to recognize the impacts that various funded activities may have on the environment.	2 workshops (YR1 and YR4)	5,000/workshop
2. NCU Environmental Safeguard Specialist	To provide NCU environmental safeguard specialist with knowledge on the screening of the projects, EIA process and EIA review/study tour	2 overseas (in Central Asia) regional training tours (YR1)	5,000/study tour
3. Sub-borrowers/project beneficiaries	Environmental awareness and a practical exercise to observe and learn about sustainable agricultural practices and best available techniques and industry and agriculture	2 workshops (YR1, YR2)	4,000/workshop
4. Farmers/farmer groups	To provide farmers/grantees with knowledge on environmental issues and environmental management techniques and procedures	two-day in-country regional workshop	4,000/workshop
5. Regional/Local Government Officers overseeing investment grants	Training on use of environmental guidelines, how to identify sub projects that may fall into one of the Bank's environmental categories, and in which case will require a full and/or a partial EIA, and, to identify activities that may affect the environment and in organizing the subprojects EIAs	2 workshops (YR1, YR3)	5,000/workshop
<b>B. Pest Management</b>			
6. NCU and agriculture staff	To ensure that NCU and sector staff are aware about environmental and health related concerns of pesticide use and the value of promoting integrated pest management	2 workshops (YR1 and YR2)	10,000/workshop
7. Sub-borrowers/project beneficiaries	Awareness and a practical exercise to observe and learn about integrated pest management practices and best available techniques for horticulture and safe use of pesticides	3 workshops (YR1, YR3 and YR5)	4,000/workshop

### **Funding for EMPs Implementation**

During the (re)construction/implementation phase, the EMP implementation will be funded by the subproject beneficiaries. All (re)construction and installation activities will be provided by investment recipients

### **10. Environmental Supervision and Reporting**

Since the proposed types of investments are very small with insignificant impacts and in most cases the EIAs and EMPS will be reviewed and approved by the participating banks. In rare cases, when impacts are expected to be significant, the review and approval of the EIA and EMPs will be undertaken by the State Ecological Expertise. No activity will be permitted to start a subproject until a favorable official written approval is received.

#### **Supervision and monitoring activities**

During subproject implementation the participating banks and the NCU will have overall supervision responsibility for assuring that the measures indicated in the EMP are being properly performed. Independently, or in collaboration with the national environmental authorities they will perform the Investment environmental supervision during both construction and operation phases as specified in the monitoring plan of the EMP.

#### **Reporting**

Regular Investment progress reports should include a section entitled “Environmental Management”. The section should be as brief as possible: providing a condensed description of the monitoring activities, any issues identified and how they were or are planned to be resolved.

#### **Subproject beneficiaries’ responsibilities**

The actual investment implementation will be carried out by its beneficiary or contractors selected on its behalf. They have to operate in full compliance with national environmental legislation and with the EMP requirements. Further, the beneficiaries are obliged to follow regulative requirements of the national law related to occupational health and safety; environmental protection. They will also be requested to designate a person in charge of environmental and safety issues and for implementing the EMP.

### **11. EMF Disclosure**

The EMF draft document was discussed with all stakeholders. To this end, on May 4, 2015, the Rural Restructuring Agency published the document on its webpage (<http://www.rra.uz>) so that any interested persons could read the document and take part in public discussions. The discussion took place on May 11, 2015. The participants included members of the program working group and representatives of interested institutions (agriculture, environment protection, research institutes). It was pointed out at the discussion that the draft EMF covers almost all possible impacts and mitigation measures, as well as environmental assessment and control procedures. Overall, the EMF was approved by all participants in the meeting. After finalization, the EMF was again presented at the Agency's website and sent to the World Bank to be disclosed in its InfoShop.

# **Annexes**

**ANNEX 1. Environmental Screening Checklist**

**PART 1**

**GRANT/LOAN RECIPIENT ENVIRONMENTAL SCREENING CHECKLIST**

*(to be completed by Climate Investment Grant Recipient)*

**1. Investment Title:**

**2. Brief Description of Investment activity** to include: nature of the project, project cost, physical size, site area, location, property ownership, existence of on-going operations, plans for expansion or new construction.

**3. Will the project have impacts on the environmental parameters** listed below during the construction or operational phases? Indicate, with a check “X”, during which phase impacts will occur and whether mitigation measures are required.

Environmental Component	Construction Phase	Operational Phase	Mitigation Measures
<b>Terrestrial environment</b>			
Soil Erosion & Degradation: Will the project involve ploughing/plant cultivation on the slopes?			
Habitats and Biodiversity Loss: Will the project involve use or modification of habitats (pasturing on and ploughing up the steppe areas, cutting or removal of trees or other natural vegetation, etc.)			
Land degradation: Will the project apply pesticides?			
Land, habitats & ecosystems degradation: In case of rangeland management and livestock production, will the project contribute to land, habitats and ecosystems degradation?			
Land & soil degradation: Will the project involve land excavation?			
Generation of solid wastes, including toxic wastes?			
Will the project located in vicinity of protected areas or other sensitive areas supporting important habitats of natural fauna and flora?			
Agricultural crop production & plantation crop production - will the project presume appropriate agricultural practices?			
Biodiversity Loss: enlargement of area under the agricultural crop production			
Soil & underground water pollution			
Land degradation, water pollution & aesthetics:			
Construction			
Other impacts			
<b>Aquatic environment</b>			
Water Quantity: Will the project involve water use and extraction?			
Water Quality/Pollution: Will the project contribute to surface water pollution?			

## Environmental Management Framework

Underground and Surface Water Pollution: Will the project apply pesticides and inorganic fertilizers contributing to surface water pollution?			
Loss of Biodiversity: Will the project located in vicinity of protected area or wetlands supporting both local avifauna and birds on passage?			
Degradation of natural aquatic ecosystems			
Weeds, pests, diseases: Will the project contribute to spreading of weeds, pests and animal and plant diseases?			
Will the project contribute to sedimentation of waterbodies?			
Other impacts			
<b>Socio-economic environment</b>			
Will the project assure non-deterioration of human health, occupational safety and non-disturbance of residents living near project area?			
Does the project require public consultation to consider local people environmental concerns and inputs?			
Social impacts			

4. For the environmental components indicated above, and using the information (examples) provided in the table below **describe the mitigation measures that will be included during the construction (C) or operational (O) phase of the project or both (B)**

Environmental Component	Phase (C, O or B)	Mitigation measures

*Sub-borrower:*

*Signature:*

*Date:*

**Examples of Mitigation Measures**

(for more detailed description of listed below and other potential mitigation measures refer to Table 3 above)

Environmental Component	Mitigation measures
<b>Terrestrial environment</b>	
Soil Erosion & Degradation: Will the project involve ploughing/plant cultivation on the slopes stimulating soil erosion and landslides?	<ol style="list-style-type: none"> <li>1) Ploughing across the slope</li> <li>2) Contour tillage</li> <li>3) Avoid creation of new terraces since it is linked with loss of topsoil, etc.</li> </ol>
Habitats and Biodiversity Loss: Will the project involve use or modification of habitats (pasturing on and ploughing up the steppe areas, cutting or removal of trees or other natural vegetation, etc.)	<ol style="list-style-type: none"> <li>1) Avoiding use of remained natural or semi-natural steppe areas for pasturing and crop production</li> <li>2) Avoid, where possible, cutting of trees and other natural vegetation, etc.</li> <li>3) Minimize loss of natural vegetation/ Maximal preservation of vegetation during construction</li> </ol>
Land degradation: Will the project apply pesticides?	<ol style="list-style-type: none"> <li>1) Use of less harmful (non-persistent) pesticides</li> <li>2) Not to apply more pesticides than needed</li> <li>3) To ensure appropriate pesticides handling to avoid contaminated surface runoff, etc.</li> <li>4) Use of Integrated pest management approaches</li> </ol>
Land, habitats & ecosystems degradation: In case of rangeland management and livestock production, will the project contribute to land, habitats and ecosystems degradation?	<ol style="list-style-type: none"> <li>1) Not to exceed pastures' capacity and avoid overgrazing</li> <li>2) Where possible, use of stabling</li> <li>3) To develop sown pastures</li> <li>4) Where possible use rotational grazing, to fence grazing areas to use them subsequently, giving to others possibility to restore, etc.</li> <li>5) Not to graze in natural areas in early spring and late autumn, etc.</li> </ol>
Land & soil degradation: Will the project involve land excavation?	<ol style="list-style-type: none"> <li>1) To dislocate excavated topsoil to adjacent agricultural lands</li> </ol>
Generation of solid wastes, including toxic wastes?	<ol style="list-style-type: none"> <li>1) Wastes reuse and recycling</li> <li>2) Disposal on authorized landfills including on special toxic wastes disposal sites</li> </ol>
Will the project located in vicinity of protected areas or other sensitive areas supporting important habitats of natural fauna and flora?	<ol style="list-style-type: none"> <li>1) Consideration of alternative locations, where possible</li> <li>2) Careful timing of works and work seasonally, as appropriate: to avoid construction during breeding season</li> <li>3) Where possible, to fence the area under construction to lessen occasional disturbance on habitats and biodiversity</li> <li>4) Use natural meadows and grasslands rather for mowing than grazing</li> <li>5) Inform personnel about importance of adjacent environmentally important area, if any, etc.</li> </ol>
Agricultural crop production & plantation crop production - will the project presume appropriate agricultural practices?	<ol style="list-style-type: none"> <li>1) Appropriate crop rotation: fallow land – wheat – maize – sunflower – lucerne – lucerne (2 years long) – legumes (pea, haricot, etc.) / wheat maize, etc./ or rye- maize-sunflower-Lucerne-Lucerne-legumes-rye, etc</li> <li>2) Ploughing and tillage: ploughing across the slope &amp; contour tillage</li> <li>3) On lands which are subject to erosion preferable cultivation of plants with require dense sowing (e.g. wheat, rye, etc.) and avoid cultivation of tilled crops (e.g., maize, sunflower)</li> <li>4) Orchards: creation of grass strips between the rows, deep cultivation between the rows</li> <li>5) Where possible, to prefer agricultural land arrangement as</li> </ol>



Environmental Component	Mitigation measures
	follows: areas with cultivated crops alternated with areas used for pasturing and orchards, etc.
Biodiversity Loss: enlargement of area under the agricultural crop production	Where possible, to plant (or maintain) green corridors to ensure movement of terrestrial fauna
Soil & underground water pollution	<ol style="list-style-type: none"> <li>1) Fuel and lubricants: use of specially arranged sites (with concrete floor) for their handling and storage to avoid their leakages into the soil and runoff into waterbodies</li> <li>2) Pesticides: see above</li> <li>3) Use of special platforms and tanks with a waterproof bottom for accumulation of manure and preparing of organic fertilizers, etc.</li> </ol>
Land degradation, water pollution & aesthetics: Construction	<ol style="list-style-type: none"> <li>1) Careful selection of location for and planning of the project</li> <li>2) To minimize construction site's size and design work to minimize land affected</li> <li>3) Where possible, to execute construction works during dry season to avoid excessive contaminated runoff</li> <li>4) Properly arranged waste disposal sites</li> <li>5) Cleaning of construction site, replacing the lost trees, re-vegetation of work area, etc.</li> </ol>
Other impacts?	Other measures?
<b>Aquatic environment</b>	
Water Quantity: Will the project involve water use and extraction?	<ol style="list-style-type: none"> <li>1) To ensure natural flow of water/ minimum disruption of natural streams flows</li> <li>2) To install water meters to control and minimize water use</li> <li>3) Avoid or minimize surface water abstraction in case downstream the wetland is situated. etc.</li> </ol>
Water Quality/Pollution: Will the project contribute to surface water pollution?	<ol style="list-style-type: none"> <li>1a). For small rural enterprises: to install local wastewater treatment facilities (e.g., septic tanks)</li> <li>1b). For big enterprises: not to exceed established limits of pollutants in effluents</li> <li>2) To minimize water and mud collection</li> <li>3) Where possible, to renovate existing sewerage system/ensure connection to municipal sewerage system</li> <li>4) To arrange properly waste disposal sites</li> </ol>
Underground and Surface Water Pollution: Will the project apply pesticides and inorganic fertilizers contributing to surface water pollution?	<ol style="list-style-type: none"> <li>1) See above</li> <li>2) Where possible, to plant at least bush vegetation downslope to reduce pollutants surface runoff into waterbodies</li> </ol>
Loss of Biodiversity: Will the project involve introduction of alien species (e.g., in case of aquaculture projects)?	<ol style="list-style-type: none"> <li>1) Where possible, to avoid introduction of alien species</li> <li>2) In case of use of already introduced alien species to ensure their noncoming into natural ecosystems, e.g., during water discharge from the ponds, etc.</li> </ol>
Loss of Biodiversity: Will the project located in vicinity of protected area or wetlands supporting both local avifauna and birds on passage?	<ol style="list-style-type: none"> <li>1) Not to exceed established limits of pollutants in effluents and emissions</li> <li>2) To avoid or minimize construction and operational activities during breeding and migration periods, etc.</li> </ol>
Degradation of natural aquatic ecosystems	<ol style="list-style-type: none"> <li>1) Avoid application of pesticides in the strip with width of 300 m along the natural surface waterbodies,</li> <li>2) Avoid cutting of trees and other natural vegetation along the waterbodies</li> <li>3) Avoid coming of alien species into natural waterbodies,</li> </ol>

## Environmental Management Framework

Environmental Component	Mitigation measures
	4) Properly arranged waste disposals sites, etc.
Weeds, pests, diseases: Will the project contribute to spreading of weeds, pests and animal and plant diseases?	<ol style="list-style-type: none"> <li>1) Avoid cultivation of plant mono-culture on agricultural lands</li> <li>2) Appropriate pest management</li> <li>3) Giving the priority to the agro-technical and biological measures for the control of weeds, pests, and diseases</li> <li>4) In cattle farms, to adhere established veterinary rules to prevent or minimize animal diseases, etc.</li> </ol>
Sedimentation of waterbodies	<ol style="list-style-type: none"> <li>1) To avoid excessive soil erosion: see above</li> <li>2) Minimize soil processing</li> <li>3) Provide retention/ sedimentation ponds, as necessary</li> <li>4) To control reed harvesting ( to avoid over-harvesting)</li> </ol>
Other impacts?	Other measures?
Socio-economic environment	
Will the project assure non-deterioration of human health, occupational safety and non-disturbance of residents living near project area? (mainly for construction activities)	<ol style="list-style-type: none"> <li>1) To ensure collective and individual protective measures (work clothes, masks, shoes), when needed.</li> <li>2) To adhere established occupational safety requirements as well as simple rules, e.g.:               <ol style="list-style-type: none"> <li>a. water spaying twice a day during construction to avoid dust</li> <li>b. Permanent ventilation of internal areas</li> <li>c. timing of work</li> </ol> </li> <li>3) To conduct regular instructing of personnel on health and occupational safety requirements</li> <li>4) To restrict vehicle speeds and trough-traffic in residential areas, especially trucks</li> <li>5) Restrict trough-traffic in residential areas</li> <li>6) Work timing to minimize disturbance/ restrict construction to certain hours</li> <li>7) Restrict movement of hazardous materials in residential areas/ regulation of transportation of materials; apply any load restriction required during and post construction periods</li> <li>8) Incorporate safety and environment protection requirements in the project contract documents, etc.</li> </ol>
Does the project require public consultation to consider local people environmental concerns and inputs?	If yes, anticipated public concerns, e.g., project location, waste disposal sites, harmful emissions into environment, aesthetic arrangement of site under construction activities? etc.
Social impacts	Appropriate project design: location, methods of construction, use of safe technologies during operation period, work timing, careful decommissioning, etc.

**ANNEX 1. ENVIRONMENTAL SCREENING CHECKLIST**

**PART 2**

**INITIAL ENVIRONMENTAL SCREENING CHECKLIST**

*(to be completed by the participating bank as appropriate)*

1. Project Environmental Category (B or C)
  
2. Environmental Assessment Required (Yes or No)
  
3. Type of Environmental Assessment:
  - 3.1 Partial EIA for Category B projects
  
  - 3.2 EMP Checklists for small scale construction/reconstruction activities
  
4. Types of EA documents:
  - 4.1 Partial EIA, including site assessment and EMP for category B projects
  
  - 4.2 Site assessment and EMP checklists for small scale category B projects
  
5. What environmental issues are raised by the proposed investment?
  
6. If an environmental assessment is required, what are the specific issues to be addressed?
  
7. If a Pest Management Plan is required, what specific concerns need to be addressed?
  
8. What is the time frame and estimated cost of conducting the environmental assessment?

***Environmental Screener:***

***Signature:***

***Date:***

**ANNEX 1. Environmental Screening Checklist**

**PART 3**

**FINAL ENVIRONMENTAL SCREENING CHECKLIST**

*(to be completed by the participating bank)*

1. Was an Environmental Impact Assessment needed? (Y/N) \_\_\_\_ If “Yes”, was it done? \_\_\_\_
2. Have national and World Bank requirements for public consultation been met and fully documented? (Y/N) \_\_\_\_\_
3. Was an Environmental Management Plan prepared? (Y/N) \_\_\_\_\_
4. Was a Pest Management Plan needed? (Y/N) \_\_\_\_ If “Yes”, was it done? \_\_\_\_
5. Are the mitigation measures to be included in project implementation adequate and appropriate? (Y/N) \_\_\_\_\_
6. Will the project comply with existing pollution control standards for emissions and wastes? (Y/N) \_\_\_\_ If “No”, will an exemption be sought? \_\_\_\_\_
7. Is an Environmental Monitoring Plan necessary? (Y/N) \_\_\_\_ If so, has it been prepared? (Y/N) \_\_\_\_ Approved by the NCU? \_\_\_\_\_
8. What follow-up actions are required by the proponent and NCU?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
9. Were public consultations held concerning potential environmental impacts of the proposed sub-project? (Y/N) \_\_\_\_ Were minutes recorded? (Y/N) \_\_\_\_

Dates:

Participants:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
*Environmental Screener*

*Date:*

**ANNEX 1. Field Inspection Checklist**

**PART 4**

**FIELD INSPECTION CHECKLIST**

*(to be completed by the participating bank for Category B subprojects)*

**Project name:**

**Date/time of Visit:**

**Region/location:**

**Other participants:**

**Current activity and site history**

- Who is the site contact (name, position, contact information)?
- What is the area of the site to be used for project activities?
- What are current uses of the site?
- What were previous uses of the site (give dates if possible)?

**Environmental Situation**

- Are there sensitive sites nearby (nature reserves, cultural sites, historical landmarks)?
- Are there water courses on the site?
- What is the terrain or slope?
- Does the site experience flooding, waterlogging or landslides? Are there signs of erosion?
- What are the neighboring buildings (e.g. schools, dwellings, industries) and land uses? Estimate distances.
- Will the proposed site affect transportation or public utilities?

**Licenses, Permits and Clearances**

- Does the site require licenses or permits to operate the type of activity proposed? Are these available for inspection?
- What environmental or other (e.g., health, forestry) authorities have jurisdiction over the site?

**Water Quality Issues**

- Does the proposed activity use water for any purposes (give details and estimate quantity). What is the source?
- Will the proposed activity produce any effluent? (estimate quantity and identify discharge point)
- Is there a drainage system on site for surface waters or sewage? Is there a plan available of existing drainage or septic systems?
- How waste water is managed (surface water courses, dry wells, septic tanks)?

**Soils**

- What is the ground surface (agricultural land, pasture, etc.)?
- Will the project damage soils during construction or operations?
- Will the project affect the landscape significantly (draining wetlands, changing stream courses)

**Pesticide Issues**

- What are the procedures for transport, application, storage and disposal of pesticide

## Environmental Management Framework

- Are members of the grant recipient work force trained in proper storage and use of pesticides?
- Are pesticides being used as a last resort?
- Are there efforts to use integrated pest management measures?

### **Biological environment**

- Describe vegetation cover on the site.
- Is there information about rare or threatened flora and fauna at or near the site? If yes, would the project have an impact or increase risk to the species?
- Obtain a list of vertebrate fauna and common plants of the site (if available).
- Note potential negative impacts on biota if project proceeds.

### **Visual Inspection Procedures**

- Try to obtain a site map or make a sketch to mark details.
- Take photos, if permitted.
- Walk over as much of the site as possible, including boundaries, to note adjacent activities.
- Note any odors, smoke or visual dust emissions, standing water, etc.

**ANNEX 1. Terms of Reference for Conducting an Environment Impact Assessment**

**PART 5**

**TERMS OF REFERENCE**

*(For conducting an Environmental Impact Assessment Study for Categories B of subprojects)*

An Environmental Assessment Report Categories B projects focuses on the significant environmental issues raised by a Sub-project. Its primary purpose is to identify environmental impacts and those measures that, if incorporated into the design and implementation of a project can assure that the negative environmental effects will be minimized. The scope and level of detail required in the analysis depend on the magnitude and severity of potential impacts.

The environmental assessment report should include the following elements:

- a. *Executive Summary.* This summarizes the significant findings and recommended actions.
- b. *Policy, legal and administrative framework.* This section summarizes the legal and regulatory framework that applies to environmental management in the jurisdiction where the study is done.
- c. *Project Description.* Describes the nature and scope of the project and the geographic, ecological, temporal and socioeconomic context in which the project will be carried out. The description should identify social groups that will be affected, include a map of the project site, and identify any off-site or support facilities that will be required for the project.
- d. *Baseline data.* Describe relevant physical, biological and social condition including any significant changes anticipated before the project begins. Data should be relevant to project design, location, operation or mitigation measures.
- e. *Environmental impacts.* Describe the likely or expected positive and negative impacts in quantitative terms to the extent possible. Identify mitigation measures and estimate residual impacts after mitigation. Describe the limits of available data and uncertainties related to the estimation of impacts and the results of proposed mitigation.
- f. *Analysis of Alternatives.* Systematically compare feasible alternatives to the proposed project location, design and operation including the "without project" alternative in terms of their relative impacts, costs and suitability to local conditions. For each of the alternatives quantify and compare the environmental impacts and costs relative to the proposed plan.
- g. *Environmental Management Plan (EMP).* If significant impacts requiring mitigation are identified, the EMP defines the mitigation that will be done, identifies key monitoring indicators and any needs for institutional strengthening for effective mitigation and monitoring to be carried out.
- h. *Appendices.*

This section should include:

- (i) The list of EA preparers;
- (ii) References used in study preparation;
- (iii) A chronological record of interagency meetings and consultations with NGOs and effected constituents;
- (iv) Tables reporting relevant data discussed in the main text, and
- (v) A list of associated reports such as resettlement plans or social assessments that were prepared for the project.

**Attachment 1.** Environmental *Management* Plan Format

Phase	Environmental impact	Mitigating measure(s)	Cost		Institutional Responsibility		Remarks
			Install	Operate	Install	Operate	
<i>Construction</i>							
<i>Operation</i>							
<i>Decommissioning</i>							

*Sub-borrower:*

*Signature:*

*Date:*

**Attachment 2.** Environmental *Monitoring* Plan Format

Phase	What parameter is to be monitored?	Where will the parameter be monitored?	How will the parameter be monitored?	When will the parameter be monitored?	Why is the parameter being monitored?	Cost		Institutional Responsibility	
						Install	Operate	Install	Operate
<i>Baseline</i>									
<i>Construction</i>									
<i>Operation</i>									
<i>Decommissioning</i>									

*Sub-borrower:*

*Signature:*

*Date:*



## ANNEX 1. Recommended Structure for Pest Management Plan

### PART 6

(Structure of Pest Management Plan)

1 **Background** which would outline

- i) the purpose of the Plan,
- ii) indicate *pest management authorities*, and
- iii) pest management program *objective*;

2. **Responsibilities of individuals** (e.g., Program Director, Health Chair, Pest Management Coordinator, Pest Management Personnel, etc.)

3. **General Information** which should provide data on land use and soil, in the area where the pesticides are applied; climate, geo-morphology, settlements in the area of concern, population, surface water, etc. as well as inventory of land use and layout of facilities

4. **Priority of Pest Management** (e.g., undesirable vegetation, vertebrate pests, etc.)

### 5. **Integrated Pest Management**

5.1 *Principles of the Integrated Pest Management* are:

a) *Mechanical and Physical Control*. This type of control alters the environment in which a pest lives, traps and removes pests where they are not wanted, or excludes pests. Examples of this type control include: harborage elimination through caulking or filling voids, screening, etc.

b) *Cultural Control*. Strategies in this method involve manipulating environmental conditions to suppress or eliminate pests. For example, spreading manure from stables onto fields to dry prevents fly breeding. Elimination of food and water for pests through good sanitary practices may prevent pest populations from becoming established or from increasing beyond a certain size.

c) *Biological Control*. In this control strategy, predators, parasites or disease organisms are used to control pest populations. Sterile flies may be released to lower reproductivity. Viruses and bacteria may be used which control growth or otherwise kill insects. Parasitic wasps may be introduced to kill eggs, larvae or other life stages. Biological control may be effective in and of itself, but is often used in conjunction with other types of control.

d) *Chemical Control*. Pesticides kill living organisms, whether they will be plants or animals. At one time, chemicals were considered to be the most effective control available, but pest resistance rendered many pesticides ineffective. The trend is to use pesticides which have limited residual action. While this has reduced human exposure and lessened environmental impact, the cost of chemical control has risen due to requirements for more frequent application. Since personal protection and special handling and storage requirements are necessary with the use of chemicals, the overall cost of using chemicals as a sole means of control can be quite costly when compared with nonchemical control methods.

5.2 *Integrated Pest Management Outlines*.

This sub-chapter addresses each major pest or category of similar pests is addressed, by site, in separate outlines.

5.3 *Annual Workload for Surveillance, Prevention, and Control*.

In this sub-chapter has to be indicated the number of man-hours expended for surveillance, prevention, and control of pests.

6. **Health and Safety.** This chapter should contain health and safety requirements as follows:

6.1 *Medical Surveillance of Pest Management Personnel.* All personnel who apply pesticides have to be included in a medical surveillance program.

6.2 *Hazard Communication.* Pest management personnel are given hazard communication training, to include hazardous materials in his workplace. Additional training is to be given to new employees or when new hazardous materials are introduced into the workplace.

6.3 *Personal Protective Equipment.*

In this chapter has to be described approved masks, respirators, chemical resistant gloves and boots, and protective clothing (as specified by applicable laws, regulations and/or the pesticide label) are provided to pesticide applicators. These items are used as required during the mixing and application of pesticides. Pesticide-contaminated protective clothing is not be laundered at home but commercially. Severely contaminated clothing is not laundered, but is considered a pesticide-related waste and disposed, as applicable for hazardous waste.

6.4 *Fire Protection.* The fire safety protection requirements has to be established; the pest management coordinator has to control implementation of measures to prevent fire.

7. **Environmental Considerations.**

7.1 *Protection of the Public.* Precautions are taken during pesticide application to protect the public, on and off the installation. Pesticides should not be applied outdoors when the wind speed exceeds 155 m/min. Whenever any pesticides are applied outdoors, care is taken to make sure that any spray drift is kept away from individuals, including the applicator. Pesticide application indoors is accomplished by individuals wearing the proper personal protective clothing and equipment. At no time are personnel permitted in a treatment area during pesticide application unless they have met the medical monitoring standards and are appropriately protected.

7.2 *Sensitive Areas.* No pesticides are applied directly to wetlands or water areas (lakes, rivers, etc.) unless use in such sites is specifically approved.

7.3 *Endangered/Protected Species and Critical Habitats.* Protected migratory birds which periodically occur on the installation cannot be controlled without a permit. The Pest Management Coordinator periodically evaluates ongoing pest control operations and evaluates all new pest control operations to ensure compliance with the list of endangered species. No pest management operations are conducted that are likely to have a negative impact on endangered or protected species or their habitats without prior approval from environmental authorities.

7.4 *Environmental Documentation.* An environmental assessment which specifically addresses the pesticide use program on the installation has been prepared. This plan is referenced in the assessment as documentation of pesticide use.

## ANNEX 2

## ENVIRONMENTAL CATEGORIES

**World Bank Category A:** (insert country equivalent category) A Category A project is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works, can cause serious and irrevocable impact upon the environment or human health. The category A subprojects will be not financed under the project

**World Bank Category B:** (insert country equivalent category): A Category B project has potential adverse environmental impacts on human populations or environmentally important areas - including wetlands, forests, grasslands, and other natural habitats - which are less adverse than that of Category A projects. These impacts are site-specific; few if any of them are irreversible; and in most cases mitigatory measures can be designed more readily than for Category A projects. The scope of EIA for a Category B project may vary from project to project, but it is narrower than that of a Category A assessment. Like Category A, a Category B environmental assessment examines the projects potential negative and positive environmental impacts and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance.

**World Bank Category C:** (insert country equivalent category): A Category C project is likely to have minimal or no adverse environmental impacts. Beyond screening, no further EIA action is required. Category-C includes activities, the scope, location and content of which will not bring about serious impact on the environment.

Category B sub-project EIA reports, are subject to post review by the Bank. The first two category B subprojects for each country will be subject to prior review and then – post review.

It is important that the project management unit and the lending institution be able to identify activities for which funding is being requested and which may fall into either of the World Bank’s Category A or Category B. For the most recent information on environmental categories see Website [www.worldbank.org/environment](http://www.worldbank.org/environment)

### Sub-projects classified as Categories A, B or C include:

Category A Sub-Projects (Category I in country classification)	Category B Sub-Projects (Category II or III in country classification)	Category C Sub-Projects (Category IV in country classification)
<p><i>Agriculture and Rangeland (large scale)</i></p> <ul style="list-style-type: none"> <li>- Agriculture, horticulture, rangeland, vineyards and orchards (medium scale intensive operations &gt;500 ha)<sup>17</sup></li> <li>- Re-cultivation of resting land (greater than 1000 hectares);</li> <li>- Utilization of agricultural</li> </ul>	<p><i>Agriculture and Rangeland (medium scale)</i></p> <ul style="list-style-type: none"> <li>- Agriculture, horticulture, rangeland, vineyards and orchards (medium scale intensive operations 50-500 ha)<sup>1</sup></li> <li>- Re-cultivation of resting land (up to 1000 hectares);</li> <li>- Utilization of agricultural land (30 to 50 hectares) for nonagricultural (commercial or industrial) purposes</li> <li>- Utilization of virgin soils and unbroken expanses for intensive agriculture</li> </ul>	<p><i>Agriculture and Rangeland (small scale)</i></p> <ul style="list-style-type: none"> <li>- Agriculture, horticulture, rangeland, vineyards and orchards (small scale &lt;50ha)</li> <li>- Forest plantation in degraded lands;</li> <li>- Small scale recultivation (&lt;100 ha);</li> <li>- Green fence plantation around agricultural lands</li> </ul>

<sup>17</sup>There is no specific requirements for EA of agricultural, horticultural or orchard and vineyard activities under the local Law, so the HDP will specify >50ha and less than 500 ha category B and <50ha as Category C.

Category A Sub-Projects (Category I in country classification)	Category B Sub-Projects (Category II or III in country classification)	Category C Sub-Projects (Category IV in country classification)
<p>land (over 50 hectares) for nonagricultural (commercial or industrial) purposes</p> <p><b>Irrigation (large scale)</b></p> <ul style="list-style-type: none"> <li>- River basin development;</li> <li>- Thermal and hydropower development;</li> </ul> <p><b>Off-grid energy (large scale)</b></p> <p><b>Other Considerations</b></p> <ul style="list-style-type: none"> <li>- Activities located in protected areas and other nationally recognized sensitive and wetlands</li> </ul>	<ul style="list-style-type: none"> <li>- Forest plantation in agricultural lands</li> <li>- Construction of buildings to store agriculture goods and agricultural products</li> <li>- Construction/reconstruction of warehouses for chemical pesticides and mineral fertilizers</li> </ul> <p><b>Irrigation (medium scale)</b></p> <ul style="list-style-type: none"> <li>- Watershed projects (management or rehabilitation);</li> <li>- Rehabilitation, maintenance, and upgrading projects (small-scale);</li> </ul> <p><b>Off-grid energy (large scale)</b></p> <ul style="list-style-type: none"> <li>- Micro-hydro schemes</li> </ul> <p><b>Participatory Forestry</b></p> <ul style="list-style-type: none"> <li>- Medium scale (over 500 ha);</li> <li>- Forestry in undeveloped lands</li> </ul>	<ul style="list-style-type: none"> <li>- Construction of glasshouses and hotbeds without water supply and heating structures</li> <li>- Utilization of agricultural land (20 to 30 hectares) for nonagricultural purposes in developed areas</li> <li>- Acquisition of tractors and other farm equipment</li> <li>- Integrated pest management</li> <li>- Purchase of drought-tolerant seeds</li> </ul> <p><b>Irrigation (small scale)</b></p> <ul style="list-style-type: none"> <li>-drip and plastic tube irrigation (small scale)</li> <li>-irrigation scheduling</li> <li>-alternate furrow irrigation</li> </ul> <p><b>Off-grid energy (small scale)</b></p> <ul style="list-style-type: none"> <li>-small scale micro-hydro rehabilitation</li> </ul> <p><b>Participatory Forestry</b></p> <ul style="list-style-type: none"> <li>- Small scale (less than 500 ha) and in degraded agricultural lands</li> </ul>

## ANNEX 3

### Terms of Reference for the NCU Environmental Safeguard Specialist

#### A) Responsibilities

The Environmental Safeguard Specialist (ESS) will be responsible for ensuring investments' EA and environmental monitoring of the Project interventions and its impacts. The ESS will be in charge of overall coordination and reporting on the EMP, inspection of environmental compliance at worksites, advising project participants on environmental questions, coordination the overall environmental monitoring at project level, and coordination of the IPM extension program. The specialist will be responsible for periodically collecting information on changes and impact of the project activities. The ESS will set monitoring indicators for the periodical study of environmental impacts of the project activities. Project related study documents, including EMF, and others will be the main frame works for the specialist to operate. ESS will ensure that the information gathered is provided to the Project Manager and relevant component coordinators so that they will be able to properly assess project implementation and make suitable adjustments to implementation plans (should that be necessary). This information and the findings from it are a powerful management tool to be used on a continual basis during implementation and therefore it is important that the ESS receives suitable and continuous support from the NCU management. Detailed responsibilities of the Environmental specialist in relation to NCU are listed below (but not limited to this list):

Liaising with the participating banks and the State Ecological Expertise body in review and approval of projects that pose a high environmental risk

Guiding the participating banks, NCU and other relevant project staffs in the areas of investment sub-projects environment requirements and review and approval procedures and providing training as appropriate.

Guiding and informing investees of environmental safeguard requirements, review and approval and monitoring requirements, and providing training and manuals, as appropriate to ensure that investees are adequately aware and equipped to meet the environmental safeguard requirements

Providing training and technical guidance on safe pesticide use, application, storage, disposal and transport and on options for IPM, including recruitment of technical expertise to provide training and extension services

Provide quarterly report to the Project Manager on project progress and effectiveness of the measures for environmental management.

Guiding the staff of NCU in preparation of bidding documents to ensure environmental compliance

Act as the communication point between the national and international authorities and organizations involved in the Environment and Nature Protection.

Actively participate in IDA supervision missions.

**B) Reporting**

The ESS will report directly to the Manager/NCU. The ESS will be responsible to implement the monitoring plan. ESS will prepare and submit concise quarterly reports to the attention of the NCU on the most important issues related to the investment EMP. The format of the report will be prepared by the ESS and approved by the Manager/NCU.

**C) Qualifications and Experience**

The Environmental Safeguard Specialist should have:

- i) A university degree in the area of ecology, environment and nature protection, industrial engineering and/or similar.
- ii) At least 3 years' experience of working in the area of monitoring, environment and nature protection and/or similar.
- iii) Broad experience in monitoring environmental impacts, national environmental standards and requirements for nature, human health and general safeguard policies and standards.
- iv) Understanding of international environmental standards, including World Banks safeguard policies and requirements.
- v) Experience in interacting with Government agencies, international agencies, national and local administrations.
- vi) Good written and communication skills. Knowledge of English is preferable.

