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Tajikistan

Ministry of Agriculture

TAJIKISTAN AGRICULTURE COMMERCIALIZATION ADDITIONAL FINANCING PROJECT

Environmental and Social Management Framework

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Content

Acronyms

ACP	Agriculture Commercialization Project
ADB	Asian Development Bank
AED PMU	Agriculture Entrepreneurship Development Project Management Unit under the MOF and Ministry of Agriculture
AF	Additional Financing
ATC	Agricultural Training Center
BDS	Entrepreneurship training and business development services
CAWMP	Community Agriculture and Watershed Management Project
CEP	Committee for environmental Protection under the Government of Tajikistan
CPS	Country Partnership Strategy
DATs	Debt Audit Teams
DRMU	Debt Resolution Management Unit
DRS	Districts under Republican subordination
EAP	Environmental Action Plan
EA	Environmental Assessment
ESMF	Environmental and Social Management Framework
EMP	Environmental Management Plan
EIA	Environmental Impact Assessment
EMMP	Environmental Management and Monitoring Plan
FFS	Farmer Field Schools
FIAS	Farmer Information Advisory Service
FPSP	Farm Privatization Support Project
GBAO	Gorno-Badakhshan Autonomous oblast
GDP	Gross Domestic Product
GOT	Government of Tajikistan
GRM	Grievance redress Mechanism
ICG	International Crisis Group
IPM	Integrated Pest Management
JDCs	Jamoat Development Committees
LRCSP	Land Registration and Cadastre System for Sustainable Agriculture Project
MAC	Maximum Allowable Concentrations
MIGA	Micro Investment Government Agency
MIWR	Ministry of Irrigation and Water Resources
MOA	Ministry of Agriculture
MOF	Ministry of Finance
MOH	Ministry of health
MSME	Micro, Small and Medium Enterprise
M&E	Monitoring and Evaluation
NBA	National Business Association
NGO	Non-governmental Organization
OP	Operational Policy
PAU	Poverty Assessment Update
PFI	Participating Finance Intermediaries
PMU	Project Management Unit
PMU	Project Management Unit under the Ministry of Finance
PMP	Pest Management Plan
POP	Persistent Organic Pollutants
RIRP	Rural Infrastructure Rehabilitation Project
RRS	Rayon under Republican Subordination
SEE	State Ecological Expertise
SCLM	State Committee of Land Management

SIC	State Investment Committee
SPV	Special Payment Vehicle
UNDP	United Nations Development Program
WB	World Bank
WUA	Water User Association
WHO	World Health Organization

Executive Summary

1. *Project objective*. The initial project development objective is to increase the commercialization of farms and agribusinesses in selected areas of Tajikistan. This will be achieved by improving the performance of selected value chains and providing financial and capacity building services to the project beneficiaries. The proposed AF would consolidate and expand impacts of the ACP in terms of increasing the rate of commercialization of goods and services, covering not just agriculture, but also other rural products and services. Respectively the PDO has be modified to adjust the coverage of beneficiaries and is aimed at increasing the commercialization of farm, agribusiness and non-farm products, and number of jobs created, by providing better access to finance and strengthened capacity of project beneficiaries.

2. *Rationale of Proposed Additional Financing (AF) of the Project*. In the situation of worsening economic situation in the country and the imposition of more stringent migration policies by the Russian authorities, constraining outflow of Tajik migrants, pressures on domestic labor market are intensifying. The proposed additional financing would support the government's agenda of creating income and employment opportunities for the returning migrants, but also other budding entrepreneurs. Additional financing instrument allows for a shorter response time to the government priorities, as this will allow scaling up and expanding the concepts already used in the ongoing ACP. The proposed additional financing supports the government's agenda of promoting private sector development, including creating income and employment opportunities for the returning migrants, but also other budding entrepreneurs (including women, youth, and disabled). Given the dire situation with incomes and jobs for rural population the concepts developed under the original ACP (such as access to business support/extension services, access to finance and markets) will be expanded, beyond agriculture and agribusiness, to other types of rural sub-sectors and businesses, interested in creating self-employment, as well as providing job opportunities for others. These could be business, income generation and employment creation opportunities as auxiliary products and services for agricultural value chains, off-farm opportunities, as well as other rural businesses. It should be noted that "rural" is defined as the entire country, except for its capital Dushanbe, which already provides better income and employment generation opportunities than the rest of the country.

3. *Expected Beneficiaries*. Consistent with the Government priorities to amplify support for MSME growth[1] and investment opportunities, the project will focus on rural business development, covering underserved areas, such as areas outside of the capital city. MSMEs to be supported under the project will include individual entrepreneurs and micro, small and medium size enterprises, including dekhan farms, present in a diverse array of sectors of the economy, including agricultural production, food processing, small-scale manufacturing, services, trade, and transport, among others.

4. Initial project components and proposed changes under AF. The initial project components and activities are the following:

(i) Component I: Improvement of Technical Knowledge and Skills in Support of Commercialization (US$6.70 million, all IDA). This component aims to improve the technical knowledge and skills of participants in key agricultural value chains and productive partnerships. Support will be provided in the form of group-based interventions (training) and individual technical assistance (advisory services).

(ii) Component II: Access to Finance for Agribusiness Enterprises and Small-Scale Commercial Farms (US$15.32 million, including US$11.4 million IDA) supports the commercialization of agricultural products by improving access to medium-term finance for the larger agri-business enterprises (US$ 8 million IDA), providing start-up capital in the form of grants for small-scale farms involved in productive partnerships (total finding US$3.0 million IDA), and by ensuring the availability of financing for value chain support, which often requires short-term financing (such as, for contract farming schemes and post-harvest handling activities). Investments include: improved on-farm technology, storage,

[1] Private sector development plays an important role in the country's new National Development Strategy 2016-2030.

processing, new products, marketing, quality enhancement and food safety.

(iii) Component III: Institutional Capacity Building and Project Management (US$3.90 million, all IDA). This component strengthens the critical elements of the institutional framework and the sector's academic knowledge base required to support commercial activity: (i) Support to the Educational Establishments in the Agriculture Sector; (ii) Market Information System for Farmers and Agribusinesses; (iii) Support for Policy and Regulatory Reform – strengthen the Ministry of Agriculture's (MOA) capacity for policy and regulatory reform by funding selected studies on critical issues relevant to the commercialization of agriculture, and well as (iv) Project Management. The project is implemented by two Project Implementation Units (PIUs). The project's TA components (i.e., I and III, as well as the Commercialization Grant Program) will be implemented by the Agricultural Entrepreneurship Development Project Management Unit (AED PMU) reporting to the Ministry of Agriculture. The Project Management Unit for Access to Green and Rural Development Finance set up under the auspices of the Ministry of Finance (MOF PMU) for the purposes of implementing donor-financed credit lines, is implement the project's credit line and the related TA to participating financial institutions (PFIs).

The proposed changes in the project AF include the following:

- Additions to component 2, including expansion of its scope to a wide range of business activities in the rural sector of Tajikistan (except for the city of Dushanbe) such as manufacturing; providing services to local population; etc.), outside of traditional agriculture and agribusiness, while maintaining the conditions for granting loans developed in the CAS;
- The introduction of a parallel contribution program, complementary to a credit line, in support of job creation, including self-employment;
- Supporting capacity building activities for selected small microfinance institutions with good development potential for expanding financing opportunities, especially for small rural and agricultural businesses;
- Increase the budget for project management;
- The introduction of a new component 4 to provide technical support and empower entrepreneurs by: providing business development services with an emphasis on enterprises managed and directed by young people, women and persons with disabilities; As well as to promote pilot innovative approaches to small business and job creation, including a business incubator in Khatlon, business training programs, etc.

3. *Location.* The initial project is currently being implemented in selected areas of the country where agricultural capacity is high and agriculture is critical for rural livelihoods. While the project will be implemented countrywide, it is expected most of beneficiaries will be from Khatlon, Sugd and the Districts of Republican Subordination (DRS)

4. *Project category*. In accordance with the Bank's safeguard policies and procedures, including OP/BP/GP 4.01 *Environmental Assessment*, the AF project category remains B. As during Appraisal, it is not possible to identify which subproject or grant will be financed, it is necessary to have in place an Environmental and Social Management Framework (ESMF) which would specify all rules and procedures for the subprojects EA. For this purpose, the AF project will update the ESMF prepared for the initial project, providing guidance on potential environmental and social impacts for the new types of business activities that would be financed along with monitoring requirements and implementing arrangements.

5. *Purpose of Environmental Management Framework.* The purpose of the updated ESMF was to ensure the implementation of security measures provided for by the rules and procedures of the World Bank and the legislation of the country in order to assess the social and environmental impact of activities (both positive and negative) under the AF Project, taking into account the increase in territorial coverage and business diversification in agriculture and rural areas, including those that go beyond traditional agriculture. ESMF identifies potential environmental impacts of the project to outline rules and procedure for the 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 ESMF was prepared by a local consultant hired by the Client based on the following: (i)

analysis of the existing national legal documents, regulations and guidelines; (ii) World Bank safeguard policies, as well as other WB guiding materials; (iii) existing EMFs for similar World Bank projects; and (iv) results of consultations with the representatives of stakeholders and all interested parties.

6. *EA Institutional capacities to perform environmental safeguards.* The evaluation of the EA institutional capacity and previous experience in implementing safeguards issues within the initial project has shown that national institutions and implementing entities although have basic capacities to perform their duties concerning EA and enforcing the ESMF provisions, there is need for additional capacity building activities. In this regard the Project will support additional information dissemination and training activities to ensure the environmental requirements and the ESMF provisions would be fully implemented. A special attention will be paid to training of PFIs and PMU which should play a major role in grants and subprojects EA. The PMU Environmental and Social Specialists overall have the relevant capacity to implement environmental and social safeguards issues, - based on last WB implementation support missions (in 2016-2017), the project environmental and social performance is considered satisfactory.

7. *Potential environmental impacts.* The project will support mostly various types of agricultural production and agro-processing, along with the manufacturing and providing services subprojects, mentioned in the point 2 above. None of them will 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 new credit line). However, the majority of sub-projects/grants might cause adverse environmental impacts that would fall under the Category B projects in accordance with the Bank OP/BP 4.01 (small scale agro-industries; small scale rehabilitation, maintenance, and upgrading of various premises, storages; animal production; fish farming; plantation of new orchards and/or vineyards, industrial production and manufacturing, providing services for the population, 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 supported grants and subprojects will not have environmental impacts and will fall under the Category C (especially those related to purchasing of new agricultural machinery; providing basic services, etc.) for which would be required only environmental due diligence procedure. Furthermore, it is expected the selected grants and subprojects will not be located in protected areas, critical habitats or culturally or socially sensitive areas, as well as will not have impacts on international waterways, - this will be ensured during the subprojects screening and EA, excluding them from the project financing. The potential adverse environmental impacts of proposed types of grants and 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, health and environmental risks associated with agro-chemicals use, loss of biodiversity, waterlogging and salinization of irrigated lands, and disturbing wildlife and natural habitats; (b) *agro-processing*: contribution to surface water pollution, wastes generation, odor nuisance; (c) small scale *construction and/or rehabilitation of the existing premises*: soil and air pollution; acoustic disturbances, construction wastes, and potential asbestos issues, toxic materials, etc.; (d) *manufacturing and providing services*, - air and water pollution, solid wastes, labor safety. All these impacts are expected to be easily mitigated through good projects design and implementation practices.

8. *Potential social impacts and resettlement issues*. The grants and sub-projects to be implemented under the access to finance component 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, contribution to poverty reduction and food safety. Potential indirect adverse social impacts can be related to increase water pollution and health risks due to more usage of chemicals in agriculture. A separate social assessment was conducted to identify social issues to be addressed throughout the project implementation and AF. Under Component 2 the project will provide finance credits for medium-term investment loans/leases, supporting value chains through PFIs, and commercialization grants. The credit line may be used to finance investments in technological plants, equipment, expansion of orchards, and greenhouses. However, these activities will take place on privately held land. *The project will not finance activities that result in the*

involuntary taking of land resulting in (i) relocation or loss of shelter; (ii) loss of assets or access to assets; (iii) loss of income or means of livelihood whether or not there is physical displacement. In addition, the project will not finance activities which will result in the involuntary restriction of access to legally designated parks and protected areas. The project will only finance sub-projects where the Sub-borrower has a title to the land and the land is not being used or occupied by any third party. The Environmental Management Plan (EMP) which will be part of operational procedures for the PFIs, will be used to screen out projects with OP 4.12 impacts.

9. *Environment and Social Management Framework (ESMF).* The document outlines environmental assessment procedures and mitigation requirements in line with both national and Bank policies for the grants and subprojects which will be supported by the project. It provides details on procedures, criteria and responsibilities for subprojects preparing, screening, appraisal, implementing and monitoring. The document also includes Environmental Guidelines for different types of proposed subprojects providing analysis of potential impacts and generic mitigation measures to be undertaken for subprojects in agricultural production and agro-processing sectors at all stages - from identification and selection, through the design and implementation phase, to the monitoring and evaluation of results. The EMF includes also a section describing both measures which will be used to ensure compliance with national laws and WB requirements relating to pesticide purchase and use, and measures 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 country and guidance on their use. The project also will support training, technical assistance and demonstration in support of the IPM program. Lastly, the EMF provides an analysis of the EA institutional capacity of the implementing agencies along with the proposed technical assistance to adequately implement the EA requirements for the grants and subprojects to be supported.

10. *ESMF disclosure and consultation*. The Project Management Unit (PMU) during the period from May 20 to May 25, 2017, conducted consultations on the results of social assessment survey and environmental assessment of AF in three regions of the country (in the Sughd, Khatlon oblasts and the DRS). The provisional updated version of the ESMF for AF is posted on the websites of the PMU of the MoF, CEP and the AED PMU (http: //greenfinance.tj/page/97, www/hifzimuhitizist.tj, http://pmutacp.tj/index.php/novosti/item/287) on July 10, 2017 for consideration and comments by stakeholders, and for access to the general public. After consultations in Dushanbe, conducted on 20 July 2017, the draft document was revised taking into account the recommendations of the consulted parties. The final version of the ESMF document will be posted on the website of the PMU of the MoF, Ministry of agriculture and disclosed on the World Bank external website.

I. INTRODUCTION

1. *Project Background.* The original ACP was approved on June 10, 2015, in the amount of US$22 million IDA grant. The project development objective was to increase the commercialization of farm and agribusiness products, by improving the performance of selected value-chains and productive partnerships through increased access to finance and strengthened capacity of project beneficiaries. The ACP was designed to support increased commercialization of the agriculture sector, strengthen the links between producers and processors, and support producer associations - therefore, contributing to the implementation of the comprehensive new Agrarian Reform Program recently prepared by the Government and donors as the basis for future reform and investment.

2. The project aims to increase the commercialization of agricultural products using a coherent and complementary approach, addressing all of the main aspects of this effort, by: increasing the capacity of farmers, traders, agri-businesses and agro-processors to engage in agricultural markets through access to knowledge and technical assistance; improving access to finance; and strengthening critical elements of the institutional framework and the sector's academic knowledge base required to support commercial activity.

3. The proposed additional financing supports the government's agenda of promoting private sector development, including creating income and employment opportunities for the returning migrants, but also other budding entrepreneurs (including women, youth, and disabled). Given the dire situation with incomes and jobs for rural population the concepts developed under the original ACP (such as access to business support/extension services, access to finance and markets) will be expanded, beyond agriculture and agribusiness, to other types of rural sub-sectors and businesses, interested in creating self-employment, as well as providing job opportunities for others. These could be business, income generation and employment creation opportunities as auxiliary products and services for agricultural value chains, off-farm opportunities, as well as other rural businesses. It should be noted that "rural" is defined as the entire country, except for its capital Dushanbe, which already provides better income and employment generation opportunities than the rest of the country.

4. Additional financing instrument allows for a shorter response time to the government priorities, as this will allow for scaling up and expanding the concepts already used in the ACP. There are also significant economies of scale in terms project management and implementation utilizing an existing line of credit under ACP.

5. The AF is also justified to consolidate and expand impacts of the ACP in terms of increasing the rate of commercialization of goods and services, covering not just agriculture, but also other rural products and services. The AF would thus enhance the impact of the original project, while improving the overall sustainability of knowledge service and investments. The AF will also build on other World Bank-financed activities in the country, such as the "Tajikistan Jobs Diagnostic and Strategy" (World Bank, expected 2017) which provides the analytical background for this proposed operation, the ongoing World Bank-financed Strengthening the Financial Sector Project, which has done extensive household training in financial literacy matters, Private Sector Competitiveness Project, which significantly eased the process of business registration, as well as other IFC-led efforts to improve the business environment, and LLI's Youth Empowerment & Entrepreneurship Development, which has provided basic entrepreneurship training to 4,000 youth around the country, as well as entrepreneurship awareness campaign. Micro, small and medium size enterprises (MSMEs) to be supported under the project AF will include individual entrepreneurs and MSMEs including dekhan farms, present in a diverse array of sectors of the economy, including agricultural production and irrigation development, food processing, fishery, agroforestry, pasture and livestock management, small-scale manufacturing, services, trade, and transport, among others, and small scale construction/reconstruction of new buildings. The AF is expected to enable expansion of sectors covered as well as broaden coverage of the project, resulting in development outcomes of improving productivity and creating better jobs. The proposed expansion of access to credit for MSMEs is especially important during a time of constrained financing due to the impact of the economic downturn affecting an underdeveloped rural finance sector. The additional

financing aims to increase access to more affordable lending products (complemented by matching grants) and advisory services to support rural investments, growth among MSMEs, productivity enhancements, and job creation.

6. *Proposed Changes in Project Activities and Components.* Original Project consists of three components: 1) Component I: TA Support to Commercialization; 2) Access to Finance for Commercial Farms and Agribusinesses; and 3) Component III: Institutional Capacity Building and Project Management. Under proposed AF project activities and components will largely remain the same as in the original project design, with the suitable activities expanded to reach the broader rural beneficiaries. The specific changes to the components are described in details in the Chapter V below.

7. *Project Environmental Assessment*. In accordance with the Bank's safeguard policies and procedures, including OP/BP/GP 4.01 *Environmental Assessment*, the original project was classified as Category B for which an Environmental Assessment (EA) with Environmental Management Plan (EMP) is required. While the proposed project restructuring and additional financing will not change the project category and not trigger new safeguards policies, the scope of access to financing will be broader, including also a wide range of new rural business activities (such as manufacturing; providing services to local population; etc.), outside of traditional agriculture and agribusiness. This required updating of the initial project Environmental and Social Management Framework (ESMF) by providing guidance on potential environmental and social impacts for the new types of business activities that would be financed along with monitoring requirements and implementing arrangements. The revised ESMF also clarifies the procedures of the subprojects' Environmental Assessment (EA) and of preparing Environmental and Social Management Plans (ESMPs) for sub-projects to be financed, including for business incubators to be build or rehabilitated in Khatlon region, considering the experience obtained implementing the ACP during 2015-2017. Any activities involving new construction and/or expansion of existing facilities that might trigger OP4.12 would be diligently screened out and not financed by the project. Any activities involving child and forced labor will also be screened out.

8. *The purpose of the updated ESMF* is to provide the World Bank's and national 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 sub-projects environmental screening and to specify appropriate preventive actions and mitigation measures (including appropriate monitoring scheme) to prevent, eliminate or minimize any anticipated adverse impacts on environment.

II. NATIONAL ENVIRONMENTAL ASSESSMENT POLICY AND REGULATORY FRAMEWORK[2]

2.1. Legal framework for environmental protection

9. *Overview*. Tajikistan has developed during last decade most of the needed environmental laws and regulations (*see Table 1*).

Table 1: Selected environment-related legislation
Air quality
Law on Air Protection
Law on Hydrometeorological Activity
Mineral resources
Law on Mineral Waters
Water Code
Land management
Land Code

[2] Used source for updating – Third Environmental Performance Review of Tajikistan, UNECE, 2017

Law on Land Administration
Law on Land Valuation
Forests
Forestry Code
Animals and factories
Law on Protection and Use of Animals
Law on Protection and Use of Factories
Law on Fishery, Fisheries and on the Protection of Fish Resources
Law on Factories Quarantine
Health and safety
Law on Securing Sanitary and Epidemiological Safety of the Population
Law on Veterinary Medicine
Law on Salt Iodization
Law on Quality and Safety of Food
Law on Industrial Safety of Hazardous Installations
Law on Radiation Safety
Waste and chemicals management
Law on Production and Consumption Waste
Law on Production and Safe Handling of Pesticides and Agrochemicals

These laws along with the Regulations approved by the GoT create a favorable legal framework for environmental protection in the country as well as for usage and protection of its natural resources.

10. *Framework environment law.* The "framework environment law"/Law on Environment Protection was adopted in 2011 (21 July, 2011, № 208). The previous Law on Nature protection was adopted in 1993 and amended in 1996, 2002, 2004 and expired in 2011. The Law stipulates that Tajikistan's environmental policy should give priority to environmental actions based on scientifically proven principles to combine economic and other activities that have an impact on the environment with nature preservation and the sustainable use of resources. The Law defines the applicable legal principles, the protected objects, the competencies and roles of the Government, the State Committee for Environment, the local authorities, public organizations and individuals. The Law stipulates also measures to secure public and individual rights to a safe and healthy environment and requires a combined system of ecological expertise and environmental impact assessment of any decision on an activity that could have a negative impact on the environment. The Law also defines environmental emergencies and ecological disasters and prescribes the order of actions in such situations, defines the obligations of officials and enterprises to prevent and eliminate the consequences, as well as the liabilities of the persons or organizations that caused damage to the environment or otherwise violated the Law. The Law establishes several types of controls over compliance with environmental legislation: State control, ministerial control, enterprise control and public control. State control is affected by the Committee for Environment Protection, the Sanitary Inspectorate of the Ministry of Health, the Inspectorate for Industrial Safety and the Mining Inspectorate. Adopted in 2014, the amendment to the law allows environmental inspectors to use firearms and other special means. Public control is carried out by public organizations or trade unions and can be exercised with respect to any governmental body, enterprise, entity or individual. The Law has also several articles related to agriculture. They regulate, for instance, the use of fertilizers and pesticides, the use of biological and chemical substances and protection against such contamination in food, soil protection and the rational use of land, and protection against pollution from livestock farms.

11. *Water Code.* The Water Code (2000) stipulates the policies on water management, permitting, dispute resolution, usage planning and cadaster. It promotes rational use and protection of water resources exercised by all beneficiaries and defines the types of water use rights, authority and roles of regional and local governments for water allocations among various users, collection of fees, water use planning, water use rights and dispute resolution. The Code delegates Water User Associations to operate and maintain on-farm

irrigation and drainage infrastructure. Since 2010, the Water Code of 2000 has been amended and supplemented in 2011 and 2012. In 2011, users of hydropower sources, which produce less than 30,000 kWh of electricity, were exempt from payment for the use of water resources. In 2012, a new chapter was added to the Code, devoted to basin management of water resources. It provides for the creation of the National Water Council to coordinate the activities of various bodies for basin water resources management and the development of basin plans for the use and protection of water resources, as well as the establishment of basin water councils.

12. *Land Code.* The current Land Code (1992) defines the types of land use rights, the authority and the role of regional and local governments for land allocation, collection of land taxes, land use planning, land use right mortgaging and settlement of land disputes. It defines the rights of land users and lease holders, and also defines the use of a special land fund for the purpose of land privatization and farm restructuring. The law does not provide for purchase or sale of allotted land. The Land Code regulates land relations and it is directed at the rational "use and protection of land and fertility of the soil…[3] ." The land may be used in a rational manner only and the Code allows local authorities to decide what constitutes "rational" land use. It includes also mechanisms that make it possible to take the land-use permit away from farmers, including in situations where land use causes land degradation. This decision is taken by the *rayon* administration.

13. *Land Administration* (2001). The Law obliges the authorities to map and monitor the quality of land, including soil contamination, erosion and water logging.

14. *Regulation of agrochemicals usage.* Pesticides and fertilizers handling, use, transportation and storage are regulated by a number of legal documents (*see Table 2*).

T*able 2. Laws and regulations related to agrochemicals usage in Tajikistan*

Law on Environment Protection (2011);
Law on Ecological Expertise (2011);
Law on the Factories Quarantine Law (N5, 12.05.2001), of 2001, revised in 2003.
Law on Production and Safety Implications of Pesticides and Agro-chemicals law dated April 22, 2003.
The Decree on Factory Quarantine (N38, 4.02.2002) concerning creation of the Government Inspection (service) on factories quarantine of 2002.
The Law of the Republic of Tajikistan "On Plant Protection" for No. 817 dated April 16, 2012.
The Law of the Republic of Tajikistan "On the Production and Safe Management of Pesticides and Agrochemicals" No. 2 dated April 22, 2003.
Government Decision "On the establishment of the Commission on Chemical Safety of the Republic of Tajikistan" No. 92 of March 3, 2003.
A list of chemicals and biological preparations permitted for use in the Republic of Tajikistan, which was approved by the decision of the Commission on Chemical Safety of the Republic of Tajikistan of June 11, 2004 No. 4.
Government Decision "On Approval of the List of Especially Hazardous Pests" No. 477 of August 31, 2012.
Resolution of the Government "On the Program for the Control of Pests and Diseases of Gardens and Vineyards for the Period 2011-2015" No. 625 of December 3, 2010.
Government Decision "On approval of the Program for the Development of the Cotton Sector in the Republic of Tajikistan for 2010-2014" No. 586 of October 31, 2009.

15. *Transport sector.* The Law "On ensuring environmental safety of road transport" in 2015 provides introduction of an environmental classification of imported vehicles, checking the environmental condition of vehicles, the introduction of technical standards for fuels, the production and sale of clean fuel, the systematic control of fuel quality, the introduction of technologies for secondary processing or batteries neutralization, as

[3] Land Code (1992)

well as environmentally safe disposal of used vehicles, waste tires and used tires, batteries and used motor oils (Chapter 12).

16. *Healthcare sector*. In 2011 the amendments and additions to the Law "On Ensuring Sanitary and Epidemiological Safety of the Population" of 2003 introduced the concept of sanitary and epidemiological expertise that establishes the compliance of project documentation and economic activities with the state sanitary and epidemiological norms and rules, as well as strengthened provisions on sanitary-hygienic, anti-epidemic and information measures. The Food Safety Law of 2012 was adopted in place of the previous law of 2002 and provides more detailed requirements for the production, packaging, labeling, storage, transportation, sale and importation of food products.

17. *Agriculture sector*. New laws have been enacted since 2010, including the Law on Plant Protection 2012, which regulates, among other things, the use and disposal of pesticides; Law "On pastures" 2013, aimed at ensuring the optimal use of pastures through their monitoring, registration and state expertise; and the Law on Biological Diversity Management and production " of 2013, which introduces the criteria of biological production and requirements for processing, storage, transportation, packaging, labeling and certification of biological products, which is a step towards organic farming (Chapter 9).

The Law "On state regulation of the provision of fertility of agricultural lands" in 2004 defines the state policy regarding the provision of soil fertility, including through standards and provisions for agrotechnical, agrochemical, irrigation and drainage activities. The law obliges land users to report on the use of agrochemicals and pesticides, as well as to comply with standards and regulations for agrotechnical, agrochemical, meliorative phytosanitary and anti-erosion measures.

The Law on Dekhkan Farm, adopted in 2016 in place of the 2009 Law on the same issue, provides the legislative basis for the establishment and operation of private dehkan farms. While, according to the Law of 2009, dehkan farms were subjects of economic activities that carry out activities without the formation of a legal entity, the new Law allows dekhkan farms to obtain the status of legal entities. It also clarifies and fixes the rights of members of dehkan farms as land users. The law improves the management of dehkan farms and defines the rights and duties of their members. It allows farmers to legally erect field camps on land as temporary buildings, which makes it possible to significantly improve productivity at the agricultural season. The law requires dehkan farms to take measures to improve soil fertility and improve the ecological status of lands, timely payments for water and electricity, and provide statistical information to government agencies.

The Veterinary Law 2010 regulates the protection of the population against epizootic diseases, including their prevention and elimination, and establishes measures to ensure the safety of food products of animal and vegetable origin, as well as the safety of veterinary drugs, feed and feed additives.

The Law on Food Security 2010 pays special attention to the allocation of state support funds on a competitive basis between national producers of agricultural products within the framework of the state policy on ensuring food security.

The Law on the Collection, Preservation and Rational Use of Plant Genetic Resources in 2012 establishes the legal framework for state policy in the field of genetic resources of cultivated plants and their wild relatives and regulates their collection, conservation and rational use in agriculture and food production.

The Law on Biological Management and Production of 2013 establishes the legal basis for the activities of biological (organic) management, including the production, processing, storage, import and export, transportation, packaging, labeling and sale of organic products, i.e. Products produced without the use of GMOs or chemical and synthetic substances, with the rational use of water in the production process. The law establishes a system of standards and certification of organic products.

The Law on Pastures, 2013, defines the basic principles of pasture use, including protection of pastures and the environment, and attraction of investments for more effective use and protection of pastures. The Law specifies the powers of local administrations to control environmental safety and pasture use in accordance with state regulations and standards. The law prohibits the implementation of a number of activities in pastures, such as cutting down trees or bushes, building roads, misuse of grazing land, pollution of the environment with waste, and grazing of livestock beyond the established rate. The law requires users to ensure effective use of pastures, including protection of pastures against degradation and pollution. It provides geobotanical research on pastures to assess the potential productivity of natural forage land.

The Law on Fishery, Fisheries and the Protection of Fish Resources, 2013 regulates commodity and recreational fish farming, fish stocks, fisheries, restrictions on fishing and measures to protect fish resources (Chapter 1).

18. The *Law on Environment Protection* indicates the necessity of applying the minimum permissible standards of agro-chemicals in agriculture and forestry to ensure compliance with the minimum permissible amounts in food, soil and water. The specially adopted law in the domain (Law on Production and Safety Implications of Pesticides and Agro-chemicals) prohibits use of biologically and environmentally persistent pesticides and products known to be carcinogenic, mutagenic, teratogenic, embryo- and gonad toxic in compliance with the International List of potentially toxic chemicals of the UN Environmental Program. This law also regulates distribution, use, and disposal of pesticides.

19. The *Law on Ecological Expertise (2012)* and the *Resolution on the Establishment of the Commission for Chemical Safety (2003)* set up the legal framework for the registration and use of pesticides and other chemicals. These substances and compounds should undergo mandatory State testing in laboratories and production (field) facilities to assess their biological, toxicological and environmental characteristics. If the testing results are positive, the substance or compound must be registered with the Commission for Chemical Safety and included in the List of Chemical Substances and Biological Compounds that are permitted for Use. The Commission manages the system of registration, testing and control of pesticides[4]. It is chaired by a deputy Prime Minister and includes representatives of, among others: the Committee for Environmental Protection, the Ministry of Health and the Ministry of Agriculture. A working group prepares the meetings of the Commission. The Commission approves a list of pesticides upon application from producers or distributors. A new list of chemicals is being prepared.

20. *Quarantine*[5]. In 2001, a technical review workshop on Union of Independent Countries (a few countries of former Soviet Union) and Baltic's countries published data about quarantine and phytosanitary conditions in the countries of the former Soviet Union. The agreement about coordination in field of factories quarantine for indicated above countries was signed on November 13, 1992 in Moscow. In 1997 during the 6th Conference countries agreed to accept a unified list of pests to be quarantined, to common quarantine rules for import, export and transit of goods, and provide information data about distribution of pests on countries territory. Not much changed since then. In 2001 Government of Tajikistan enacted a Factories Quarantine Law (N5, 12.05.2001), and in 2002 – a decree on measures on factory quarantine (N38, 4.02.2002) – for Government Inspection (service) on factories quarantine.

21. The qualifying requirements for physical and legal entities of the Republic of Tajikistan operating with application of the pesticides by aerosol and fumigation methods are[6]:

- Application and handling are regulated in terms of the availability of special machinery and equipment for the pesticides application ensuring the safety and quality of chemical treatment;
- the availability of special storages for the pesticides complying with the sanitary and epidemiologic rules and norms,
- construction norms and rules,
- requirements of fire safety;
- compliance with environmental requirements,
- sanitary and epidemiologic rules and norms,

[4]UN Economic Commission for Europe: Tajikistan Environmental Performance review, 2004 http://www.unece.org/env/epr/studies/Tajikistan/welcome.htm
[5] WB Tajikistan Community Agriculture and Watershed Management Project. (CAWMP), Pest Management Plan. 2004.
[6] WB Tajikistan Farm Privatization Support Project (FPSP) Integrated Pest Management Plan, 2005

- safety and labor protection; individual protective facilities,
- fire extinguishing equipment;
- qualified staff with corresponding education and training having experience of practical work on the pesticides application by aerosol and fumigation methods.

22. For storage and disposal, special landfills are used to dispose expired and banned pesticides and their packaging. The state environmental control authority is responsible for issuing the permit to construct the landfills and neutralize the pesticides. Neutralization of the pesticides procured at the expense of the state budget is the responsibility of the MoA and local state authority (local budget). Legal and physical entities the activities of which are linked with the state phytosanitary control objects are obliged to neutralize the pesticides. However in Tajikistan there are only 2 sites formally approved by the Committee for Environmental protection for storage or disposal of unused pesticides or their packaging in Vahksh and Konibodom.

23. *International environmental treaties to which Tajikistan is a party.* Tajikistan became party to a series of international treaties and in particular:

- Rotterdam Convention on Prior Informed Consent (PIC) procedure on September 28, 1998, ratification pending;
- Signatory of the Stockholm Convention on Persistent Organic Pollutants on May 21, 2002, ratification pending;
- Convention on Biological Diversity on 29 October 1997 and to its Cartagena Protocol on Biosafety on 12 May 2004;
- Convention for the Protection of the World Cultural and Natural Heritage (1992);
- The United Nations Convention to Combat Desertification (1997);
- The United Nations Framework Convention on Climate Change (1998);
- The Ramsar Convention (2000);
- The Convention on the Conservation of Migratory Species of Wild Animals (2001).
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (2016); and
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (2016)

24. Taking into consideration international treaties have the superiority under the national legislation, mentioned above Conventions constitute also a legal basis in the relevant areas of environmental protection in the country.

2.2. Legal framework for EA, environmental licensing and permitting

25. *Basic EA Laws.* There are two laws in the country that stipulate all aspects of the EA: (a) Law on Environment Protection; and (b) Law on Ecological Expertise. The Chapter V, Articles 35-39 of the Law on Environment Protection (2011), introduces the concept of state ecological review (literally, state ecological "expertise" – SEE) which seeks to examine the compliance of proposed activities and projects with the requirements of environmental legislation and standards and ecological security of the society. 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. The following activities and projects subject to state ecological review: a) draft state programs, pre-planning, pre-project, and design documentation for economic development; b) regional and sectoral development programs; c) spatial and urban planning, development, and design; d) environmental programs and projects; e) construction and reconstruction of various types of facilities irrespective of their ownership; f) draft environmental quality standards and other normative, technology, and methodological documentation that regulates economic

activities; g) existing enterprises and economic entities, etc. The laws stipulate that all types of economic and other activities shall be implemented in accordance with existing environmental standards and norms and shall have sufficient environmental protection and mitigation measures to prevent and avoid pollution and enhance environmental quality. The EA studies analyzing the short- and long-term environmental, genetic, economic, and demographic impacts and consequences shall be evaluated prior to making decisions on the sitting, construction, or reconstruction of facilities, irrespective of their ownership. If these requirements are violated, construction will be terminated until necessary improvements are made, as prescribed by the Committee for Environmental Protection and/or other duly authorized control bodies, such as sanitary, geological, and public safety agencies.

26. *Environmental Impact Assessment.* An Environmental Impact Assessment (EIA) study is a component of the State Ecological Expertise, as set out in the 2011 amendments to the Environmental Protection Law. In 2012 the new Law "On Environmental Expertise" was adopted. In pursuance of this law, the Government subsequently adopted the following:

- the Procedure of environmental impact assessment (adopted by the Resolution of the Government of the Republic of Tajikistan as of 01.08.2014 №509): Guidelines on the composition, order of development, coordination and approval of design estimates for construction of facilities, buildings and structures and EIA chapters, SEA and feasibility documents;
- A List of objects and kinds of activity for which preparation of documentation for environment impact assessment is mandatory (adopted by the Resolution of the Government of the Republic of Tajikistan as of 01.08.2014 №509). The List is very extensive: it contains 180 types of activities, grouped according to four environmental impact categories (from (I) "high risk" to (IV) "local impact"). If the facility is not included in the list, then it is not required to pass either an EIA or a SEE.

The EIA is the responsibility of the project proponent. The Procedure for carrying out the EIA (Government Resolution No. 509 of 2014) establishes general requirements for the contents of the EIA documentation. The State Ecological Expertise for all investment projects is the responsibility of the Committee for Environmental Protection under Government of Tajikistan (CEP) and its regional offices. Furthermore, according to the 2012 Law on the State Ecological Expertise, all civil works, including rehabilitation, should be assessed for their environmental impacts and the proposed mitigation measures reviewed and monitored by the CEP.

27. *Types of Ecological Expertise.* According to the 2011 Law on Ecological Expertise, ecological expertise is intended to prevent negative impacts on the environment as a result of a proposed activity, forecast impacts from activities that are not considered as necessarily damaging to the environment and create databases on the state of the environment and knowledge about human impact on the environment. This Law and the Law on Environment Protection envisage two types of ecological expertise – State ecological expertise and public ecological expertise, which are not given equal importance. While State ecological expertise is a prerequisite for beginning any activity that may have an adverse environmental impact, public ecological expertise becomes binding only after its results have been approved by a State ecological expertise body. The State Ecological Expertise is authorized to invite leading scientists and qualified outside specialists to participate in the review. Approval should be issued within 30 days, unless the project developer agrees to an extension, and remains valid for two years, if the decision is positive. For very complicated projects the term of consideration and approval can be extended till 60 days. According to the Law on SEE the public ecological expertise of economic activities or other activities implementation of which can negatively impact the environment of population which live in relevant area can be carried out by any public organization and citizen. They have right to send the proposals to the responsible government bodies concerning environmental issues of implementation planned activities; to receive information on results of conducted state ecological expertise from relevant responsible bodies. The materials reflecting the public expertise delivered to the experts' commission should be taken into consideration under preparation of conclusion of state ecological expertise and decision making on realization of expertise object. The public ecological expertise is carried out under the state registration of application of public organization. The registration can be done by local executive

authorities (during 7 days) in place where the expertise activities are planned. The public organizations which are organizing this expertise, should inform the population of initiation of expertise and then on its results.

28. *Screening categories.* The laws on Environment Protection and EE stipulate the Government will approve a list of activities for which the full Environmental Impact Assessment is mandatory. The List of 2013 contains 180 types of activities, grouped according to four environmental impact categories (from (I) "high risk" to (IV) "local impact"). The current system of environmental impact assessment does not provide for any preliminary assessment of the project to decide on the need for an EIA (screening), nor to define the scope of the issues covered and the content of EIA (scoping) materials as specific procedural steps. The List of objects and activities for which the development of EIA materials is required is very detailed and, in the opinion of government bodies, for this reason there is no need to procedurally consider the issue of carrying out an EIA in each specific case.

According to the existing legislation, the Project AF should not be required to prepare any EIA, however, as soon as the Project AF is approved, it will be necessary to consult with the CEP experts and receive further guidance on the SEE compliance requirements.

29. *EA administrative framework.* The Environmental Protection Law states that a SEE should be conducted by the CEP, which is designated as a duly authorized state environmental protection body. It has a comprehensive mandate that includes policy formulation and inspection duties. The CEP has divisions at oblast (region), city and rayon (district) level, in the form of Departments of Environmental Protection (DEPs), within the Hukumat (local administration) at each city or rayon. A small unit in the ministry is entrusted with guiding and managing both EIA and SEE. EIA preparation is the responsibility of the proponents of public- and private-sector projects, who, in addition to complying with various environmental standards, procedures, and norms, shall meet the standards of other sectors and environmental media line agencies, such as sanitary-epidemiological, geological, water, etc.

30. *Public participation.* Article 12 of the Environment Protection Law proclaims the right of citizens to live in a favorable environment and to be protected from negative environmental impacts. Citizens also have the right to environmental information (Article 13), as well as to participate in developing, adopting, and implementing decisions related to environmental impacts (Article 13). The latter is assured by public discussion of drafts of environmentally important decisions and public ecological reviews. Public representative bodies have an obligation to take into consideration citizens' comments and suggestions. The Law on the EE also provides the rights to the citizens to conduct a Public Environmental Expertise (art. 7). On 17 July 2001 Tajikistan acceded to the 1998 Aarhus Convention, the provisions of which have priority over domestic law that also stipulates the rights for Public EE. The element of public participation in the EIA procedure is described in detail in the Procedure (Order) for Conducting an EIA of 2014. Public participation procedures are envisaged for all categories of projects, although in practice they are mainly applied to Category I projects. The Procedure (Order) for conducting the EIA of 2014 changed the focus and timing of public discussions. The previous version of the Procedure for the EIA of 2006 provided for the participation of the public at an early stage of the process (i.e., after submitting a draft declaration of intent to the competent environmental authority) and it was indicated that comments and suggestions from the public were taken into account in drafting the technical task for carrying out the EIA, which is agreed with the competent authority. In fact, this ensured the participation of the public at the stage of defining the range of EIA tasks (scoping). The procedure for conducting the EIA of 2014 assumes public discussions only after the preparation of the EIA report by the project's customer.

31. *Licenses.* Licenses are legal instruments to regulate certain potentially hazardous activities where minimal qualifications and strict adherence to rules are required to ensure that they are carried out efficiently, safely

and do not result in potentially very significant and irreparable damage to the environment and human health[7]. In particular, licenses are required for handling hazardous waste; for activities in industrial safety, sources of ionizing radiation, production and handling of pesticides and other agrochemicals. They are issued by the relevant industry regulator (ministry or committee) or an entity to which it has delegated such right. Licensing is also used to ensure the most efficient and sustainable use of natural resources. For example, licenses are required for prospecting, collecting or extracting mineral resources, or for constructing underground facilities not related to mining.

32. *Environmental permits.* The Law on the Permit System of 2011 established a unified procedure for obtaining permits for all types of activities that require authorization. It also defines the list of activities for which permission is required, types of permits and competent state bodies authorized to issue such permits. The permitting bodies may re-register, suspend and revoke permits; They also have the right to monitor compliance with the requirements and conditions set out in permits. A single fee for the issuance of an authorization document was introduced.
The law introduced the procedure of "approval by default": an authorization document is considered issued if the permitting authority did not respond to the applicant in writing within the time period stipulated by law (10 working days). A new element of the enabling legislation is the introduction of an assessment of the regulatory impact for any legal act that provides for the introduction of a new authorization document as a measure to prevent unjustified introduction of new types of permits by state bodies.
Each permitting authority should maintain a register of issued permits. All data on licensing procedures are entered in the Unified State Electronic Register of Permitting Documents, for which the State Committee for Investments and State Property Management is responsible. The electronic register is accessible to the public through the Internet (www.ijozat.tj). In addition to procedural issues, the register contains limited data on enterprises that have received permits.
Permits are meant to ensure the sustainable use of natural resources. There are two types of permits: (a) permits to use natural resources; and, (b) permits for emissions or discharges. The natural resources use permits allow their holders to take a certain number or amount of a particular natural resource within a defined territory and time period. They are issued both to individuals (e.g. to hunt a particular species of animal or harvest particular factories) and to organizations (e.g. permits to extract ground or surface water for a particular use). By law, permits are needed for any commercial use of any resource. The authority that issues the permit and the legislation (government resolution) that applies depend on the resource. Permits to discharge polluted matter are issued by the relevant inspectorate departments of CEP (e.g. Water Department (Inspectorate) or Air Department (Inspectorate) of the Committee's local environmental protection departments to industrial or agricultural enterprises and municipal utilities that release by-products into the environment. The permits allow releasing a certain amount of polluted matter (gases, liquids, solid waste) into the environment. The permits are normally granted for one year and indicate the maximum allowed concentration of the pollutants in the released matter, the maximum volume of the polluted matter and the pollutants allowed.

33. *Environmental norms and standards.* Norms are set for air and water pollution, noise, vibration, magnetic fields and other physical factors, as well as residual traces of chemicals and biologically harmful microbes in food. The exceeding of their thresholds results in administrative action, including financial sanctions. Several ministries determine environmental quality standards, each in its field of responsibility. For example, admissible levels of noise, vibration, magnetic fields and other physical factors have been set by the Ministry of Health and social defense of population.

34. *Implementation and compliance.* A number of legal acts establish liability for violations of environmental laws, which can be enforced by several State bodies. In particular, the 2010 Code of Administrative Violations

[7] United Nations Economic Commission for Europe: Environmental Performance Review of Tajikistan. Review, 2012 (see: www.unece.org/index.php?id=31560)

establishes administrative liability for organizations, their officers and individuals for a range of violations, from the careless treatment of land to violation of the rules for water use or water protection or failure to comply with a State ecological expertise. The administrative sanctions for environment related violations can be imposed by the administrative commissions of hukumats, courts, the CEP's inspectors, the Veterinary Inspectors of the Ministry of Agriculture, and the State Committee for Land Management and Geodezy. The most common administrative sanction is a fine of up to 10 minimal monthly salaries for individuals and up to 15 minimal salaries to officers of organizations. The 1998 Criminal Code covers crimes against ecological safety and the environment, such as violations of ecological safety at work, poaching, and spoiling land, violation of rules for the protection and use of underground resources. The maximum fine is up to 2,000 minimal monthly salaries and the maximum sentence is up to eight years in prison.

III. WORLD BANK ENVIRONMENTAL ASSESSMENT REQUIREMENTS

35. *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.

36. *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 Project are indicated in the *Table 3* below.

Table 3. World Bank's Safeguard Policies and their relevance to sub-project

Safeguard Policies	Relevance
Environmental Assessment (OP/BP 4.01) 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	Yes. Project activities and components will largely remain the same as in the original project design, with the suitable activities expanded to reach the broader rural beneficiaries. Many subprojects will generate environmental and social impacts, triggering this OP.
Natural Habitats (OP/BP 4.04) 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	Not triggered by the project as there will be no important wildlife and wildlife habitats in the vicinity of the projects activities. The project would not allow investments with any negative impact on the wildlife and natural habitats. It will support investments only in the settlements or on existing agricultural lands. The ESMF provides guidance and criteria for grants and subprojects screening on this OP and all those which might trigger the policy will be excluded from the project financing.
Forestry (OP/BP 4.36) This Policy is to ensure that forests are managed in	No. No sub projects that might trigger this policy will be supported – no commercial wood harvesting

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	subprojects or those which might affect the status of forests.
Pest Management (OP 4.09). 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	This OP 4.09 is triggered as the project may finance purchasing of pesticides and proposed project activities and/or lead to their increased usage. The EMF includes a section describing both measures which will be used to ensure compliance with national laws and WB requirements relating to pesticide purchase and use, and also measures to promote Integrated Pest Management (IPM) approaches and safe pesticide handling and disposal practices to reduce human and environmental exposure. Additionally the ESMF will include a list of eligible pesticides in the country and guidance on their use.
Physical Cultural Resources (OP/BP 4.11) 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	No. As the project will be implemented on agricultural lands there will be no physical cultural resources in their vicinity.
Indigenous Peoples (OP/BP 4.10) 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.	No. This Policy is not applicable for Tajikistan.
Involuntary Resettlement (OP/BP 4.12) 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	No. Under Component 2 the project will provide finance credits for medium-term investment loans/leases, supporting value chains through PFIs, and commercialization grants. The credit line may be used to finance investments in technological plants, equipment, expansion of orchards, and greenhouses. However, these activities will take place on privately held land. ***The project will not finance activities that result in the involuntary taking of land*** resulting in (i) relocation or loss of shelter; (ii) loss of assets or access to assets; (iii) loss of income or means of livelihood whether or not there is physical displacement. In addition, the project will not finance activities which will result in the involuntary restriction of access to legally designated parks and protected areas. The project will only finance sub-projects where the Sub-borrower has a title to the land and the land is not being used or occupied by any third party. The

	Environmental Management Plan (EMP) which will be part of operational procedures for the PFIs, will be used to screen out projects with OP 4.12 impacts.
Safety of Dams (OP/BP 4.37) 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 & reservoir capacity	No. The project will not support any activities which might have impact on dams safety.
Projects on International Waterways (OP/BP 7.50) 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	No. The project not finance any subprojects which may affect international waterways including: new irrigation projects; projects involving discharging waste waters directly in the international waterways; abstraction or diversion of international waters; projects related to discharging waste materials in a location that could impact on international waters; construction of any dams that might affect international waters hydrological regime. These requirements represent screening criteria to be applied by the FIs.
Disputed Areas (OP/BP 7.60) 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	No. The project will not support any activities in disputed areas.
Disclosure Policy (BP 17.50) 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	Yes. The EMF have been disclosed and consulted in the country before appraisal and will be also disclosed on the WB website.

37. *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[8]. 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 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

[8] See: Environmental Assessment Update Sourcebook, Environmental Department April 1993. The World Bank

(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. The findings and results of EA for Category B projects are described in the Project Appraisal Document.
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.

38. *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, the same relates to aquaculture projects and many others. 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/or environmental due diligence 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. The Project AF will not finance any activities categorized as Category A.

39. *WB Public Consultation and Disclosure requirements*. For all Category 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 project's environmental aspects and takes their views into account. The borrower initiates such consultations as early as possible. 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. Any Category B EIA report for a project proposed for WB financing is made available to project-affected groups and local NGOs. Public availability in the borrowing country and official receipt by the Bank of any Category B EA report for projects proposed for WB funding, are prerequisites to Bank appraisal of these projects.

IV. THE COMPARISON OF NATIONAL AND WB EA REQUIREMENTS

40. *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.

41. *Differences in screening categories.* As mentioned above currently there is no clear EIA categorization system in Tajikistan. Screening is provided for within the legal and regulatory framework. Environmental Impact Assessment. It is based on an inclusion list for activities requiring environmental assessment. The SEE law stipulates all projects with a potential environmental impact should have in the project design an assessment of the potential impacts as well as a set of mitigation measures. Thus, as the project will support agricultural and agro-processing activities which have more or less significant environmental impacts, all of supported subprojects would require environmental assessment and respectively - ecological expertise. The projects which do not require an EA mainly correspond activities which are expected to have minor impacts on environment and therefore do not need to be passed through the formal procedures of EIA and SEE (subprojects that propose purchasing agricultural machinery or providing services, - WB Category C projects). The scale of the project EA is decided in each concrete case by the SEE/Ecological Inspectors during the preliminary approval of the project location and of its technical specifications. In the case where World Bank and national categorization/EA requirements differ, the more stringent requirement will apply. This refers mostly in the case of deciding about Category C 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.

42. *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. Similarly, in the case of Category B grant and subprojects, the beneficiaries will be required to apply WB rules and prepare not a list of mitigation measures but EMPs.

43. *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 and standards and ecological security of the society. 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. The SEE is conducted by a special Unit within the SCEPF. In compliance with World Bank policy, all EAs for sub-project financed under the Credit component will go through the more stringent review and approval process of the World Bank

44. *Differences with regard to disclosure and public consultation.* Conducted analysis shows there is currently more harmonization between World Bank and national requirements in this regard. The disclosure requirements for Tajikistan system are well defined, and, for the most part, adequate. One shortcoming is the lack of clarity on the contents of the environmental management plan, and hence what information is to be disclosed. According to national legislation, the EA disclosure and public consultation is not mandatory. 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 and can have the juridical power only after their approval by the responsible state body in field of ecological expertise. The results of public ecological expertise can be published in mass-media, deliver to the local public authority, other stakeholders. In the case of World Bank EA 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. Therefore, for the Sub-project, the PMU 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 Tajik public consultation is satisfactory, there would be no further consultation requirement. However, if no public consultation was conducted or the PMU determines that the Tajik 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 PMU 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 EA sub-project would be made available to project-affected groups and local NGOs in an easily accessible PFI and/or PMU website.

V. PROJECT DESCRIPTION

45. Changes in *Project development objectives and activities.* The Proposed Revised Project Development Objective (PDO) is to increase the commercialization of farm, agribusiness and non-farm products, and number of jobs created, by providing better access to finance and strengthened capacity of project beneficiaries. The proposed additional financing supports the government's agenda of promoting private sector development, including creating income and employment opportunities for the returning migrants, but also other budding entrepreneurs (including women, youth, and disabled). Given the dire situation with incomes and jobs for rural population the concepts developed under the original ACP (such as access to business support/extension services, access to finance and markets) will be expanded, beyond agriculture and agribusiness, to other types of rural sub-sectors and businesses, interested in creating self-employment, as well

as providing job opportunities for others. These could be business, income generation and employment creation opportunities as auxiliary products and services for agricultural value chains, off-farm opportunities, as well as other rural businesses, manufacturing and providing services. It should be noted that "rural" is defined as the entire country, except for its capital Dushanbe, which already provides better income and employment generation opportunities than the rest of the country. Project activities and components will largely remain the same as in the original project design, with the suitable activities expanded to reach the broader rural beneficiaries. The changes to the specific components are described below:

46. **Component II: Access to Finance for Agribusiness Enterprises and Small-Scale Commercial Farms (original financing - US$15.32 million, including US$11.4 million IDA, proposed amount under the AF – US$13.2 million, including US$12.0 million IDA).**

Activity 1: Credit Line. The proposed AF will allow for increasing the amount of the credit line (by US$9.0 million) and expand its scope to include a wide range of rural business activities outside the municipal borders of Dushanbe. Similarly to the original ACP credit line, it will be disbursed through eligible PFIs (commercial banks and microfinance institutions), with the PFIs responsible for selecting eligible beneficiaries, setting the on-lending rates, as well as assuming full credit risk. The terms and conditions of the credit line are expected to be largely similar to those under ACP, subject to incorporating the new modalities (such as the matching grant scheme described below) proposed under this AF.

To contribute towards addressing the current market failures of (i) providing medium-term credit for investment in the rural space on the demand side; and (ii) encouraging commercial banks and microfinance institutions to lend for micro-, small-and medium sized-business development, in particular, start-ups, a credit line will be provided through the commercial banking sector and micro-finance institutions ensure access to businesses developing in the rural space. Sub-loans will be available for start-ups, but also for entrepreneurs expanding their businesses and creating new jobs. With a view of continuing to promote private financial sector development, the project will work with the smaller banks and microfinance institutions. The credit line will extend the following *lending products*:

(i) Medium-term loans and leases for investment, expected for up to 7 years, with a maximum exposure per beneficiary of up to US$100,000, to finance equipment, technologies, and other assets needed for business development in rural areas.
(ii) Working capital loans for short-term financing needs with a maturity of up to two years. The same maximum loan amount of US$100,000 would apply, but the maximum exposure to one sub-borrower should not exceed US$100,000 under the credit line.

Target Borrowers. The project's credit line will be targeted at micro-, small and medium-sized businesses, including start-ups. These businesses could be individual entrepreneurs (including farmers) or legal entities with 100% private ownership and duly registered is accordance with the laws of the Republic of Tajikistan, and who are engaged in or intending to engage in an eligible entrepreneurial activity as a result of financing from the credit line.

Activity 2: Matching Grant Program (US$2.5 million, all IDA) for start-up target groups will introduce a matching grant program, which will complement the credit line, in support of new enterprise and job creation (including self-employment) for targeted groups: starts-ups among youth (up to 30 years of age), women and disabled.
A detailed manual for the MGP will set forth terms and conditions for selection of MGP beneficiaries, as well as the necessary formats for application for matching grants, safeguard requirements, and other necessary guidelines.

47. **Component III: Institutional Capacity Building and Project Management (US$3.90 million, all IDA, proposed amount under the AF – US$1.0 million).**

Activity 1: Capacity Building for financial intermediaries (US$0.5 million, all IDA)**.** Capacity building to financial intermediaries will be provided in two main areas: (i) Training to PFIs on start-up business financing modalities, including risk identification and appraisal, and structuring of the repayment. The training will also include key environmental aspects associated with rural business financing; (ii) Capacity building support to selected smaller micro-finance institutions with good potential to grow and expand the opportunities for access to finance, in particular for small rural and agricultural businesses.

Activity 2: Project Management (US$0.5 million, all IDA) will be allocated for project management expenses for implementation of the proposed additional activities financed under the additional financing. The PMU MOF will be responsible for the relevant procurement, financial management and Monitoring and Evaluation (M&E) activities, including the baseline and results assessment studies for the project. The AED PMU under the MOA will be responsible for Social and Environmental safeguards.

48. **Component IV: Entrepreneurship Training and Business Development Services to MSMEs (NEW, proposed amount under the AF - US$3.0 million).** A new component will be added to support potential target groups of entrepreneurs with entrepreneurship training, business development services and start-up support, as well as pilot innovative approaches to promote entrepreneurship and job creation. As part of the AF, a new Component IV will be added to expand the scope of the ongoing project to provide entrepreneurship training and business development services to potential entrepreneurs and start-ups to promote entrepreneurship and job creation. The component is expected to consist of the following two main activities.

Activity 1: Entrepreneurship training and business development services (BDS) (US$1.5 million, all IDA) to start-ups with more intensive focus on youth-led, women-led enterprises and enterprises led by/employing persons with disabilities. The project will finance basic entrepreneurship training to a wide group of potential beneficiaries and more complex business development services[9] (BDS) to select start-ups. The entrepreneurship training and business consulting services will aim to help prepare borrowers to take advantage of the credit line (including business plan preparation) and other services (accounting, financial planning, and marketing) to improve the likelihood of utilizing the loans successfully and generating jobs[10]. Youth-led, women-led and enterprises led by, or employing, persons with disabilities are expected to receive a higher share of resources.

Activity 2: Entrepreneurship Hub (US$1.5 million, all IDA). Piloting innovative approaches to promote start-up growth and job creation, including a business incubator (tentatively, in Khatlon but could be in another region, based on demand) and business mentoring and training programs. The project will take into account experience of NGOs in provision of such innovative services[11]. The project will assist with opening a business incubator in Khatlon (or another region) for a selected number of companies, as well as scale up some of the good business mentoring and training services to support start-ups more generally (with a particular focus on women, and youth-led, and disabled person-led/employing enterprises). It is expected that the pilot would contribute towards development of an 'entrepreneurship ecosystem' in Tajikistan, as incubators play an important role in developing the innovation and entrepreneurship ecosystem by fostering dialogue and cooperation among providers of business and financial support, policy makers, and entrepreneurs.

[9] Business development services are defined as those non-financial services and products offered to entrepreneurs at various stages of their business needs. These services are primarily aimed at skills transfer or business advice (IFC).

[10] MDTF financed grant will be leveraged to finance a small pilot to test different approaches to contracting BDS providers, including based on results. The grant will finance developing contract models and piloting them along-side traditional payment contracts to see if paying by results can increase the outcomes of MSMEs.

[11] For instance, Imon International has a lot of experience in supporting women entrepreneurs, as well as provision of business incubation services in Sughd.

The Business Incubation[12] function of the Entrepreneurship Hub is aimed at supporting the development and scaling of growth-oriented, early-stage enterprises, to provide them with an enabling environment at the startup stage of enterprise development. The Business Incubator[13] is expected to ensure the following services to its members (please see the *Table 4* below):

Table 4: Key components of business incubation

Services	Benefits
Infrastructure (e.g. office space, meeting rooms, electricity, phone, internet, lab facilities, etc.)	Economies of scale decrease the cost of starting a business + benefits from a professional look and brand.
Business services (e.g. help with registration, licenses, accounting, strategy advice, market research, exporting facilitation, etc.)	Help with non-core business activities saves time and money
People connectivity (e.g. mentoring, coaching, and interaction with fellow entrepreneurs (a micro cluster), market linkages)	Learning, exchange of ideas, psychological support, partnerships, business relationships

Source: World Bank (2014) Impact Assessment of Business Incubation Models in Eastern Europe & Central Asia. 2014. infoDev, Finance and Private Sector Development Department. Washington, DC: World Bank.

49. *Sub-Projects Coverage and Potential Activities*. The project will support a diverse array of sectors of the economy, including agricultural production, food processing, fishery, agroforestry, pasture and livestock management, small-scale manufacturing, services, trade, and transport, among others, and small scale construction/reconstruction of new buildings. The project facilities will not be located in protection areas and critical habitats as well as in cultural heritage areas.

50. *Operational modalities.* Detailed operational modalities, rules and regulations for the management of the grants and subprojects EA, together with the detailed instructions and guidance to the PFIs and other stakeholders will be provided in the Financing Guidelines. These guidelines will be part of the revised Project Operational Manual and constitute an integral part of the Subsidiary Credit Agreements to be signed between the Recipient and each of the PFIs.

VI. ANALYSIS OF POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS

51. *Important Environmental Components.* The environmental components, which may be adversely affected by projects at their construction, operation and decommissioning stages, generally are grouped as physical, biological and socio-economic ones. Examples of the environmental components which might be of a different levels and attributes are presented in the *Table 5* below.

Table 5. Environmental Components

Physical Components	Biological Components	Socioeconomic Components
• Physical component of ecosystems (habitats) • Air • Soil (quality, structure, fertility, erodibility) • Land	• Fauna • Flora • Vegetation communities/ forests • Animals' and plants' populations (number,	• Human health • Settlements • Cultural heritages • Employment • Demography • Income

[12] A recent study of 9 business incubators in 8 ECA countries across found that the incubators studied have generally been effective in fostering entrepreneurship and high quality job creation[12] (World Bank 2014).

[13] The financial services, which often form part of the services package at a business incubator will not be provided by the Business Incubator set up under the project.

• Water resources (surface water &, underground water: quality, availability, hydrological regime); Landscape/ Aesthetics, etc.	abundance, distribution, etc.) • Biological component of forest, aquatic, meadow, steppe and other ecosystems (as a whole), etc. • Micro-organisms, etc.	• Poverty • Gender • Education • Migration

52. *Subprojects' potential impacts.* Within the ACP and the proposed AF, impacts are expected mainly from the various types of grants and sub-projects that are funded under changed Project Component II, taking into account the expansion of its scope to a wide range of business events. The impacts associated with the different types of grants and sub-projects might be positive and negative. Positive impacts attribute mainly to socio-economic environment. Negative impacts attribute to water, air and soil pollution, additional water and energy consumption (if more goods are produced), noise, odor, health risks, loss of biodiversity and habitats, etc. Measures to be taken to minimize potential negative environmental impacts depend on their type, magnitude, combination and distribution.

53. *Subprojects' potential risks*[14]. The sub-projects' environmental risk is generally evaluated mostly moderate. In most of the cases potential impacts generated by sub-project activities are expected to be easily mitigated through good project design and implementation practices, so their negative impact and risk are expected to be insignificant**.** Furthermore, the project would support additional TA activities to strengthen the existing institutional capacities to ensure that effective EAs are conducted, EMPs are implemented properly and monitoring systems are put in place. Of particular attention would be those activities resulting in water, soil and air pollution, and soil erosion. Sustainable agricultural techniques which are to be supported through the access to finance component will contribute to better environmental protection. Recommended basic environmental and social trainings on environmental and social safeguards for both PMU staff and loan officers would promote for the most environmental and social favorable agricultural activities (see more details in Chapter 12) will also further reduce environmental risks. The project does not entail any direct social risks as its implementation and does not presume any job losses/ relocations. On the contrary, the project will make agricultural and agro-processing activities easier to pursue and will likely increase demand for labor in more competitive enterprises.

54. In rural areas, where child labor is broadly regarded as a support to parents rendered off school hours without disruptions to school attendance, there still remains the risk of its use in violation of the national legislation. In general, the risk of child and forced labor is mostly associated with cotton production though child labor could also be used in activities like production and sale along the value chain. The project will continue to apply mitigation measures currently in place aimed at preventing the risk of financing of investments, in which child and forced labor including that of migrant workers could be utilized. The private borrowers' compliance with the national legislation on the use of child/forced labor will continue to be rigidly monitored, while efforts will be made to raise sub-borrowers' awareness of the relevant legislation and the cost of non-compliance with it. A project-wide GRM will also be used for monitoring any cases of non-compliance.

55. *Potential Positive Impacts.* Sub-projects to be implemented under the project activities will generate a great number of both direct and indirect positive impacts. Direct positive impacts will be generated by

[14] Environment risks refers to (i) any temporary or permanent changes to the landscape, atmosphere, soil, water, plants or animals caused by human activities.
Social includes (i) labour standards and terms of employment (ii) community impacts such as public health, safety, security, gender equality, impacts on indigenous peoples and cultural heritage, land acquisition or potential reduction in people's livelihoods as a result of project activities (iii) occupational Health and Safety. It also includes disproportionate impacts on vulnerable groups/gender, involuntary resettlement, and affordability of basic services
In details the potential risks of activities under sub-projects can be seen in EBRD Environmental and Social Risk Categorisation List – Revised 2014 (http://www.ebrd.com)

increased agricultural production and agro-processing activities, and with the implementation of start-ups for agribusiness, which would result in higher yields, creation of new jobs and respectively, more employment 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. Some positive direct and indirect impacts/ benefits generated by activities within concerned sectors and direct inputs from loans are presented in the *Tables 6 & 7* below.

Table 6. Project's Positive impacts anticipated

Sector	Positive impacts/ Benefits
Agriculture: Annual Crop & Plantation Crop Production; Meet & Poultry Production	Introduction of advances agricultural techniques, use of advanced machinery & equipment, increased crop and plantation crop production, mammalian livestock and poultry production; creating new jobs, contribution to ensuring of food security, contribution to poverty reduction in rural area and generally, to improvement of socio-economic conditions in rural areas, etc.
Agro-processing: Storage, Dairy, Meat and Poultry Processing, Vegetable Oil Processing, Bee keeping, etc.	Introduction of new technologies & quality standards at enterprises, use of advanced machinery & equipment, providing additional value to produced agricultural production, providing more food thus ensuring country's food safely; creating new jobs and increased incomes, contribute to improvement of socio-economic conditions urban and rural areas, etc.
Manufacturing: Cement & Lime, Ceramics, Glass, Textile Manufacturing, Tanning & Leather Finishing, Printing, Construction Material Extraction, Surface Treatment of Metals and Plastics, Metal, Plastic & Rubber Products manufacturing, Sawmilling & Manufactured Wood Products, Board & Particle-based Products, Pharmaceuticals & Biotechnology, Semiconductors & Other Electronics manufacturing	Introduction of new technologies & quality standards at enterprises, use of advanced machinery & equipment, creating new opportunities for access to foreign markets; providing machinery and other equipment for other sectors of economy (e.g., farm machinery for agriculture), providing more goods thus contributing to improvement of living conditions, providing new jobs with better working conditions and increased incomes, improving women's labour market participation, etc.
Construction	Providing new jobs & better income, contributing to development of infra-structure, contribution to improvement of living and work safety conditions, and in general, to socio-economic conditions in urban and rural areas, etc.
Providing services	Increasing of self-employment, contribute to improvement of socio-economic conditions urban and rural areas, etc.

Table 7. Positive Impacts generated by direct loan inputs

Input	Positive Impact
Seeds - Agriculture: for Annual Crop & Plantation Crop Production, including orchards and vineyards	Increased agricultural production; increased rural income; improvement of rural economy; contribution to country's food security, etc.
Fertilizers - Agriculture: for Annual Crop & Plantation Crop Production	Improved soil quality, increased agricultural production; increased rural income; rural economy improved; contribution to country's food

Input	Positive Impact
	security, etc.
Pesticides - Agriculture: for Annual Crop & Plantation Crop Production; Agro-processing: Mammalian Livestock & Poultry Production	Increased agricultural production; increased rural income; rural economy improved; contribution to country's food security, etc.
Mammalian Livestock & Poultry Production	Fewer animals required for the same production volume; improved quality of production and respective products for markets, including foreign ones; increased farm income; improved rural economic situation, etc.
Animals for dairy - Agro-processing: Meet & Poultry Processing	Improved farm income & rural economic situation; contribution to country's food security, etc.
Machinery and other equipment – Agriculture, Agro-processing, Manufacturing	Reduced labor burden for rural employees; improved farms' efficiency; increased production volume, improved soil preparation, improved rural economic conditions, etc. In fact, for primary processing equipment the positive impact will be additional value to agricultural production resulting in improved local economic situation through more jobs provided; improved farm income; reduction of n transportation costs and fuel consumption, etc..
Vehicles – all sectors	Improved labor efficiency resulting in improved profits
Storage facilities – all sectors	In fact, for fuel, grain and other products, the positive impact will be: easy fuel and lubricants handling, avoidance of fuel spills, decease of fuel wastage; decrease spoilage of crops and grains resulting in improved economic efficiency and higher farm incomes
Construction – all sectors	In fact, for stock of machinery and chemicals the positive impact will be: Improved livestock husbandry; better protection of machinery against weather conditions thus contributing to farms net profit; prevention of chemicals' leakages and accidental spills thus improving local environmental conditions, better chemicals' quality, etc.
Providing services	Improved labor efficiency resulting in improved profits, improved incomes

56. *Potential negative impacts.* Negative impacts mainly relate to physical and biological environmental components and are linked to water, air and soil pollution, soil erosion, loss of biodiversity and habitats, health risks, energy and water consumption as well as solid waste management. The potential adverse environmental impacts of proposed types of grants and 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, health and environmental risks associated with agro-chemicals use, loss of biodiversity, waterlogging and salinization of irrigated lands, and disturbing natural habitats; (b) *agro-processing and manufacturing*: contribution to surface water pollution, wastes generation, odor nuisance; (c) small scale *construction and/or rehabilitation of the existing premises*: soil and air pollution; acoustic disturbances, construction wastes, and potential asbestos issues, toxic materials, etc. The major agricultural impacts are related to livestock and poultry production, both on the small farm holding and the large commercial farm. This may result in increased volumes of animal waste, including contaminated by pesticides affecting soil, groundwater (through leach ate from septic tanks) and surface water quality, human health and biodiversity, as well as soil degradation/ compaction due intensive pasturing, loss of agricultural biodiversity, etc. In addition, some sub-projects for livestock raising (as was identified during the implementation of original ACP) may include increasing / building paddocks right in the courtyards of homes where sub-borrowers reside. In the event that the number of heads of livestock per unit of area necessary for the relevant animal content is exceeded, this activity may create risks to human health (primarily for family members, like children, women, elderly people) associated with sanitation, air pollution (odors), etc., as well as the risk of

water pollution by animals waste. In other subprojects of ACP some improper activities also indirectly increase environmental risks, such as water erosion and soil salinization. These examples need more attention to the proper environmental screening, EA, and regular supervision of such subprojects[15].
In agro-processing and manufacturing sector the main impacts are related to surface water pollution through increased concentrations of pollutants in wastewater effluents and emissions to air, mostly dust and odor, emissions to air (dust/ particulate matter, often toxic substances), acoustic, vibration, water and energy consumption.
During construction/reconstruction activities which may have a relevance to all above sectors, the main negative impacts are generated during construction phase and relate to soil erosion, soil and water pollution through waste generation, air pollution, acoustic and aesthetics and asbestos issues.

57. The most common potential negative impacts from agricultural production, agro-processing activities and construction/rehabilitation of existing buildings activities and their significance are summarized in the *Table 8* below.

Table 8. Potential negative impacts

Enterprise Category	**Potential Impacts**	**Level of Significance**
Agro-processing	• Water and energy consumption • Water pollution • Soil pollution • Odor nuisance • Air emissions	High High Moderate High Moderate
Manufacturing	• Water and energy consumption • Surface water pollution by hazardous chemicals • Air pollution • Biodiversity/ habitats loss • Soil and water pollution through hazardous wastes generation and disposal	Very high Very high Very high Moderate Moderate
Agriculture Production	• Soil degradation (soil erosion, loss of productive capacity, compaction, etc.) • Soil pollution (e.g., by pesticides) • Surface (through runoffs) and underground (though infiltration) water pollution • Loss of agricultural biodiversity (due to cattle grazing) • Threats to human health and wildlife due to improper handling of processed seeds, fertilizers and pesticides, and due to improper management and placement of vaccines for livestock and other animal treatments;	High High High High High
Construction/ reconstruction of buildings, farmyards for cattle, storage facilities	• Soil erosion • Soil pollution • Land degradation • Air pollution • Acoustic • Water pollution • Asbestos	Moderate Moderate High Moderate High Moderate High
Providing	• Water and energy consumption	Low

[15] Materials of ACP Implementation support mission of WB: environmental management issues, May, 10 - 19, 2017

Enterprise Category	Potential Impacts	Level of Significance
services	• Water pollution • Soil pollution • Air emissions • Health and safety	Low Low Low Moderate

More detailed description of impacts which may arise from each probable activity as per sectors of concerns are presented in the Environmental Guidelines and all these impacts are expected to be easily mitigated through good projects design and implementation practices (*see Annex 4/Form2, Annexes 10-13).*

58. *Impacts from the creation of a business incubator (under new AF Component IV)*. Business incubator is a legal entity created to support small businesses at the stage of their formation by providing production facilities, equipment, organizational, legal, financial, consulting and information services. Within the framework of the AF for the ACP, it is proposed to create a business incubator in Khatlon region in the framework of new Component IV (Activity 2) - Pilot implementation of innovative approaches to develop entrepreneurship and create jobs and introduce mentoring programs for businesses.

The main impacts from the creation of a business incubator are expected from repair or small construction works in Khatlon to provide production facilities to small business entities.

In carrying out repair and / or small construction works, the main impacts are divided into three stages (pre-construction, construction and operational (phase of operation) phase). The main types of potential negative impacts that may be expected include:

• air quality deterioration - due to construction debris, dust formation, exhaust gases from transport and construction equipment, etc.;
• soil contamination - due to inadequate storage and disposal of garbage, possible fuel leaks and fuels and lubricants due to a malfunctioning state of technology, etc.;
• quality of surface and groundwater - due to improper location of the facility, storage of fuel, transport leaks, improper storage and disposal of construction waste, lack of septic tanks, non-compliance with sanitary and hygienic requirements for etc.;
• threats to biodiversity - due to trees cutting off;
• Exceeding the permissible noise levels - due to non-observance of the operating time of equipment, unsuitable equipment;
• Impacts associated with the dismantling of roofs from slate containing asbestos, or use for roofs of asbestos-containing materials
• Impacts related to occupational safety, and public safety and health.

The choice of start-ups/innovative enterprises to be supported should be also based on criteria that meet the requirements of environmental conservation and favorable social consequences. The environmental effect is determined by the ability of innovation in production, operation and disposal to have no negative environment impact. Under environmental and social assessment of innovation, potential risks reflecting the level of its environmental and social safety are taken into account.

Along with positive impacts, innovations can have negative impacts. Potential adverse impacts from stimulating the creation and growth of innovative enterprises and their activities may in the future mainly relate to the physical and biological components of the environment. As in the case of impacts from sub-projects, impacts from the activities of such innovative enterprises may be related to water, air and soil pollution, soil erosion, loss of biodiversity and habitats, health risks, energy and water consumption, and solid waste management. These impacts will be mitigated primarily by selecting start-ups/innovative enterprises through appropriate Environmental Management Plans and social aspects (mitigation measures). An example of such a Plan is given *in Annex 8.*

Positive impacts relate to improving the economic environment for small entrepreneurship, including creating of new jobs, contribution to food security, poverty reduction in rural areas and, overall, improving the socio-economic conditions in rural areas, etc.
The training which will be provided through competitive grants and coaching programs (business coaching) can have a positive impact in the sense that more environmentally friendly and adapt to climate change innovative technologies can be promoted.

59. *Potential Cumulative Impacts.* Cumulative impacts are not likely to be an issue as the Project distributes its loan activities more or less evenly throughout the country. In the agricultural production sector, if there is a concentration of loans for the purchase of a large number of livestock in one particular region, without effective waste management, the main river of the watershed could become heavily polluted as a result of a high concentration of livestock. Simultaneously, there can be a great degradation of the village pastures and epidemiological danger. Some activities may require additional water consumption thus contributing to lowering of groundwater table, or contribute to water pollution though additional polluted effluents thus contributing to deterioration of surface water quality and respectively, loss or degradation of aquatic habitats, biodiversity degradation, etc. Pesticide and chemical fertilizer use in agricultural production may have a severe cumulative effect. Enterprises in a single small region could cumulatively have a significant effect on surface water bodies, resulting in damaged of aquatic ecosystems and affecting water quality downstream, sometimes in adjacent countries. Similarly, the impact on water quality of a common river used by several processing plants could be significant. The regular analysis of water and soil which routinely is done by analytical laboratories of the State Hydro meteorological Service and of CEP as part of national environmental monitoring will provide the necessary data about the trends in water and soil pollution in the country. Based on this data the MoA PMU will take measures to mitigate and prevent the possible pollution and negative impacts.

60. *Residual Impacts.* Residual impacts are those that remain after all mitigation has been carried out. Assuming that all mitigation as indicated in the guideline tables are implemented appropriately, the residual effects, even cumulatively on all sub-projects, should not be significant. Expert judgment on expected residual impacts from agricultural production and agro-processing activities within sub-projects implementation once all mitigation measures are taken is presented in *Annexes 10 and 11.* Summary of probable residual impacts generated by the proposed activities is presented in the *Table 9* below.

Table 9. Summary of probable residual impacts

Activity	**Probable Residual Impact**	**Significance**
Agriculture	Surface water & underground water pollution, soil pollution, soil erosion	Low-moderate
Development of virgin and fallow lands, pasture management and livestock breeding	Land use change/conversion of natural habitats	High
Agro-processing	Surface and underground water pollution, air pollution	Low
Construction/rehabilitation of small scale buildings	Surface water pollution, soil erosion, generation of solid wastes, used toxic materials, asbestos	Low
Manufacturing	Air & surface water pollution	Low-moderate
Providing services	Surface water pollution, soil erosion, generation of solid wastes	Low

61. *Indirect Impacts.* Indirect (or secondary) impacts are those arising from activities associated with direct activities implementing within the project implementation. These might be positive and negative social,

economic, or environmental impacts of agricultural production, and agro-processing. In fact, in agricultural production and agro-processing sectors may relate to purchase of more goods (e.g., fertilizers and pesticides for agricultural production), more transportation service, more fuel, utilities, labor, etc.). Negative indirect environmental impacts resulted from activities of the supported subprojects have to be considered during the EA process and relevant mitigation has to be suggested.

VII. SOCIAL ANALYSIS

62. The social assessment, which was conducted for the purposes of additional financing of the Project in selected regions (Penjikent, Jayhun, Rasht), aimed to design measures for updated Document on Social Assessment.

63. Within the framework of the social assessment, the following objectives were accomplished:

- analysis on preferential loans calculation for target groups (youth, return migrant workers, women, vulnerable people, including disabled people);
- analysis of agriculture commercialization activities among target groups;
- analysis of the current business incubators mechanism state, development of proposals and recommendations;
- analysis of land resources access for women, youth, returning labor migrants and vulnerable groups of the population and, first of all, persons with disabilities to;
- issues related to new jobs creation, the use of child labor, youth employment, returning labor migrants and people with disabilities;
- identification of the potential, raising awareness on social protection issues for credit institutions

7.1. Methodology

64. In order to achieve the objectives, qualitative research methods were used: semi - structured interviews with key informants and focus groups. Semi-structured interviews were conducted with the following key informers:

1. specialists and chairmen of district department, which supervise social issues, including employment and social protection;
2. Heads of the regional agriculture departments;
3. The chairmen of the jamoats and mahalla committees;
4. Financial institutions representtives (micro credit organizations)

65. The focus groups were held in jamoats, and included both men and women. The selection of focus group participants was carried out taking the following criteria into account:

- Women, including heads of household;
- People with disabilities (disabled);
- Returned labor migrants;
- Heads of dehkan farms involving women, men and disabled in their activities;
- The youth.

66. The selection of rapid social assessment areas was carried out by the Agriculturalization Commercialization Project (CAS) and was based on the representation of all regions of the country, except for GBAO. The survey team could not get there because of difficulties with movement due to severe weather conditions and avalanches. The study was conducted in Penjikent, Sughd region, as well as in Jaihun (former Kumsangir) of Khatlon region and in Rasht, one of the districts of republican subordination.

7.2. Target groups access to land

67. As per results of the study, women's access to land resources remains at a low level. According to information received from the agriculture department in study areas, women's access to individual dehkan farms in Penjikent region is 8.5% of the total, in Rasht district it is 3% and in Jaihun area - 5%.

68. However, according to the legislation of the Republic of Tajikistan (the Land Code of the Republic of Tajikistan, the Law of the Republic of Tajikistan on State Guarantees of Equality of Men and Women and Equal Opportunities for Their Implementation, the National Strategy for Activating the Role of Women in the Republic of Tajikistan for 2011-2020, etc.), women have equal access with men to land resources. One of the reasons for women's low access to land resources, especially those who are heads of households and single, is, first of all, limited material means for effective cultivation. In addition, there are also difficulties in the processing, cultivation, storage and sale of manufactured products.

69. The able-bodied people with disabilities (invalids) in accordance with the Land Code of the Republic of Tajikistan also have equal rights in access to land resources. The study revealed that people with disabilities do not have special benefits when it comes to access to land resources, land processing and financial resources provision (credits), including circulating assets (seeds, mineral fertilizers, combustible lubricants).

70. The study results revealed that, there are no restrictions for returning labor migrants access to land resources. The majority of return migrant workers have their share in dekhkan farms. They work in their land plots or collective dehkan farms upon return from abroad. The majority of young people become full owners of land plots in accordance with the Law on Dehkan Farms, which guarantees a land transfer by inheritance.

7.3. Women's employment

71. During research on women's, returning labor migrants, youth and disabled people employment, it was revealed that women, especially single, divorced, those with many children or those having disabled children, have limited access to develop their own business, especially when it comes to farming. They lack certain level of education, limited financial capacity, poor knowledge of the market, etc to introduce their own business. However, employment and social protection services representatives noted that some women are engaged in education and health (mainly as nurses). A certain proportion of women are engaged in trading and, above all, selling agricultural crops, sewing national dresses at home. Despite all these types of employment, the majority of women in the study areas are engaged in agricultural crops production. Thus, Penjikent district representatives noted that even 30-40% of the women from Penjikent city-center are engaged in the production of agricultural crops. Most women work in so-called women's brigades, which usually consists 20-30 people.

72. The employment of single women in the study areas has its own characteristics. These are mostly young women, widows, women, whose husbands are in labor migration and do not provide financial support to their families, divorced. Due to lack of necessary education, specialty and certain qualifications, this group of women can hardly provide their families with necessary means for livelihood. Therefore, single women have to engage in several activities at the same time. Most single women work on household plots in dehkan farms, some women are engaged in market trade, selling dairy products, cleaning state and private organizations, home-based needlework.

7.4. Employment levels of returning labor migrants and youth

73. Conversations in focus groups revealed that, in recent years, the number of migrant workers has decreased due to economic crisis in the Russian Federation and the tightening of migration policy. Respondents from Rasht district noted that about 30-40% of returned labor migrants work in the production of agricultural crops and about 40-50% in the Jaihun area. For many returning labor migrants work in agriculture sector is not a main income source and is a temporary work. Most of them are employed mainly in urban construction. Returning migrant workers have extensive experience in construction, repair and maintenance of agricultural machinery, storage, processing and sale of agricultural products. They can make a significant contribution to the development and commercialization of agricultural production. However, when it comes to opportunities in agriculture, there are obstacles such as high interest rates of financial institutions.

74. Returning migrants, among those overwhelming majority are young people, would like to create small industrial enterprises for the agricultural products processing, storage facilities, and also develop new technologies in this direction, for example, drip irrigation, different crops cultivation in specialized hotbeds.

75. Another obstacle is poor financial literacy of young entrepreneurs, lack of educational centers for financial training programs in rural areas.

7.5. Employment level of disabled people

76. In accordance with the Law of the Republic of Tajikistan "On the Social Protection of Disabled People", disabled people are granted employment guarantees. Proceeding from this law, local authorities and enterprises, regardless of ownership form, should provide disabled people with a workplace. The employer should create additional preferential conditions for the disabled. The Law of the Republic of Tajikistan "On promotion of employment of the population" also guarantees the employment for disabled people (invalids) according to their physical abilities.

77. The research has shown that more than half of disabled people (group 2 and 3) work in agricultural production. Many of them work on the markets as sellers of agricultural products. Among disabled women, the majority are engaged in home work. Focus group participants noted that because of a lack of financial resources, remoteness of medical institutions and, in particular, low level of legal literacy, many disabled people do not have the opportunity to register their disability.

78. Disabled people who live in rural areas are also vulnerable when it comes to development of their farms, due to both physical and social, economic and financial opportunities. Also, due to physical limitations, they are not recruited either by farmers, by processors or by other employers. More than 50% of disabled people of 2nd and 3rd group are forced to work, mainly on their personal plots, presidential or leased lands. Many of them use microfinance banking services in the form of loans for seeds purchasing, seedlings, fertilizers or agricultural equipment rent, while there are still no special preferential programs for this population category. Mostly they are engaged in relatively light jobs, such as: sales of products, contracts or purchase of machinery, agricultural materials, etc. Disabled people do not have any privileges or support from the State for agricultural activities.

7.6. *Commercialization level of agricultural production*

79. The end result of the whole chain of added value is agricultural products sale, and receipt by dehkan farms of necessary profits, which could, on the one hand, compensate all expenses, on the other hand, create opportunities for further production, simple or extended reproduction. The study showed that dehkan farms face a lot of restrictions, including access to markets, lack of financial resources and know-how in production.

7.7. *Specialization of agricultural production*

80. Commercialization of agricultural products produced on dehkan' and households' level mainly depends on what type of agricultural products are called for. Thus, dehkan farms in the Penjikent region are mainly engaged in the production of potatoes, carrots, apples, grapes and rice. The main part of grown apples (more than 80%) are purposed to be sold, out all potato production, approximately 50% is destined for domestic consumption, 20% for seeds and 30% for sale. Grapes are mainly produced for sale. Farms that are engaged in the production of rice, use 20% for consumption and 80% for sale.

81. Studies have shown that the level of marketability of agricultural products depends on the size of dehkan farms. Usually in large collective dehkan farms the bulk of the output is intended for sale, production in individual dehkan farms, most of all, is directed for their own provision with food products.

7.8. *Access to material means for agricultural production*

82. Access of agricultural producers to quality seeds, fuels and lubricants, agricultural machinery, circulating and fixed assets is the important part of CAV. The study showed that dekhkan farms mainly purchase mineral

fertilizers, seeds on the markets. Large dekhkan farms sign contracts with major suppliers that supply the necessary materials directly to dehkan farms. The provision of services and means of production by dehkan farms is chaotic without a single system, accounting needs, regional features of agricultural production.

7.9. *Selling of agricultural products*

83. Lack of time, transportation equipment, places on the market, storage areas, and high transport costs, mean that dekhkan farms cannot sell their products on their own.

7.10. *Storage and processing of agricultural product*

84. The study showed, that the weakest link in the CAV for agricultural producers is low level of infrastructures development, the ways of storing and processing of produced production. Most of the existing storage facilities in the study areas were built during the Soviet era, owned by collective and state farms. Presently most of them are inactive and do not meet modern requirements for agricultural products storage.

85. Participants of focus groups in the surveyed regions noted that they mainly use traditional methods of storing. The main storage place for grown agricultural products are cellars and sheds. When storing agricultural products, new technologies are actually not used. Representatives of institutional organizations, jamoats and focus groups noted that lack of modern storage facilities is the main problem in the production and sale of products. Due to lack of storage facilities, dehkan farms have to sell their products at low prices. In the regions there are also practically no enterprises for processing agricultural products.

7.11. Analysis of current state of business incubator's mechanism

86. Tajikistan adopted a number of regulatory documents for the development of business incubators (Article 1b of Art. 4 of the Law "On Technical Park" adopted by the Government of the Republic of Tajikistan on July 21, 2010 No. 629, Article 16 of the new Law of the Republic of Tajikistan "On State Protection and Support of Entrepreneurship" dated March 18, 2015 No. 1194). These laws describe main responsibilities and tasks for business incubators creation. In the adopted Decree of the Government of the Republic of Tajikistan No. 201 of 30.04.2012, "On approval of the Program of State Support of Entrepreneurship in the Republic of Tajikistan for 2012-2020", it was planned to create business incubators in Dushanbe, Khujand, Khorog and Kulyab cities by 2014. But, in fact, at the moment, there is only one business incubator in the country, which was opened by the National Association of Business Women in Tajikistan (NADJT) in the Sughd region. Currently, the association provides its services throughout the whole Tajikistan with the help of 23 existing branches located in different regions of the country that have trained trainers and who conducted and can conduct additional, educational trainings on current market reforms, business training and vocational courses.

87. However, a study in the Penjikent, Rasht and Jaihun districts revealed that, on institutional organizations, and local government (jamoat), dehkan (farmer) economies and communities levels, there is no accessible information about business incubators.

7.12. Social impact of the Project and additional financing

88. The results of social assessment and research have revealed that, in general, the expected social and gender effects of the Project will be positive, especially with regards to outcomes of employment and labor improvement. The project activities will specifically target vulnerable groups of the population, including returning labor migrants, youth and people with organic opportunities (disabled) unemployed, unproductive self-employed people and active workers. The Project will expectedly have a positive impact on the employment opportunities for women. The Project will provide better access to information on labor market opportunities and more relevant training, and thus provide more control over their own career choices.

89. In addition, the Project expectedly will have a permanent positive influence the employment results of the beneficiaries and therefore potentially have a big impact on the economic situation improvement in the country, especially in rural areas.

90. Activities that result in the forced relocation or withdrawal of land are not implied within the framework of the Project, thus, OP 4.12 will not be triggered.

VIII. ENVIRONMENTAL AND SOCIAL GUIDELINES

91. *Purpose of Environmental and Social Guidelines.* The purpose of the project Environmental and Social Guidelines is to assist the PFI loan officers, PMU staff, sub borrowers in determining the potential environmental and social impacts of grants and sub-projects and specific conditions to each of the sub-project loans to ensure that potential impacts are minimized, if not entirely avoided. The Guidelines provide the anticipated sub-project activities and the impacts that they may have on environmental components as well as mitigation measures to be undertaken to minimize or even prevent impacts on environment. In particular, the PFIs, PMU and loan officers will use three sets of tables presented in the Annexes 7 and 8, which will assist them in determining of environmental and social impacts that can be expected from different types of projects in various sectors. Knowing the impacts to be expected from various types of grants and subprojects, the loan officer as well as the subproject designer/beneficiary can define the mitigation measures required as a condition for the loan. These Guidelines may be also be used for the purpose of environmental monitoring of sub-projects.

Since these are only guidelines and the information contained within is generalized, in some instances, the officers would be advised to seek local professional opinion (e.g. CEP, agricultural extension staff, research officers, designers, etc.) for more specific information and advices.

92. *Content of Environmental and Social Guidelines.* The Environmental and Social Guidelines provide the following: (a) Rules and Procedures for grants and sub-projects environmental screening to be funded under the access to finance component; (b) Environmental Screening Checklists (presented in the *Annex 5 (Forms 1-4*), including for existing facilities and EMP Checklist-type for small scale construction/rehabilitation subprojects; (c) Content and format for the Environmental Management Plan to be complied for sub-projects and format for Environmental Monitoring Plan to be follow to achieve environmental protection requirements under the loan (*Annex B*); as well as, (d) Tables that describe potential environmental and social impacts that may occur as a result of sub-project activities as well as needed mitigation measures for the following sectors: Agricultural Production (*Annex 10*), Agro-processing (*Annex 11*), Manufacturing (Annex 12) and providing Services (Annex 13), which may be financed by the credit.

93. *Rules and Procedures for Sub-projects Environmental Screening.* Screening of each proposed project for funding is to be undertaken in order to determine the appropriate extent and type of Environmental Assessment as well as which one of World Bank's Policies will be triggered. The attribution of the project type to WB's EA category and respectively, environmental risk that might be generated (i.e., high risk – by the Category A projects; from moderate to low risk – by the Category B projects, and from low to no risk - by the Category C projects) is to some extent, an expert judgment. Generally the significance of impacts and the selection of screening category accordingly, depend on the *type* and *scale* of the project, the *location* and *sensitivity* of environmental issues, and the *nature* and *magnitude* of the potential impacts.
In terms of type and scale of the projects. Usually the following projects are considered as having "significant" impacts and respectively should be qualified as category A projects: (a) significantly affect human populations, including settlements and local communities, (b) alter environmentally important areas, including wetlands, native forests, grasslands, and other "critical" natural habitats and ecosystem services; (c) "significant" potential impacts might be also considered the following: direct pollutant discharges that are large enough to cause degradation of air, water or soil, endangered species and "critical" habitats; (d) large-scale physical disturbance of the site and/or surroundings; (e) extraction, consumption, or conversion of substantial amounts of forest and other important natural habitats, including above and below ground, and water-based ecosystems; (f) measurable modification of hydrologic cycle; (g) hazardous materials in more than incidental quantities; (h) and involuntary displacement of people and other significant social disturbances. It is expected the supported sub projects will be not related to mentioned above circumstances and respectively

will not have significant environmental impacts. In the case such project will be presented for financing, they will be rejected.

In terms of location: 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 and "critical" habitats — juniper forests, wetlands, wild lands, vulnerable soils, and particular habitats of endangered rare and endemic 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). Similarly as above, the project will not support any projects located in the proximity of mentioned areas.

In terms of sensitivity. This is in the case when the project might involve activities or environmental features that are always of particular concern to the Bank as well as to the borrower. These issues may include (but are not limited to): conversion of wetlands, potential adverse effects on endangered species and habitats as well as protected areas or sites, involuntary resettlement, impacts on international waterways and other transboundary issues, and toxic waste disposal.

In terms of magnitude. There are a number of ways in which magnitude can be measured, such as the *absolute amount* of a resource or ecosystem affected, the *amount affected relative to the existing stock* of the resource or ecosystem, the *intensity* of the impact and its *timing* and *duration*. In addition, the *probability of occurrence* for a specific impact and the *cumulative impact* of the proposed action and other planned or ongoing actions may need to be considered. Taking into account the scale of the proposed subprojects it is expected the magnitude of their environmental impacts will be also quiet low and thus they usually will be considered as category B projects.

94. *Proposed subprojects environmental categorization.* During environmental screening it is necessary to take into consideration the following:

- The proposed subprojects which might have significant impacts and located in or in the vicinity of environmentally sensitive areas and habitat of endangered species; in or near archaeological, historical, cultural sites and socially vulnerable areas are considered as Category A. As mentioned above, all types of Category A subprojects will be not supported within this project.
- To Category B projects may be attributed all activities which may have some adverse impacts the environment, - mainly those others beyond the scope of Category A, which involve livestock production, usage of mineral fertilizers and pesticides, large scale orchards and vineyards plantations, and/or construction and full rehabilitation of buildings, as well as agro-processing enterprises.
- To the Category C projects will be mainly attributed those which are expected to have minor impacts on environment and therefore are not needed to be passed through the formal procedures of EIA and SEE (mainly those related to purchasing agricultural machinery and bee keeping, providing services).

For Category C projects beyond screening, no further EA action is required. Should the PFIs meet difficulties with WB categorization of projects it should consult the PMU environmental specialist.

The screening process and criteria outlined below in the above will be used to determine which sub-projects are Cat B and C. They are generally in line with both national and WB rules and procedures. At the same time *in the case where WB and national categorization/EA requirements differ, the more stringent requirement will apply*. This refers mostly in the case of deciding about Category C 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.

Steps to be followed while performing categorization/screening of sub-projects.

i) The initial screening for the eligibility of the subproject will be based on the List of prohibited types of investment activities (see *Annex 1* and Exclusion list I in the *Annex 2*) banned by WB. The loan officer

(or credit specialist)/ employee will check the type of activity of the subproject with *Annex 1* and *Annex 2 (Exclusion list I)* and, if the subproject is on the list, the subproject initiator receives a response that the financing of this subproject will not be considered.

ii) Once it is confirmed that the subproject is not part of the List of prohibited activities (*Annex 1* and Exclusion list I in the *Annex 2*), the loan officer /employee will continue to work with the subproject initiator to conduct a rapid assessment of the likely environmental impact and the potential for involuntary resettlement, based on the requirements of national legislation and WB policies, as described below. Check-list on social assessment of sub-project (*Annex 3. Screening Check-list on social issues*) and Checklist for express environmental screening (*Annex 4 (Form1)* will be used by loan officer for assessment of social impacts. *Annex 4/Form 2* is recommended to be filled by PFI credit officers for more precise categorization and for sub-projects of category B.

iii) The loan officer will check the type of subproject activities with WB criteria for Category A projects – see Exclusion lists II and III in the *Annex 2*. If the subproject is on the list, the subproject initiator receives a response that the financing of this subproject will not be considered.

iv) The loan officer will check the type of activity of the subproject with National Categories I and II projects (see *Annex 3* - Exclusion lists IV and V in the *Annex 2).* If the subproject is on the list, the subproject initiator receives a response that the financing of this subproject will not be considered.

v) After the loan officer / employee of the Bank reconciles with the checklists and the evaluation procedures, the subprojects must be classified in one of the following environmental impact categories:

- Category "A" projects are classified as high risk projects and include National categories I and II (*Annex 2 – Exclusion lists II-V*);
- Category B projects are classified as medium risk projects with local impacts and include National categories III and IV (*Table 10 below – Lists II and IV*) and projects which are not listed in the national categorization list but with significant environmental impacts, requiring EMP;
- Projects of category "C" are classified as projects with a minimum or zero degree of risk.

vi) Category "A" projects are excluded from financing. Only projects of categories "B" or "C" are allowed for financing.

vii) All sub-projects under categories "B" and "C" (*see Table 10 below*) must undergo the Evaluation of environmental risks according to the updated and tested form in frame of implementing ACP (see *Annex 5.1.(Forms 1-3, Forms 6/1 and 6/2)*

viii) For all sub-projects under category "B" *sub-borrowers will fill out* Environmental screening table according to the updated form in frame of implementing ACP (see *Annex 5*) and prepare the EMP.

The Bank finances projects that do not lead to involuntary resettlement of people (as was mentioned above), i.e. Projects that are classified as category "C" with zero impact on involuntary resettlement.

The lists of eligible and examples of non-eligible types of activities (sub-projects) which was prepared on the base of Exclusion list of activities, WB categorization criteria, National Categories for the projects for which development of EIA/EMP materials is mandatory is presented in *Annex 2* and *Table 10* below. However, this list can be extended because of other factors involved such as subproject location, the nature of impacts, and the need for the EA process to be flexible enough to accommodate them. For example, the activities related to animal husbandry (increasing number of cattle, cattle breeding) can be recommended for full exclusion or strongly limited because of high degradation (erosion) level of pastures in Tajikistan. Location of this type of activities (valley, mountains), fodder availability, pasture pressure etc. must be carefully reviewed before recommending the sub-projects for funding.

Table 10. Examples of eligible types of activities for financing and suggested environmental Category

I.	**WB Category C** *(subprojects which are unlikely to have direct and adverse impacts – no EIA/EMP is required)*
	Small scale agricultural subprojects, if they were not established through conversion of natural habitat, do not use pesticide, and have not some other adverse impacts on the environment. - Agriculture, horticulture, vineyards and orchards (small scale 5 ha) - Livestock (small-scale - less than 10 head of cattle, small cattle or 500 birds) - Construction of silos for drying, cleaning, storage of grains - Construction of greenhouses (without boiler houses) - Flax production - Purchase of tractors and other agricultural machinery - Agro-tourism - Seeds purchasing - Bee keeping - Agricultural machinery (tractors, winnowers, sowing machines, etc.) - Nutrition; - Flour milling ***Trade*** Wholesale and retail trade by non-hazardous goods ***Services*** Sales Hear cutting shops Hoteling Internet cafe
II.	**WB Category B** *(subprojects which may have some environmental and social impacts development of an **EMP is mandatory**))*
	Small scale agricultural subprojects (*listed as the "WB Category C "above****), if they were established through conversion of natural habitat, consider using pesticide or significant amount of chemical fertilizers, and may have other adverse impacts on the environment.*** ***Medium scale agricultural subprojects)*** - Agriculture, horticulture, vineyards and orchards (medium-scale intensive operations 5-300 ha) - Animal husbandry (medium scale - from 10 to 500 head of cattle and up to 1000 small ruminants)* - Production of poultry meat from 500-3000 birds (special measures are required to reduce the impact) - Construction and operation of surface irrigation and drinking water supply - Recultivation of fallow lands (up to 100 ha); - Creation of mariculture and aquaculture farms on rivers or lakes over 0.5 0.25 ha (without exotic species) - Use of agricultural land (10-25ha) for non-agricultural commercial purposes - Use of virgin soils and a whole space for intensive farming - Construction of buildings for storage of agricultural goods and products - Construction of warehouses for chemical pesticides and mineral fertilizers - Warehouses of agricultural products; Note: *Although medium animal husbandly is in principle can be considered as eligible activity, but taking into account the level of pastures erosion in Tajikistan this type of activity directed to increasing of livestock number should be excluded or carefully reviewed (location, status of pastures etc.). ***Food industry (medium scale)*** - Agro-processing plants, food, beverages, seeds, fibers (medium scale -> output 1000ton / year)

	- Canning industry (annually process from 3000 to 20,000 tons of products). - Complex of livestock farms (up to 1000 animals) - Dairy products, milk and dairy plants - Slaughterhouses, meat processing plants and plants for processing the remains of animals (medium scale -500 - 5000t / year) - Construction of new facilities, or planting perennials. ***Manufacturing/agro-processing (small scale)*** - Canning industry (processing of raw materials <1000 tons / year). - Collection and processing of medicinal herbs - Construction of buildings, structures and enterprises for processing agricultural products - Creation of food industries for semi-finished products (production capacity <1000 tons / year) - Manufacture of soft drinks
III.	**Other Category B projects (**types of activities from the list of the National category III of the environmental impact**) – EIA\EMP is mandatory:**
	1. Service stations, car parks; 2. Cattle-breeding complexes; 3. Granaries; 4. Small workshops for wine making and production of fermented beverages, 5. Small workshops for the production of clay products and building materials; 6. Small shops for processing leather; 7. Small hydroelectric power stations (with a capacity of less than 30 mw); 8. Meat industry (slaughterhouses and processing); 9. Wool processing enterprises; 10. Public catering enterprises with more than 50 seats; 11. Poultry farms; 12. Reconstruction and reclamation of irrigated lands on the area from 100 to 1000 hectares; 13. Repair of engines and machines, as well as their coloring; 14. Repair of rubber products with restoration of tires; 15. Fisheries, including fish processing; 16. Markets with more than 50 seats; 17. Assembly and repair of electrical equipment; 18. Greenhouses with boiler rooms; 19. Factories for the manufacture of confectionery; 20. Refrigeration plants with a capacity of more than 50 tons
IV	**Category B projects (**objects and activities from the list of the National category IV of the environmental impact**) - EIA\EMP is mandatory:**
	1. Construction and reconstruction of on-farm water management systems, construction of water pipelines of intra-farm level; 2. Veterinary clinics; 3. Vulcanization and minor car repairs;. 4. Garages and parking lots of enterprises, organizations and public use; 5. Small carpet shops; 6. Small weaving and sewing shops; 7. Small carding shops (processing of wool, cotton wool); 8. Mini-mills; 9. Small enterprises for smoking meat and fish products 10. Car washing; 11. Processing of facing stones; 12. Recreational and civil-purpose facilities, as well as social and cultural facilities that do not have boiler houses and treatment facilities connected to sewers;

	13. Points of acceptance and snoring of cocoons; 14. Markets with less than 50 seats; 15. Reconstruction and land reclamation improvement of the old irrigated lands on an area of less than 100 hectares; 16. Bakery, production of bakery and pasta.

95. *Sub-projects Environmental Assessment*. After the environmental screening for the Category B projects it is required to conduct some Environmental Impact Assessment (EIA) in order to identify, evaluate and prevent potential environmental impacts and identify mitigation measures that may be incorporated into the project design within EMP or EMP checklist. The purpose of the EMP is to predict potential effects and improve the environmental aspects of projects by minimizing, mitigating or compensating for negative effects. The project's applicant is responsible for conducting this EIA and to prepare the EMP or an EMP checklist. In practical terms it may be considered that in most cases the EMP will be required for the subprojects under National environmental impact category III, and EMP check-lists for the projects under National environmental impact category IV – or Category B under the WB classification. Nevertheless the final decision about relevant type of document should be made on the base of the screening of the significance of environmental impact: the stronger impact needs the preparation of the EMP and relevant public consultations, and less impact can require the EMP check-lists only. The example for EMP and EMP checklist is presented in *Annex 8(Parts 1-3).* Example for Environmental Monitoring plan for small scale construction is given in *Annex 9.*

96. *Impacts Prevention/ Mitigation*. Based on the existing WB and national EIA rules and procedures, all potential impacts from planned economic activities have to be identified and the set of mitigation measures has to be outlined. Furthermore, since preventive measures are favored over mitigation or compensatory measures, the Project will provide capacity building to all involved parties and especially to the PMU, PFIs to avoid or minimize potential environmental impacts through applying a set of good practices directed to sub-borrowing enterprise through providing guidance on environmental sustainability matters when advising on agricultural production and agro-processing activities. The project will also support environmentally sustainable agriculture technologies, including organic farming, and provide stakeholders by education on environmentally sound practices.

In relation to sectors to be covered by potential sub-project activities, the description of potential impacts which may arise from sub-projects from agricultural production, and agro-processing sectors as well as typical measures to be taken to prevent and mitigate impacts is given in more details in *Annex 4/Form 2, Annexes 10(Agricultural Production & Aquaculture), 11(Agro-processing & Food Production), 12 (Manufacturing) and 13 (on Providing Services). These Annexes can be used by sub-borrowers (and recommended by PFI loan/credit officers to sub-borrowers) for development of EMP and mitigation/prevention measures for Category B projects.*

The full set of preventive and mitigation measures for activities in Agricultural and Agro-processing sectors were developed by the World Bank Group in 2007 in its Environmental, Health, and Safety Guidelines[16], as well as outlined in the Best Available Techniques to the EU Integrated Pollution Prevention Control Directive[17], documents which could be also consulted while conducting the EIA studies and preparing the Environmental Management Plans.

[16] See: http://www.ifc.org/ifcext/sustainability.nsf/Content/EnvironmentalGuidelines
[17] See: http://europa.eu/legislation_summaries/environment/waste_management/l28045_en.htm

97. ***Steps to be followed while performing sub-projects EIA.*** The steps to be followed while performing category B sub-projects EIA, along with the responsibilities of the various concerned institutions are presented in *Table 11* below.

Table 11. Steps to be followed while performing the sub-projects EIA

Step 1	a) The potential sub-borrower prepares an initial sub-project concept and submits it to PFIs. ***Notes:*** i) The sub-borrower is responsible for obtaining appropriate permits and approvals that may be required for the particular type of activity to be financed, and are issued by the local authorities responsible for environmental issues. It should be noted also that a construction permit would be required in case of new construction or essential reconstruction; ii) At this time the sub-borrower may initiate preliminary discussions, if needed, with the respective environmental authorities to determine requirements for environmental review.
Step 2	a) If the project receives preliminary endorsement of PFIs, the sub-borrower completes *Section 1* of the Environmental Screening table (*Annex 5 – Form 6.1.*); b) PFIs, based on the Environmental Checklist, determines the environmental category, and makes a conclusion what kind of EIA is to be conducted – either partial EIA for the EMP Checklist development or complete EIA for the EMP developmentand an EMP and/or partial EIA, or an, and informs sub-borrower.
Step 3	a) In the case of a project requires complete EIA and EMP the PFIs in consultation with the environmental specialist of PMU may organize a field site visit and completes the Field Site Visit Checklist (*Annex 6);* b) after a field site visit, PFI completes a Final Environmental Assessment Checklist provided in *Annex 5 (form 1, Form 3)* *c) in the case of sub-projects categorized as Category B sub-borrower* in consultation with PFI specialist notes potential environmental risks and indicates the ways of their prevention/mitigation in the Environmental Screening Table (Environmental screening table Section 1 (filled out by sub-borrower only for subprojects of category B); PFI specialist completes Section 2 of this Table – see *Annex 5/Form 6.1*)
Step 4	a) If the applicant decides to follow further, she/he arranges preparation of Environmental Impact Assessment of a required level and an Environment Management Plan. b) For that PFIs provides the sub-borrower the templates of the relevant documents to be prepared and suggest on what environmental issues is needed to focus. c) At sub-borrower's request, an authorized institution prepares the Environmental Impact Assessment and Environment Management Plan. ***Notes:*** i) Category B projects which presume new construction, substantial technological modernization, application of new technologies, change of land use patterns is a subject of the State Ecological Expertise. ii) In the case of small scale construction and reconstruction activities it is necessary to apply a generic Environmental Management Checklist, proposed by the WB to address potential environmental impacts; this document is provided in *Annex 7;* iii) Content and Description of the Environmental Management Plan are presented in *Annex 8;* iv) Examples of measures to mitigate impacts which may be generated by sub-projects from Agricultural Production and Agro-processing sectors are provided in *Annexes 10 and 11,* respectively.
Step 5	a) When EMP prepared, the sub-borrower organizes its disclosure and public consultation, involving NGO's, community representatives, affected groups, etc. and records input from the public Formal Minutes records the participants as well as issues raised toward EIA/EMP, and recommended activities to further address stakeholders' concerns. ***Note:***

	In the case of small scale projects which require only an EMP Checklist the sub borrower organize its disclosure with a virtual public consultation. b) The sub-borrower prepares and submits to PFI the Environmental Impact Assessment and the EMP and/or EMP Checklist together with other documents needed for environmental approval as well as other relevant documentation upon PMU's request, when needed; b) The PFI reviews the submitted documentation and completes *Section 2* of the Environmental Screening Table *(Annex 5/Form.2).* ***Notes:*** i) PFI may suggest some revisions and/ or clarification (which the applicant has to provide upon PFI's request), the environmental management plan and accompanied all necessary permits (the applicant is responsible for obtaining appropriate permits, clearances and approvals which may be required by other local authorities). ii) PFI may return the environmental documents in case they didn't correspond to specified requirements.
Step 6	a) After the consultation and PFIs review and approvals, the sub-borrower incorporates the received recommendations as well as those received during the review and clearance by other public authorities into the sub-project technical design documentation (and environmental management plan) and submits it for conducting of the State Ecological Expertise. ***Note:*** The projects which require only an EMP Checklists are not needed to be presented to the SEE. b) When required, sub-borrower gets also from the State Ecological Inspectorate the final permit on use of the natural resources which is issued on the base of permits obtained from core institutions responsible for management of these resources (Ministry of Energy and Water Resources , CEP , etc.), and permit on environmental pollution on the basis of newly established by SEI for this particular activity (e.g., building of an agro-processing factory, etc.) maximum allowable emissions into environment (i.e., limits of pollutants' concentration in waste water effluents and in emissions into air)
Step 7	a) Sub-borrower submits full set of environmental documents to PFI for their consideration and further decision on funding. b) PFI submit relevant document to the AED PMU and MOF PMU for approval. c) AED PMU reviews the documents and inform MOF PMU about the relevance of environmental requirements, and about approval or rejection of the proposal, or need for the improvement or clarification of environmental documents. d) MOF PMU provides the final decision on the approval of the proposal and informs PFI. e) PFI informs the sub-borrower in writing regarding approval or rejection of the loan proposal.

98. *EA for existing enterprises.* For expansion of existing facilities or where change of technology is proposed, an environmental audit may be required, and/or environmental due diligence procedure, depending on the nature of the sub-project. Such procedure would include collecting and checking relevant information and documents regarding environmental performances of selected enterprise (see *Table 12*). In this case it is necessary to fill out the same template of *Annex 5 (Form1 and Form 2).* The corrective actions necessary to meet the eligibility criteria provided in Table 12 will be elaborated in the audit.

Table 12 - Environmental Eligibility Checklist for the Existing Enterprise

No.	Criteria	N/A	Yes	No	Comments
1	Does the enterprise have a valid operating permit, licenses, approvals etc.?				If no, (a) all required licenses/permits/approvals etc. must be obtained prior to project approval, or (b) the project

					investment must include funds to obtain them
2	Does the enterprise meet all Tajik environmental regulations regarding air emissions, water discharges and solid waste management?				If no, (a) the facility must take corrective measures to meet all environmental regulations prior to project approval, or (b) the investment must include funds to meet them.
3	If the enterprise has any significant outstanding environmental fees, fines or penalties or any other environmental liabilities (e.g. pending legal proceedings involving environmental issues etc.) will the investment be used to correct this condition?				If the enterprise has outstanding liabilities, it must take corrective measures to remove them prior to project approval.
4	If any complaints were raised by local affected groups or NGOs regarding conditions at the facility, will the investment be used to remedy these complaints?				If yes, the PFIs should examine the nature of the complaints and actions taken to address them. If there are significant unresolved complaints, the PFIs should consult with the WB regarding appropriate actions.

99. *WB EAs prior review*. While the main responsibilities in conducting the subprojects' EIA lies with the PFIs and PMU, taking into account the lack of experience in this area of these institutions and that no one subproject was categorized as "B" before AF, the Bank will require the prior review from each PFI for at least first three EMPs and first three EMP check-lists developed for Category B subprojects.

100. *Environmental Management Plan (EMP).* A sub-project's environmental management plan consists of the set of mitigation, monitoring, and institutional measures to be taken during implementation and operation to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels (see *Annex 8*). An EMP is a key element of an EA report for all Category B subprojects.

*EMP for business incubator - for building / rehabilitation of buildings. T*o reduce the impact of small-scale construction / rehabilitation activities for buildings provided for a business incubator or storage facilities, the format of the Environmental and Social Environment Management Plan, typical project activities and related mitigation measures is provided in *Annex 4 (form 2) and Annex 7.*

101. *EMP Checklists*. In the case when the project would involve typical small scale (re)construction activities, it is proposed to be used a generic EMP checklist-type format ("EMP Checklist"), developed by the World Bank to provide "pragmatic good practice" and designed to be user friendly and compatible with safeguard requirements (see it presented in the *Annex 7*). The checklist-type format attempts to cover typical preventive and mitigation approaches to common civil works contracts with localized impacts. It is anticipated that this format provides the key elements of an Environmental Management Plan to meet Environmental Assessment requirements of the World Bank (under OP/BP/GP 4.01).

The EMP Checklist includes the environmental and social screening and mitigation measures in a simple Yes/No EMS format.

IX. ENVIRONMENTAL MONITORING AND REPORTING

102. *Monitoring.* Environmental monitoring during the subprojects implementation, which is to be performed by the project beneficiaries and the PMU has to provide information about key environmental aspects of the subprojects, particularly the project environmental impacts and the effectiveness of taken mitigation measures. Such information enables to evaluate the success of mitigation as part of project supervision, and allows corrective action(s) to be implemented, when needed. The EMP identifies monitoring objectives and specifies the type of monitoring, and their link to impacts and mitigation measures. Specifically, the monitoring section of the EMP provides: (a) a specific description, and technical details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions; 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. An example for a Monitoring Plan for a small scale construction project is presented in *Annex 9.*

103. *Supervision.* If approved, during the sub-project's operation phase, PFIs and PMU, along with the local (rayon) representative of the State Ecological Inspectorate and other environmental agencies, when required, perform environmental supervision and monitoring to control compliance with agreed design and mitigation measures to ensure that it is in full compliance with the management plan. *Annex 6/a* provides sample site monitoring format for sub-project during its implementation.

104. *Reporting.* The status of compliance with agreed environmental mitigation measures is to be reported by the PFIs and the PMU in their regular (quarterly) reports on project implementation. In the case of non-compliance, the PFI officers (with Environmental Inspectorate and PMU assistance) investigate the nature and reason(s) for non-compliance, and a decision has to be made on what is needed to bring a sub-project into compliance, or whether financing should be suspended.

The PMU makes available information on monitoring of environmental management plans and mitigation measures in its routine reporting on sub-project implementation to the World Bank and during periodic Bank supervision missions.

X. SUB-PROJECTS' ENVIRONMENTAL ASSESSMENT DISCLOSURE AND CONSULTATION

105. *Environmental assessment disclosure and consultation.* Disclosure of the environmental documents for category B projects is mandatory, and is to be done at a public place accessible to project-affected groups & local NGOs. Environmental assessment should be consulted at two times during preparation, with the first consultation occurring at as early stage as possible (i.e. during scoping), and the second in the form of public disclosure after preparation of the EMP (for EMP checklists the public disclosure is not obligatory). This might be at the beneficiary web site/office, local authority offices and/or the central State Ecological Inspectorate or its district sub-division. Furthermore, the sub-borrower provides a forum or hearing for consultation and comment by project-affected groups and local non-governmental organizations during the environmental assessment process and takes their views into account before finalizing project design and submission of the project to the PFI and to PMU for final approval. The sub-borrower provides any relevant materials (process descriptions, maps, building plans, etc.) to participants in a timely manner and in a form and language that are understandable to the group being consulted and records and describes details of consultations held in the project screening form. The subprojects consultation can be done at the stage when the draft EIA report is ready.

In the case of new small construction, insignificant reconstruction, change of machinery and equipment on a new, more ecological one, purchase and application of small amount of fertilizers, purchase of a small quantity of cattle or poultry for production and processing and some others which will not significantly affect the environment, public consultation can be done virtually, providing relevant information to all interested parties about these activities virtually by posting it on the web or in local public administrations. In the case of

construction/reconstruction activities the project beneficiaries should also install a notice plate placed in the site of project site.

XI. PEST MANAGEMENT AND MINERAL FERTILIZERS ISSUES

106. *General remarks.* The pest management issues which can be potentially raised by the project (as well as by original ACP and by proposed AF) may relate to possible direct purchasing or indirect effect of stimulating greater use of agro-chemicals associated with more intensive cultivation and/ or higher crop value. The objective of ESMF in this regard is to encourage adoption of Integrated Pest Management approach and increase beneficiaries' awareness of pesticide-related hazards and good practices for safe pesticides use and handling. List of pesticides and biological permitted for use in Tajikistan is given in *Annex 12*. Classification of pesticides prohibited for use by WHO is presented in *Annex 13*.The principles of the Integrated Pest management and rules for application of pesticides, their handling and storage are presented in *Annex 16* of the document. *Annex 17* presents Recommended Structure of a Pest Management Plan.

The PFI Loan Officer and/or PMU Environmental Specialist would review and approve the PMP prior to the approval of the Sub-project loan. The PFI Loan Officer will monitor the implementation of the PMP.

107. *Safety issues in mineral fertilizers usage and handling*. Similarly as in the case of usage of pesticides, fertilizers usage may provide important benefits, they also pose certain risks associated with accidental expose of environment and of farmers during their inappropriate handling and usage. To avoid adverse environmental impacts while using mineral fertilizers it is necessary to comply strictly with a series of requirements, stipulated in the existing legal documents as well as in the fertilizers Guidelines for their handling. The rules and procedures of production, storage, transportation and usage of the mineral fertilizers are reflected in a relatively small number of documents, and most of them were adopted at the time of the USSR – see *Annex 18*.

108. *Reviewing and approving subprojects which involve purchasing and usage of mineral fertilizers.* As handling and usage of mineral fertilizers might cause harm to the environment and to the farmers' health, in the case of such types of subprojects the beneficiaries have to attach to the subproject proposal a short memo, including the following information: (a) types of fertilizer and its amount; (b) storage conditions; (c) ways of field usage; (d) measures to be undertaken to control possible hazard scenarios; and (e) responsible person. The subproject proposal along with this memo will be reviewed by the PFIs and by the PMU Environment Specialist who will provide his approval. The first two such subprojects from each PFIs will be also subject to prior review by the WB.

XII. INSTITUTIONAL ARRANGEMENTS FOR THE ESMF IMPLEMENTATION

109. *General Remarks.* The project involves in its implementation a series of actors: Participating Financial Intermediaries, represented by several Commercial Banks; Environmental Specialist of the Project Implementation Unit; and grants beneficiaries and sub-borrowers. Their good cooperation is crucial for the success of the project.

110. *Implementing arrangements.* Both project management units: the Agricultural Entrepreneurship Development Project Management Unit (AED PMU) under the Ministry of Agriculture and the Project Implementation Unit for Access to Green and Rural Development Finance under the Ministry of Finance (MOF-PMU) are fully staffed[18]. The MOF PMU is implementing the ACP's credit line and the related TA to PFIs under Component II. As most of the proposed project activities are more relevant to the activities currently being implemented by PMU MOF, it was agreed that MOF PMU will be the main implementing unit for the AF. Hence, the proposed additional activities under Component II and proposed new activities under

[18] Project Paper on a Restructuring and Proposed Additional Credit, WB, February 2017

the Component IV (as described above) will be implemented by the MOF PMU. The MOF PMU will also be responsible for the relevant procurement, financial management and Monitoring and Evaluation (M&E) activities, including the baseline studies/surveys for the project, as well as establishment and maintenance of the Grievance Redress Mechanism (GRM). Support to Environmental and Social aspects of the AF is expected to be provided by the Specialists of the AED PMU. Additional staff, as necessary, will be hired at MOF PMU. The AED PMU environmental specialist will supervise and monitor issues related to environment requirements. His/her major roles and responsibilities will be to monitor use of the Access to Finance Component, to collate information on the operational activities and specifically to closely monitor the environmental and social covenants of the grants and subsidiary loan agreements. The Environmental Specialist will receive the reporting outputs from the PFIs and will be responsible for producing monthly, quarterly and annual reports for the AED PMU, and IDA. He/she will be selectively doing all the sub-project screening and ensuring that all EA requirements are met. PFIs from their side also will do all the sub-project screening and ensuring that all EA requirements are met. The details of the institutional arrangements and responsibilities for the ESMF implementation are presented below in the section XI of the document.

111. *Participating Financial Institutions*. The PFIs will play the major role in implementing EMF provisions and will be required to ensure that borrowers conduct an appropriate EIA and where necessary prepare an EMP, for each sub-project. The PFIs will be involved in the process of project implementation from the very beginning, at the project's appraisal stage. It evaluates project proposals to attribute them to the WB Category and determines type of Environmental Assessment to be conducted for project, reviews the set of documents prepared by sub-borrowers (sub-projects' Information Sheet or Project Summary Sheet as well as all necessary permits and clearances needed for project implementation) completes Environmental Screening Checklist and makes a final decision on project's financing. In case of non-compliance with presumed mitigation measures during project implementation, the PFIs can make a decision on suspending of funding.

The environmental assessment documentation for the first three Category B subprojects from each PFI will be subject to prior review and approval by the PMU and World Bank. *PFIs capacity building activities will be initiated prior to PFI approving of any subprojects and would be completed before prior review by the World Bank ceased.*

During sub-project appraisal PFIs will have to ensure that proposed sub-projects are in compliance with all environmental laws and standards of the RoT, as certified by the relevant local or national authorities of the Republic, and the Environmental Guidelines. All relevant documents and permits should be kept in each sub-borrower document file maintained by the PFI, and be made available for review by PMU, IDA representatives and PFI auditors.

112. *PMU.* The main objectives of the PMU is to facilitate smooth implementation of the Access to finance Component by (i) liaising between the IDA, and PFIs and (ii) conduct overall project monitoring and supervision of compliance according to applicable guidelines and IDA regulations. With regard to EA, among their tasks will be also the following: (a) conduct selection inspections of PFIs periodically to assure the compliance of sub-loans with EMF requirements concerning subprojects EA; and (b) include in their quarterly reports on status/progress of the project implementation brief information with regard to subprojects' EA, including compliance with the requirements concerning EIA&EMP.

113. *PMU Environment Specialist.* The PMU monitors the compliance with the credit agreement regarding the EA process, including conducting periodic monitoring of the screening process of applications for EA requirements. The PMU ES will assist the PFIs and beneficiaries in all aspects and is responsible for reporting to both the Government and the World Bank. The role of the PMU environmental specialist will be following: i) to provide assistance to the PFIs to determine the exact impacts that can be generated by proposed activities for which loans are being sought as well as prescribing in specific terms the required mitigation actions to be taken; ii) to conduct screening and ensure EA for the selected matching grants; and, iii) to monitor and report on a regular basis the effects on the environment that activities financed through the access to finance

component may provoke and to ensure that mitigation is carried out. The PMU Environmental Specialist will also have to selectively visit sub-loans, screen those submitted for a prior review, and ensure proper monitoring for all Cat B - both sub-loans and matching grants.

114. *Main EA responsibilities of the Environmental Specialist*. Environmental Specialist would provide guidance and backstopping to the PFIs on projects' environmental screening procedures, and along with loan officers (to whom he/she would provide advice), will be responsible for ensuring an efficient screening of proposed grants and sub-projects. The objective of the Environmental Specialist's task would be also raising awareness on environmental issues and strengthen capacity of project stakeholders toward ensuring that potential environmental impacts could be recognized, avoided or at least minimized through mitigation. In this regard among the tasks to be performed by Environmental Specialist would be: design the environmental training programs on national environmental legislation, World Bank Safeguard Policies, Environmental Impact Assessment, etc.; organize preparing a reference manual for the lending staff of the PFI, which would include the list of national environmental legislation, list of economic activities requiring permits, compliance procedures and/or compliance inspections; organize delivery of training through a series of seminars to the target audience; conduct environmental monitoring and assessment. Besides, Environmental Specialist would ensure that applicable national standards and guidelines are being followed and achieved within both providing matching grants and sub-loans. Where multiple grants and sub-projects are being carried out in geographical proximity, the specialist would assess the possible cumulative or residual effects on the environment (particularly, on natural habitats, forests, soil, and air and water resources).

XIII. CAPACITY BUILDING

115. *Training for the PMU Environmental Specialist.* In order to ensure successful implementation of the EMF requirements it is necessary to provide a series of refreshing capacity building activities. In particular, it is proposed the PMU environmental specialist should have additional training course on EA techniques and procedures with taking into account extended types of activities under AF. For that purpose he/she might visit a similar WB project in other countries in the region and/or to hire an international consultant who might provide on the job training.

116. *PFIs and PMU training.* The main function of commercial banks, which have been selected as PFIs in the project is administration of loans' processing. As the PFIs will be responsible not only for assisting the sub borrowers in preparing the environmental screening form and respectively in identifying potential sub projects environmental issues, but also for approving the EA reports and ensuring their implementation, the EMF recommends that each participating PFI would designate a staff which would be trained on environmental issues to designated further environmental assessment responsibility.

Within the framework of the ACP, about 120 loan officers (credit specialists) from nine PFIs received training on social and environmental aspects, such as environmental and social monitoring and evaluation, development of environmental and social action plans for sub-loans provided to local farmers and entrepreneurs. Such seminars for credit experts were highly appreciated by the PFIs management. Nevertheless it was noted by the Bank environmental mission in May 2017 that in some cases credit specialists prepare the environmental screening forms formally, and even commit errors in the environmental categorization of the subproject proposals. It was recommended that for the new PFIs and districts to be involved in the Project AF activities the training workshops should be organized to discuss appropriate and unacceptable practices identified during the environmental and social assessment of agricultural loans under the Project. Also, taking into account the expansion of the range of activities within the AF and the increase in geographic coverage, it is recommended to conduct repeated trainings for loan officers already involved in the PFI and training for new PFIs.

The training program should be practical and include work with realistic case studies, based on actual loan proposals and types of business activities supported by the Project. It should also cover an explanation and practical application of the environmental standards and forms designed for use by the participating financial

institutions. The training will cover the following issues: (a) national and World Bank requirements for social and environmental assessment; (b) screening and scoping procedures including categorizing sub-projects and checklists of potential environmental impacts of the agricultural production and agro-processing activities; (c) main provisions of environmental management plans for proposed sub projects, including environmental and social risk identification and assessment, evaluation of their impacts, and proper mitigation measures, monitoring requirements. Field studies also may be included. Such training will enable these target groups to recognize and assess potential negative environmental impacts and set of measures to mitigate them.

117. *Informational awareness campaigns, trainings for sub-borrower farmers, sub-borrowers.* Next the most critical group to be exposed to the importance of the environment and social concerns includes entrepreneurs from agricultural and agro-processing, non-agricultural sectors who will be receiving the grants and loans, and whom should be provided advices on use better available techniques to prevent/ mitigate impact and promote sustainable agriculture and agro-processing technologies. The workshops for this group would include environmental and social awareness and a practical exercise to observe and learn about sustainable agricultural practices and best available techniques in agro-processing activities. For this group of beneficiaries (taking into account broadening of the Project AF area), training is required to raise awareness of environmental and social safeguards issues, preparation of EMPs with appropriate mitigation measures for specific sites, environmentally friendly land use, and environmental and social monitoring plans and meeting the requirements of WB protective measures and national legislation, advanced IPM technologies, water-soil-saving, handling chemicals, etc.

Also in the training programs, it is necessary to include about social measures of labor protection, not using of forced labor, training in the basics of financial literacy, business management, legal aspects of labor protection and creating jobs, especially in terms of gender aspects,

118. *Trainings on the use of chemicals in agricultural activities* (control of pests and diseases of farm animals and plants, safety measures in the application of fertilizers.) Pest control plays an important role in agricultural practices and preventing diseases of agricultural animals and plants. The proper use of agricultural chemicals, such as pesticides, fertilizers and medicines is one of the biggest issues in Tajikistan associated with a greater use of agricultural chemicals due to more intensive cultivation or increase of marketability of agricultural products with a healthy animal content. It is necessary to stimulate and increase the skills of using integrated methods for controlling pests and diseases of farm animals and plants and to raise awareness among beneficiaries of good practices in the safe use and handling of pesticides. Another important task of increasing the commercialization of agriculture is the improvement of the application of fertilizers, which can ensure agricultural productivity and prevent environmental pollution. To conduct training, it is necessary to prepare and publish various types of information and educational publications (brochures, booklets or other information materials) on the safe use of integrated pest and disease control of agricultural animals and plants, mineral fertilizers

A special training program covering modern achievements in the field of the correct use of new means and methods for protecting plants and animals, using fertilizers characterized by high efficiency and environmental safety, the rules for their application in greenhouses, intensive gardening, vegetable growing, melons, citrus and livestock will be integrated in the framework of the components I and IV. Basing on the experience of such trainings provides for the 20 districts within the initial project, this program should emphasize the introduction of an integrated plant protection system, including agro-technical techniques, cultivation of resistant varieties, methods of conservation and activation of entomophages and other beneficial organisms, as well as the competent use of mineral and biological / organic drugs and fertilizers. The developed set of measures for controlling pests and diseases of agricultural animals and plants must comply with the principles of environmental protection and include safety issues related to the handling, transportation, use and storage of pesticides and mineral fertilizers.

119. *Contests on best practices of the most successful farmers and entrepreneurs*. The project will consider the possibility of holding competitions among the project participants (borrowers) for the most effective projects,

including the most environmentally and socially beneficial. A competition would be organized and conducted according to acceptable criteria, and then an assessment of the best practices of the most successful farmers and entrepreneurs across the country in representative pilot areas, along with large-scale advertising campaigns in local media and with the support of local authorities. A number of pilot sites in the selected area will be selected for field training and visual demonstrations. The most successful farmers and entrepreneurs will be encouraged. They will be coordinated with activities for further field training and demonstration.

XIV. BUDGET

120. *Requested expenses*. At the project design stage, the funds to be spent for preparing grants and sub projects Environmental Impact Assessments, obtaining of necessary permits and other relevant activities are the responsibilities of sub-borrowers. They will depend on the nature of project proposal, its complexity, scale, etc. At the construction and operation stages, the funds to be spent for installations and other activities to ensure mitigation measures against the environmental impacts from proposed activities is also the responsibility of sub-borrowers. These funds will depend on particular techniques and technologies used for implementing mitigation measures as well as on their scale, number, variety and other factors. At the same time, in order to ensure successful ESMF implementation, a series of capacity building activities are necessary for which the project has to provide adequate funding. It is difficult to prepare budget for capacity building activities and trainings on this stage of ESMF development for AF. Estimations of budget for proposed institutional arrangements, capacity building activities and trainings will be updated in the procurement plan after AF be commenced.

XV. GRIEVANCE REDRESS MECHANISM

121. The Grievance Redress Mechanism (GRM) is an effective mechanism for consultation and review of complaints to assist affected individuals, as well as for the timely resolution of requests and complaints, if any. The GRM is based on compliance with the requirements of the national regulatory framework, taking into account the principle of prompt consideration of complaints of persons exposed to the impact, ensuring transparency of this process.
The GRM is aimed at; (I) reduction of conflicts, risk of unjustified delays and complications in project implementation; (Ii) improving the quality of project activities and results; (Iii) ensuring that the rights of affected persons are respected; (Iv) identifying and responding to unforeseen project impacts on individuals; (V) maximizing participation, providing support and benefits to affected people.

122. The GRM was developed for the ACP and according to the assessments of the WB missions there is progress in implementing social activities. According to the regular reports submitted to the MoA PMU , the beneficiaries of the Project recognize the usefulness of explanatory activities and dissemination of information. They consider the printed material to be particularly useful, as they contain all the necessary information about where to go if there is a need to file requests and complaints. Nevertheless, further efforts in frame of AF are needed to ensure a wider coverage of the population in order to make the GRM functional, especially in the areas of the project area where the culture of disclosure of problems and the filing of complaints is only emerging.

123. As for loan officers of PFI – they can keep records of the following information:
A) complaints, complaints or protests received from local communities, with the dates of their registration, the organizations involved, the actions taken to resolve the complaints, any outstanding issues and measures proposed for their resolution;
(B) Information on disclosure and advice, if any, on affected individuals, local communities, civil society groups and other stakeholders;
(C) Details of the approach / methodologies to address concerns and address issues raised during the consultations.

XVI. ENVIRONMENTAL MANAGEMENT FRAMEWORK'S DISCLOSURE AND CONSULTATION

124. *ESMF Public consultations and disclosure* . During the period from May 20 to May 25, 2017, the PMU has conducted a public briefing and consultations on the results of environmental and social analysis and survey in three regions of the country (in the Sughd, Khatlon oblasts and the DRS). The minutes of the consultations and the lists of participants are presented in *Annex 17*. The provisional version of the ESMF is posted on the websites of the PMU of the MoF, CEP and the AED PMU (www.greenfinance.tj, www.moa.tj, www.hiszitabiat.tj) on July 10, 2017 for consideration and comments by stakeholders, and for access to the general public.

125. After consultations, including consultation workshop which took place in Dushanbe on 20th July 2017, the draft document was revised taking into account the recommendations of the interested parties. The final version of the document will be posted on the website of the PMU of the MoF and the AED PMU, and on the World Bank's website. The minutes of consultations and list of participants at regional and national level are presented in *Annex 19*.

126. Outside of participants from the interested state institutions in the meeting took part also representatives from environmental and agricultural NGOs, local representatives of the government bodies, such as CEP, MoA, MEWR, and others. During the consultation, the PMU has presented a summary of a draft Environmental and Social Management Framework to public. Particularly, the audience was informed about screening of the projects, types of Environmental Assessment for Category B projects, potential impacts which may by generated by sub-project activities as well as measures to be taken to prevent/mitigate potential impacts. The consultation meeting's attendees actively participated in discussions, which were mainly focused on WB environmental screening procedure, implementing arrangements, rules and procedures for agro chemicals use and capability of environmental authorities to perform monitoring of sub-projects.

127. The meetings concluded that the draft ESMF document covered practically all potential impacts and possible mitigation measures. The draft ESMF was revised after the meeting taking into account inputs from the consultation. The final version of the ESMF was officially submitted to the World Bank for disclosure in English on the WB external webpage; this final document will be used by the government agencies in the project implementation. The Russian translation of full EMF report will be provided to the CEP (State ecological expertise), MoA and also posted on its web-sites.

Annexes

Annex 1. Exclusion list of activities
Annex 2. Ineligible activities for financing
Annex 3. Screening Check-list on social issues
Annex 4/Form1 - Checklist for express environmental screening
Annex 4/Form 2 - Environmental Screening Checklist
Annex 5 / Form 1 - Sub-project Information Sheet
Annex 5 / Form 2 - Procurement comparison form
Annex 5 / Form 3. Evaluation of environmental risks (for subprojects under categories «B» and «C»)
Annex 5/ form 6.1 - Environmental screening table Annex 6. Field Site Visit Checklist
Annex 6/a. Sample site monitoring format for agriculture sector sub-projects during implementation of the WB project
Annex 7. Environmental Management Plan Checklist (for small scale construction/rehabilitation subprojects)
Annex 8.1. Environmental Management Plan Content
Annex 8.2. Description of the of the Environmental Management Plan
Annex 8.3. Environmental Management Plan Format
Annex 9. Example of an Environmental Monitoring Plan for small scale construction
Annex 10. Examples to be used in EMPs on Impacts, Causes, Consequences and Mitigation measures for sub-projects in Agricultural Production Sector
Annex 11. Examples to be used in EMPs for the assessment of Impacts, Causes, Consequences and Mitigation measures for sub-projects in Agro-processing & Food production Sectors
Annex 12. List of chemicals and biological substances permitted for use in Tajikistan by Commission on Chemical Security
Annex 13. Classification of pesticides prohibited for use by WHO
Annex 14. Principles of IPM, use and handling of pesticides
Annex 15. Recommended Structure of a Pest Management Plan
Annex 16. Safety provisions and rules for usage, storage and handling of mineral fertilizers
Annex 17. Report on Consultation on the Draft Environmental Management with interested parties

Annex 1

Exclusion List[19]

Financing of projects by PFI in frame of Credit line of WB is impossible for the projects involving the following:

(a) the production of or trade in any product or activity deemed illegal under host country laws or regulations, or international conventions and agreements, or subject to international phase out or bans, such as:

(i) Production of or trade in products containing PCBs[20].

(ii) Production of or trade in pharmaceuticals, pesticides/herbicides and other hazardous substances subject to international phase-outs or bans[21].

(iii) Production of or trade in ozone depleting substances subject to international phase out[22].

(iv) Trade in wildlife or production of or trade in wildlife products regulated under CITES[23].

(v) Transboundary movements of waste prohibited under international law[24].

(b) Production or use of or trade in unbonded asbestos fibres or asbestos-containing products.

(c) Activities prohibited by host country legislation or international conventions relating to the protection of biodiversity resources or cultural heritage[25].

(d) Drift net fishing in the marine environment using nets in excess of 2.5 km. in length.

(e) Shipment of oil or other hazardous substances in tankers which do not comply with IMO requirements[26].

(f) Trade in goods without required export or import licenses or other evidence of authorization of transit from the relevant countries of export, import and, if applicable, transit.

[19] It is proposed to use detailed EBRD Environmental and social exclusion list with taking into account the extended scope of project sectors under AF

[20] PCBs: Polychlorinated biphenyls are a group of highly toxic chemicals. PCBs are likely to be found in oil-filled electrical transformers, capacitors and switchgear dating from 1950-1985. PCBs: Polychlorinated biphenyls are a group of highly toxic chemicals. PCBs are likely to be found in oil-filled electrical transformers, capacitors and switchgear dating from 1950-1985.

[21] Reference documents are Council Regulation (EEC) No 2455/92 of 23 July 1992 Concerning the Export and Import of Certain Dangerous Chemicals, as amended from time to time; United Nations Consolidated List of Products whose Consumption and/or Sale have been Banned, Withdrawn, Severely Restricted or not Approved by Governments; Convention on the Prior Informed Consent Procedures for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam Convention); Stockholm Convention on Persistent Organic Pollutants; World Health Organisation Recommended Classification of Pesticides by Hazard.

[22] Ozone Depleting Substances (ODSs): Chemical compounds which react with and deplete stratospheric ozone, resulting in the widely publicised 'ozone holes'. The Montreal Protocol on Substances that Deplete the Ozone Layer lists ODSs and their target reduction and phase out dates. A list of the chemical compounds regulated by the Montreal Protocol, which includes aerosols, refrigerants, foam blowing agents, solvents, and fire protection agents, together with details of signatory countries and phase out target dates, is available from the United Nations Environment Programme.

[23] CITES: The Convention on International Trade in Endangered Species of Wild Fauna and Flora. A list of CITES listed species is available from the CITES secretariat.

[24] Reference documents are: Regulation (EC) No 1013/2006 of 14 June 2006 on shipments of waste; Decision C(2001)107/Final of the OECD Council concerning the revision of Decision C(92)39/Final on the control of transboundary movements of wastes destined for recovery operations; Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.

[25] Relevant international conventions include: Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention); Convention on Wetlands of International Importance, especially as Waterfowl Habitat (Ramsar Convention); Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention); Convention Concerning the Protection of the World Cultural and Natural Heritage; Convention on Biological Diversity.

[26] This includes: tankers which do not have all required International Convention for the Prevention of Pollution from Ships (MARPOL), International Convention for the Safety of Life at Sea (SOLAS) certificates (including, without limitation International Safety Management Code compliance), tankers blacklisted by the European Union or banned by the Paris Memorandum of Understanding on Port State Control (Paris MOU) and tankers due for phase out under MARPOL regulation 13G.No single hull tanker over 25 years old should be used.

Annex 2

Ineligible activities for financing

I.	**Prohibited Investment Activities List – Exclusion list 1**
	• Production or trade in any product or activity deemed illegal under host country laws or regulations or international conventions and agreements, or subject to international bans, such as pharmaceuticals, pesticides/herbicides, ozone depleting substances, PCB, wildlife or products regulated under CITES. • Production or trade in weapons and munitions.* • Production or trade in alcoholic beverages (excluding beer and wine).* • Production or trade in tobacco.* • Gambling, casinos and equivalent enterprises.* • Production or trade in radioactive materials. This does not apply to the purchase of medical equipment, quality control (measurement) equipment and any equipment where IFC considers the radioactive source to be trivial and/or adequately shielded. • Production or trade in unbounded asbestos fibers. This does not apply to purchase and use of bonded asbestos cement sheeting where the asbestos content is less than 20%. • Production or activities involving forced labor**/harmful child labor.*** • Production or trade in wood or other forestry products other than from sustainably managed forests. • Production, trade, storage, or transport of significant volumes of hazardous chemicals, or commercial scale usage of hazardous chemicals. Hazardous chemicals include gasoline, kerosene, and other petroleum products. • Production or activities that impinge on the lands owned, or claimed under adjudication, by Indigenous Peoples, without full documented consent of such peoples. • Production and processing of genetically modified organisms (GMOs), • Use of banned pesticides, • Use of species provided in Appendix 1 to the Bonn Convention on International Trade in Endangered Species of Wild Fauna and Flora *Notes:* * This does not apply to project sponsors who are not substantially involved in these activities. "Not substantially involved" means that the activity concerned is ancillary to a project sponsor's primary operations. ** Forced labor means all work or service, not voluntarily performed, that is extracted from an individual under threat of force or penalty. *** Harmful child labor means the employment of children that is economically exploitive, or is likely to be hazardous to, or to interfere with, the child's education, or to be harmful to the child's health, or physical, mental, spiritual, moral, or social development.
II	**Exclusion list 2**
	(i) Category A sub-projects which can trigger any of below listed OP: (ii) any investments related to wood harvesting (Ref: OP/BP 4.36 Forestry); (iii) production and processing of Genetically Modified Organisms (GMOs); (iv) the sub-projects located in protected areas, critical habitats or culturally or socially sensitive areas (Ref.: OP/BP 4.36 Forestry, OP/BP 4.04 Natural Habitats, OP/BP 4.11 Physical Cultural Resources); (v) any sub-loans used to invest in a business which would require the involuntary displacement of existing occupants or economic users of any plot of land, regardless of its current ownership, or loss of or damage to assets including standing crops, kiosks, fences and other (Ref.: OP/BP 4.12 Involuntary Resettlement); (vi) purchasing pesticides (Ref.: OP 4.09 Pest Management); (vii) large scale irrigation systems and sub-projects involving discharging waste waters directly in the international waterways, abstraction or diversion of international waters, sub-projects related to discharging waste materials in a location that could impact on international waters,

	construction of any dams that might affect international waters hydrological regime, etc. (Ref.: OP/BP 7.50 Projects on International Waterways)
III	***WB Category A projects (***in the case some of the sub-projects may cause significant impacts for which it would be necessary a full EIA)
IIIa	***Related to location***
	All activities in a following locations: • 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).
IIIb	***Related to the types and scale (****Note*: *Large scale here is defined as enterprises with annual sales of US$ 3 million or more equivalent)
	• 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
IV.	***Activities related to the National I category of environmental impact:***
	1. Motorways, metro, railways, highways and freight terminals of national importance; 2. Airports with a runway 2100 meters or more; 3. Bases of oil and oil products of I and II categories; 4. Reservoirs with a volume of more than 200 million m^3; 5. Ore-dressing plants with a capacity of more than 1 million tons of ore per year; 6. Urban landfills for household waste (for cities with a population of more than 200 thousand people); 7. Hydroelectric power plants with a capacity of more than 300 mw; 8. Extraction of mining and mining chemical raw materials with a volume of rock mass of 200 million m3 per year or more, reclamation of quarries formed during mining; 9. Extraction of fuel resources (oil, gas, coal, etc.); 10. Factories of ferrous and non-ferrous metallurgy; 11. Leather and tanning enterprises; 12. Sewage treatment facilities with a capacity of more than 200 thousand m^3 per day; 13. Power lines of national and interstate importance; 14. Main channels with a capacity of more than 150 m^3 per second and a collector with a design flow rate of more than 50 m^3 per second; 15. Machine-building industry (aircraft-building, automobile, tractor-building, engine-building, etc.);

	16. Places of storage or burial of toxic waste, as well as mud sludge; 17. Incineration plants; 18. Oil / gas pipelines of national importance; 19. Oil / gas refineries; 20. Category I and II dams; 21. Underground gas storage facilities; 22. Polygons of underground leaching; 23. Enterprises using heap leaching technology; 24. Enterprises for the processing of wastes of I and II hazard classes: 25. Enterprises using biotechnology; 26. Manufacture of batteries and galvanic batteries; 27. Manufacture of asbestos and asbestos containing products; 28. Manufacture of explosives; 29. Manufacture of equipment or devices containing toxic substances regulated by international agreements; 30. Production, use and storage of radioactive substances (isotopes); 31. Production of rubber and rubber products; 32. Manufacture of glass containing toxic impurities; 33. Manufacture of tobacco products; 34. Production of cement; 35. Reclamation of tailing dumps of toxic waste; 36. Warehouses of pesticides of national importance; 37. Thermal power plants and other combustion plants with a thermal output of 300 MW or more; 38. Textile combines; 39. Pharmaceutical plants and factories; 40. Chemical complexes and plants.
V.	***Activities relating to National category II of the environmental impact***
	1. Highways of regional importance; 2. Asphalt-concrete plants; 3. Aerodromes with a runway less than 2100 meters; 4. Base of oil and oil products of III category; 5. Drilling of oil and gas wells; 6. Water intakes of underground waters of interregional significance; 7. Water pipelines of the republican and interregional significance; 8. Reservoirs with a volume of up to 200 million m3; 9. Hydroelectric power plants with a capacity of 30 MW or less; 10. Urban landfills, household waste (for settlements with a population of 100 to 200 thousand people); 11. Ore-dressing plants with a capacity of up to 1 million tons; 12. Railway depots; 13. Extraction of mining and mining chemical raw materials with a volume of rock mass up to 2 million m^3 per year and reclamation of quarries formed during mining; 14. Extraction and processing of common mineral resources of more than 30 thousand m3 per year; 15. Railways of departmental importance; 16. Sewage treatment facilities with capacity from 50 to 200 thousand m^3 per day; 17. Complexes for the production of food products and food supplements; 18. Power transmission lines of regional importance; 19. Bast industry; 20. Main channels with a discharge flow of 100 to 150 m^3 per second and a collector with a design flow rate of 20 to 50 m^3 per second; 21. Furniture mills and factories; 22. Flour mills; 23. Waste processing plants;

	24. Oil / gas pipelines of regional importance; 25. Development of new lands with an area of more than 100 hectares; 26. III and IV category dams; 27. Enterprises of alcoholic and non-alcoholic beverages; 28. Enterprises for coloring and varnishing of leather; 29. Enterprises for processing raw cotton; 30. Enterprises for chemical impregnation of fabrics and paper with lacquers with a volume of more than 300 tons per year; 31. Enterprises for the processing of waste of hazard class iii; 32. Enterprises of the construction industry, except for the production of asbestos and cement; 33. Manufacture of paper and paperboard; 34. Manufacture of wood-shaving and wood-fiber plates; 35. Manufacture of fiberglass; 36. Production of inert gases; 37. Manufacture of cosmetic preparations; 38. Manufacture of dyes; 39. Manufacture of polymer products and synthetic materials; 40. Manufacture of electrical equipment; 41. Spinning and weaving factories in the presence of dyeing and processing shops; 42. Poultry factories; 43. Prospecting and exploration of minerals associated with mine workings; 44. Radio engineering and electronics; 45. Reconstruction and land reclamation improvement of old irrigated lands in areas of more than 1000 hectares; 46. Warehouses of pesticides of regional importance; 47. Thermal power plants and other incineration plants with a thermal power from 100 to 300 MW; 48. Cotton processing industry.

Annex 3

Screening Check-list on social issues

☐ Category "A". Significant impact, exclude from financing.	Prepared by (credit officer)
	Name and signature:
	Designation:
☐ Category "B". Limited impact, exclude from financing..	Date:
	Approved (Credit officer or Manager on social and environmental issues):
	Name and signature:
☐ Category "C". No impact.	Designation:
	Date:

Evaluation list on involuntary resettlement

	Will the loan (credit) be used for:	Yes	No	Notes
1	Purchase of land, buildings (residential and business)			If "Yes", and answers other questions "No", provide relevant documents, available for the final sales transaction.
2	Acquisitions or expansion of the business, which will be implemented by the demolition / relocation homeowners, renters, formal and informal user assets			If yes, exclude from financing
3	Acquisition of assets, which will cause the loss of access of people or a particular community / groups, especially ethnic minorities to: • Natural resources • The traditional habitat • The traditional activities • Communal utilities			If yes, exclude from financing
4	Acquisitions / or expansion of a business that can promote / increase the risk of: 1. Violation of the labor code and laws, including use of child labor 2. Harassment of ethnic minority groups in the areas of project (related to their identity, dignity and livelihoods of the system of subsistence, cultural identity) 3. Human trafficking			If yes, exclude from financing
5	Will there be land acquisition using eminent domain law?			If yes, exclude from financing
6	Will there be permanent or temporary loss of shelter and residential land due to land acquisition?			If yes, exclude from financing.

7	Will there be permanent or temporary loss of agricultural and other productive assets due to land acquisition?			If yes, exclude from financing.
8	Will there be losses of crops, trees, and fixed assets due to land acquisition?			If yes, exclude from financing.
9	Will there be permanent or temporary loss of businesses or enterprises due to land acquisition?			If yes, exclude from financing.
10	Will there be permanent or temporary loss of income sources and means of livelihoods due to land acquisition?			If yes, exclude from financing.
11	If land or private property is purchased through negotiated settlement or willing buyer-willing seller, will it result in the permanent or temporary removal or displacement of renters, or leaseholders?			If yes, exclude from financing.
12	If land or private property is purchased through negotiated settlement or willing buyer-willing seller, will it result in the permanent or temporary removal or displacement of informal land-users (people without legal rights on the land) or squatters?			
13	Will the project involve any permanent or temporary restrictions in land use or access to legally designated parks or protected areas and cause people or any community to lose access to natural resources, traditional habitats, communal land, or communal facilities?			If yes, exclude from financing.
14	Will the project use government land or any public land or property, which will require the permanent or temporary removal of informal occupants or users (residential or economic)?			If yes, exclude from financing.

Annex 4/Form 1

Checklist for express environmental screening

☐ Category "A". Significant impact, exclude from financing	Prepared by (credit officer)
	Name and signature:
	Designation:
☐ Category "B". Limited impact.	Date:
	Approved (ESR Manager):
	Name and signature:
☐ Category "C". No impact.	Designation:
	Date:

The credit officer uses the Prohibited Investment Activities list (Exclusion lists (see Annex 1 and Annex 2) to disqualify applications, which may have significant environmental risks. If the answer to one of the following questions is YES, the subprojects shall be excluded. In case requiring professional judgment, the credit officer may request validation by a qualified consultant.

Screening questions
A. Subproject Location Is the subproject area in less than 300 m from any of the following environmentally sensitive areas?
• Cultural heritage and historic site
• Legally protected area (core zone or buffer zone, all 5 types of protected areas as defined by the national environmental legislation)
• Wetlands
• Mangrove forests
• Estuarine
• Special area for protecting biodiversity
• Residential areas, schools and hospitals
B. Potential Significant Environmental Impacts for which no mitigation measures were proposed by sub-borrower
• social and environmental conflicts or additional burden on existing infrastructure and service if large number of workers from other regions are hired?
• risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during subproject construction and operation?
• risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?
C. Purchase and use of prohibited fertilizers, pesticides/herbicides or hazardous materials
D. Purchase and use of new species, which could be considered as invasive alien species, without compliance with the national regulations and a proper risk assessment or strict control measures to minimize the potential for release into local environment.

Annex 4/Form 2

ENVIRONMENTAL SCREENING CHECKLIST
(recommended for PFI credit officer)

1. **Sub-Project Name and Code:**

2. **Brief Description of Sub-project** 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 (the description can be copied from the subproject proposal and attached).

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

Environmental Component	Construction Phase	Operational Phase	Proposed Mitigation Measures
Terrestrial environment			
Soil Erosion: does the project involves crop agriculture? If so, which crops? Is agricultural field is located on the slopes and/or on the plain areas? Will the project involve ploughing/plant cultivation on the slopes?			
Soil Salinization and waterlogging: does the project use irrigation? If yes, are there any features of waterlogging and salinization noticed? At what rate?			
Habitats and Biodiversity Loss: Will the project involve use or modification of natural habitats (pasturing on and ploughing up the steppe areas, cutting or removal of trees or other natural vegetation, etc.)			
Soil pollution: Will the project applies pesticides? If yes which types and their amount? Will the project use machinery with badly managed fuel and lubricants system?			
Land, habitats & ecosystems degradation: Is the area which is to be used currently a natural (not converted) habitat (forest, wetland, natural grassland, etc.)?			
Land degradation: Will the project involve land excavation?			
Generation of solid wastes – what type of wastes will be generated (various types of construction wastes, wastes from agro-processing activities, livestock manure) and their approximate amount			
Generation of toxic wastes – what types of toxic waste will be generated (obsolete and unusable pesticides and mineral fertilizers; chemicals used in agro-processing activities; asbestos) and their approximate amount.			
Biodiversity and Habitats Loss: Will the project located in vicinity of protected areas or other sensitive areas			

supporting important habitats of natural fauna and flora? Is it planned enlargement of area under agricultural crop production based on transformation of natural habitats?			
Underground water pollution - if the project involves production of stall fed livestock does it has a manure platform?			
Construction			
Air quality			
Will the project provide pollutant emissions? Which types of pollutants (SOx, NOx, solid particles, dioxins, furans, etc)			
Aquatic environment			
Water Quantity: will the project involve water use? Which volumes and from which water source (centralized water supply system and/or from water reservoir) ?			
Water Quality/Pollution: Will the project contribute to surface water pollution – what will be the approximate volumes of waste water discharge? Does the project involve discharges of waste waters in water reservoirs and/or in centralized sanitation network/septic tank?			
Loss of Biodiversity: Will the project involve introduction of alien species (in case of aquaculture projects)?			
Loss of Biodiversity: Will the project located in vicinity of protected area or wetlands?			
Degradation of natural aquatic ecosystems – if the project involves discharges in water courses and reservoirs of solid wastes; pesticides; cutting of protective shelterbelts.			
Weeds, pests, diseases: will the project contribute to spreading of weeds, pests and animal and plant diseases?			
Sedimentation of water bodies – will the project contribute to sedimentation of water bodies due to soil erosion ?			
Socio-economic environment			
Social impacts – does the project involve the following: (a) occupational safety issues; (b) health hazards; (c) involuntary land acquisition or displacement of third parties using land; (d) loss of access to sources of income; (e) loss of physical and/or economic assets; and (f) disturbance of residents living near the project area.			
Does the project per national legislation require public consultation to consider local people environmental concerns and inputs?			
Will the project assure non-deterioration of human health, occupational safety and non-disturbance of residents living near project area? If no, is it possible by applying proposed mitigation measures to reduce the project environmental and social impacts to admissible levels?			

Examples of Mitigation Measures (for more detailed description of listed below and other potential mitigation measures refer to Annexes C and D).

Environmental Component	Mitigation Measures
Soil Erosion: does the project involves crop agriculture? If so, which crops? Is agricultural field is located on the slopes and/or on the plain areas? Does the project involve ploughing/plant cultivation on the slopes?	1) Ploughing across the slope 2) Contour tillage 3) Avoid creation of new terraces since it is linked with loss of topsoil, etc. 4) Appropriate crop rotation: fallow land – wheat – maize – sunflower – Lucerne – Lucerne (2 years long) – legumes (pea, haricot, etc.) / wheat maize, etc. 5) On lands which are subject to erosion preferable cultivation of plants with require dense sawing (e.g. wheat, rye, etc.) and avoid cultivation of tilled crops (e.g., maize, sunflower), 6) Orchards: creation of grass strips between the rows, deep cultivation between the rows, 7) Where possible, to use the branch of field crops with the branch of cattle-breeding and gardening, etc.
Habitats and Biodiversity Loss: Will the project involve use or modification of natural habitats (pasturing on and ploughing up the steppe areas, cutting or removal of trees or other natural vegetation, etc.)	1) Avoiding use of remained natural or semi-natural steppe areas for pasturing and crop production 2) Avoid, where possible, cutting of trees and other natural vegetation, etc. 3) Minimize loss of natural vegetation/ Protection of vegetation during construction activities
Soil pollution: Will the project applies pesticides? If yes which types and their amount?	1) Use of less harmful (non-persistent) pesticides 2) Not to apply more pesticides than needed 3) To ensure appropriate pesticides handling to avoid polluted surface runoff, etc.
Land, habitats & ecosystems degradation: Is the area which is to be used currently a natural (not converted) habitat (forest, wetland, natural grassland, etc.)? Does the project involve production of livestock? If so, what type and how many? Will the animals be stall-fed, pastured or free-ranging?	1) Not to exceed pastures' capacity (on degraded lands this is 0,3-0,5 conv. cap/ ha; on good lands – 1,5 conv. cap/ per ha) and avoid overgrazing 2) Where possible, use of stabling 3) Where possible, do develop sawn pastures 4) Where possible, fencing the grazing areas to use them subsequently, giving to others possibility to restore, etc. 5) Not to graze in natural areas in early spring and late autumn, etc.) 6) Use natural meadows and grasslands rather for mowing than grazing, etc.
Land degradation: Will the project involve land excavation?	1) Removal of topsoil to adjacent agricultural lands
Generation of solid wastes – what type of wastes will be generated (various types of construction wastes, wastes from agro-processing activities, livestock manure) and their approximate amount	1) Separation of wastes, their usage and recycling 2) Disposal on authorized landfills 3) Full utilization of manure as organic fertilizers
Generation of toxic wastes – what types of toxic waste will be generated (obsolete and unusable	1) Clearly marking toxic wastes on the project site as hazardous material and securely enclose them inside

pesticides and mineral fertilizers; chemicals used in agro processing activities; asbestos) and their approximate amount.	closed containments, as well as label them with details of composition, properties and handling information; 2) Disposal on special toxic wastes disposal sites. 3) Usage of specially licensed carriers for transportation and disposal of toxic wastes 4) Ensure containers with hazardous substances are placed in an leak-proof container to prevent spillage and leaching; 5) Ensure the asbestos is not reused
Biodiversity and Habitats Loss: Will the project located in vicinity of protected areas or other sensitive areas supporting important habitats of natural fauna and flora? Is it planned enlargement of area under agricultural crop production based on transformation of natural habitats?	1) Consideration of alternative locations, where possible 2) Careful timing of works and work seasonally, as appropriate: no construction during breeding season 3) Where possible, to fence the area under construction to lessen even occasional disturbance on habitats and biodiversity 4) Inform personnel about importance of adjacent environmentally important area, if any 5) Where possible, to plant (or maintain) green corridors to ensure movement of terrestrial fauna
Underground water pollution – does the project involve usage of fuel and lubricants? if the project involves production of stall fed livestock does it has a manure platform?	1) Fuel and lubricants: use of specially arranged sites (with concrete floor) for fuel and lubricants handling and storage to avoid their leakages into the soil and runoff into water bodies 2) Pesticides: see above 3) Use of special platforms and tanks with a waterproof bottom for accumulation of manure and preparing of organic fertilizers, etc.
Construction	1) Careful selection of location for and planning of the project 2) To minimize construction site's size and design work to minimize land affected, 3) Where possible, to execute construction works during dry season to avoid excessive contaminated runoffProperly arranged waste disposalsCleaning of construction site, replacing lost trees, boundary structures, re-vegetation of work area 4) During interior demolition use debris-chutes above the first floor; 5) Keep demolition debris in controlled area and spray with water mist to reduce debris dust; 6) Suppress dust during pneumatic drilling/wall destruction by ongoing water spraying and/or installing dust screen enclosures at site; 7) Keep surrounding environment (side-walks, roads) free of debris to minimize dust; 8) There will be no open burning of construction / waste material at the site; 9) There will be no excessive idling of construction vehicles at sites; 10) Construction noise will be limited to restricted times agreed to in the permit;

	11) During operations the engine covers of generators, air compressors and other powered mechanical equipment should be closed, and equipment placed as far away from residential areas as possible; 12) The site will establish appropriate erosion and sediment control measures such as e.g. hay bales and / or silt fences to prevent sediment from moving off site and causing excessive turbidity in nearby streams and rivers. 13) Waste collection and disposal pathways and sites will be identified for all major waste types expected from demolition and construction activities. 14) Mineral construction and demolition wastes will be separated from general refuse, organic, liquid and chemical wastes by on-site sorting and stored in appropriate containers. 15) Construction waste will be collected and disposed properly by licensed collectors 16) The records of waste disposal will be maintained as proof for proper management as designed. 17) Whenever feasible the contractor will reuse and recycle appropriate and viable materials (except asbestos).
Air quality	
Will the project provide pollutant emissions? Which types of pollutants (SOx, NOx, solid particles, dioxins, furans, etc.)	1) Use of approved methods and techniques to prevent and control emissions (e.g. absorption) 2) Where possible, enclosure of dust producing equipment, and use of local exhaust ventilation 3) Arrange barriers for wind protection (if raw material is stored in open piles 4) Where possible, use of fuels with a low sulfur content, such as natural gas or liquefied petroleum gas and use of low-sulfur raw material 5) Where possible, installation of dedicated filtration systems, etc. 6) Selection of materials or processes with no or low demand for VOC-containing products 7) Where possible, to install and modify equipment to reduce solvent use in manufacturing process 8) To execute strict primary and secondary control of air emissions, etc.
Water Quantity: will the project involve water use? Which volumes and from which water source (centralized water supply system and/or from water reservoir)?	1) To ensure natural flow of water/ minimum disruption of natural streams flows 2) To install water meters to control and minimize water use 3) Avoid or minimize surface water abstraction in case of downstream the wetland is situated, etc.
Water Quality/Pollution: Will the project contribute to surface water pollution – what will be the approximate volumes of waste water	1) a. For small rural enterprises: to install local wastewater treatment facilities (e.g., septic tanks) b. For big enterprises: not to exceed established limits

discharge? Does the project involve discharges of waste waters in water reservoirs and/or in centralized sanitation network/septic tank?	of pollutants in effluents 2) To minimize water and mud collection 3) Renovation of existing sewerage system/ connection to municipal sewerage system 4) Properly arranged waste disposals 5) Where possible, to plant at least bush vegetation down slope to reduce pollutants runoff into surface water bodies
Loss of Biodiversity: Will the project involve introduction of alien species (in case of aquaculture projects)?	1) Where possible, to avoid introduction of alien species 2) In case of use of already introduced alien species to ensure their non-coming into natural ecosystems, e.g., during water discharge from ponds, etc.
Loss of Biodiversity: Will the project located in vicinity of protected area or wetlands?	1) Not to exceed established limits of pollutants in effluents and emissions 2) To avoid or minimize construction and operational activities during breeding and migration periods, etc.
Degradation of water ecosystems	1) Avoid application of pesticides in the strip with width of 300 m along the natural surface water bodies, 2) Avoid cutting of trees and other natural vegetation along the water bodies 3) Avoid coming of alien species into natural water bodies, 4) Properly arranged waste disposals sites, etc.
Weeds, pests, diseases: will the project contribute to spreading of weeds, pests and animal and plant diseases?	1) Avoid cultivation of plant mono-culture on agricultural lands 2) Appropriate pest management 3) Giving the priority to the agro-technical and biological measures for the control of weeds, pests, and diseases, 4) In cattle farms, to adhere carefully established rules to prevent or minimize animal diseases, etc.
Sedimentation of water bodies – will the project contribute to sedimentation of water bodies due to soil erosion ?	1) To avoid excessive soil erosion: see above 2) Minimize soil processing 3) Provide retention/ sedimentation ponds, as necessary 4) To control reed harvesting (to avoid over-harvesting)
Socio-economic environment	
Social impacts – does the project involve the following: (a) occupational safety issues; (b) health hazards; (c) involuntary land acquisition or displacement of third parties using land;; (d) loss of the access to sources of income; (e) loss of physical and/or economic assets; and (f) disturbance of residents living near the project area.	Appropriate project design: location, methods of construction, use of safe technologies during operation period, work timing, careful decommissioning, etc. Projects which result in involuntary land acquisition or displacement of third parties using land; relocation or loss of shelter, loss of assets or access to assets, or loss of income sources or means of livelihood whether or not there is displacement will not be financed by the project.
Does the project per national legislation 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, and aesthetic arrangement of constructed

	sites? etc.
Will the project assure non-deterioration of human health, occupational safety and non-disturbance of residents living near project area? If no, is it possible by applying proposed mitigation measures to reduce the project environmental and social impacts to admissible levels?	1) To ensure collective and individual protective measures (work clothes, masks, shoes), when needed. 2) To adhere established occupational safety requirements as well as simple rules, e.g.: a. water spaying twice a day during construction to avoid dust b. ventilation of internal areas during and post construction c) timing of work 3) To conduct regular instructing of employees on health and occupational safety requirements 4) To restrict vehicle speeds and trough-traffic in residential areas, especially trucks, using signing and appropriate design 5) Restrict trough-traffic in residential areas 6) Work timing to minimize disturbance/ restrict construction to certain hours, 7) Restrict movement of hazardous materials in residential areas/ regulation of transportation of materials; apply any load restriction required during and post construction periods, 8) Incorporate safety and environment protection requirements in the project contract documents, etc.

Annex 5 / Form 1

TAJIKISTAN - AGRICULTURE COMMERCIALIZATION PROJECT

Name of PFI _____

Sub-project Information Sheet

1. Branch Code _____ and Location _____
2. Sub-borrower ID Number _____
3. Sub-borrower Name, Address, and Phone No _____
4. Legal Status of Sub-borrower _____
5. Subproject Name and Brief Description of Sub-Project_____
   _____
6. Estimated Sub-project Cost _____
7. Borrowers Contribution: Type and Amount _____
8. Amount of Sub-loan/Lease and Currency _____
9. Itemized Utilization of Sub-loan/Lease _____

Project Costs (Itemized list)	**Owners' Financing**	**ACP Financing**	**Total Cost**
TOTAL			
Percent of Total:	%	%	100%

(Add rows as necessary to provide adequate detail)

10. Date of Approval of Sub-loan/Lease (by PFI) _____
11. Number and Date of Sub-loan/Lease Agreement _____
12. Sub-loan/lease Interest Rate _____
13. Other Charges and Fees; Down payment (for Leases) _____
14. Repayment terms of Sub-loan/Lease (maturity, grace period) _____

15. Procurement Method Used _____

16. Environmental Category (delete inapplicable) «B», «C» (for B fill also forms 3 and 6, for C fill only form 3)

17. Volume of sales before sub-loan: _____

18. Projected volume of sales with sub-loan: _____

19. Actual volume of sales at the end of sub-loan: _____

20. Number of job created/maintained: _____

21. Job type - Full-time/Seasonal Jobs: _____

22. Number of women and young specialists (under 30) working for a company or entrepreneur.

Signature: _____ PFI Authorized Representative(s)

Date: _____

Annex 5 / Form 2

TAJIKISTAN - AGRICULTURE COMMERCIALIZATION PROJECT
PROCUREMENT COMPARISON FORM
(To be completed by credit applicant; applicable to sub-loans above US$500 equivalent))

1. Procurement Method: Local Commercial Practice

2. Borrower: _____

3. Items to be procured: _____

4. Estimated Value of Items: _____
(each item separately)

5. Number of suppliers contacted: _____
(min. 3 for each item)

6. Number of suppliers who responded: _____
(each item separately)

7. Suppliers' price offers (for each item separately):

No.	Name of the Supplier	Date of Receiving Offer	Price
1.			
2.			
3.			

8. Ranking of the Suppliers based on the price offer:

No.	Name of the Supplier	Price
1.		
2.		
3.		

9. Offers not incompliance with the terms of the tender:

Supplier Explanation of Non-compliance

10. Name of the selected Supplier _____

11. Contract Price _____

12. Contract award date: _____

13. Complains received from other bidders in the process (if any): _____
_____

Signature of the Borrower: _____

Date: _____

Annex 5 / Form 3

Evaluation of environmental risks (for subprojects under categories «B» and «C»)

Environmental risks (please, clarify in the relevant cell if necessary)	**Ways to decrease environmental risks and measures on environmental protection**
Soil degradation (erosion, salinization, compaction, waterlogging, etc.)	
Soil or water pollution	
Air pollution (smoke, dust, etc.)	
The appearance of wastes (solid, organic, etc.).	
Noise	
The deterioration of sanitary-epidemiological condition (diseases, allergies, etc.)	
Cutting of trees or vegetation	
Other (please, indicate)	

In the left column the borrower in consultation with PFI specialist notes potential environmental risks of his/her activities, and **in the right column** indicates the ways of their prevention/mitigation.

Signature: _____ An authorized representative of the PFI

Date: _____

Annex 5/ form 6.1

Environmental screening table

Section 1

(filled out by sub-borrower only for subprojects of category B)

1. **Ecological licences and permits** *(in accordance with the requirements of national legislation and relevant to the proposed activities)*

	Needed (+) Not needed (-)	Available (+) None (-)	**Approval by the PFI specialist (agree/not agreed)**
Permission for special water use and wastewater discharge			
Permission for emissions into the atmosphere			
Permission for waste disposal			
The license for use of mineral resources			
Permission for use of wild flora and fauna			
Sanitary authorization to operate			
Permission from sanitary and veterinary authorities			
Other, in accordance with national legislation (please specify)			

2. **Planned costs for environmental protection** *(for environmental control and pollution and / or use of natural resources; Please complete the table)*

Category	Total, annual, TJS	Latest payment, date, TJS
1.		
2.		
3.		

Sub-borrower: _____ Signature: _____ Date: _____

Section 2

(PFI specialist to complete)

1. ***Agree/ do not agree*** with form 3 completed by the sub-borrower (delete irrelevant).
   If not agreed, please, elaborate on suggestions
   _____
   _____
2. Environmental monitoring of sub-project is **needed/not needed** (delete irrelevant) ,
   If needed, indicate the frequency of monitoring _____

3. Payments/fines for environmental pollution (delete irrelevant)

Needed to pay / not needed	Paid / not paid	Amount of the payment

4. Environmental management plan is ***needed /not needed*** (delete irrelevant)
   If needed, please submit the plan as an annex.

5. Additional materials for subproject (photo, scheme, projects, etc.)
   _____(list here and attach as separate annexes).

PFI specialist _____ Signature: _____ Date: _____

Annex 5/ form 6.2

Section 3

(Project's Environmental Consultant to complete upon subproject's approval to be submitted to the MoF)

1. **Environmental action plan developed (no/yes) _____**

2. **Will the project comply with the required standards for air pollution and waste generation?** *(yes/no)* _____
   If "no", is there a need to obtain relevant permit? _____
3. **Is a plan for environmental monitoring needed?** *(yes/no)* _____
   If yes, was it developed? *(yes/no)* ____
   Was the plan approved by the Project's Environmental Consultant? *(yes/no)* _____
4. **Were all the required environmental permits and licenses obtained?** *(yes/no)*_____
   If "no", what documents are required?
   _____
5. **Does the enterprise comply with environmental requirements in accordance with national legislation and Project EMF?** *(yes or no, or impossible to identify)*
   _____
6. **What additional environmental measures recommended for the Sub-borrower, the PFI or the PIU?_____**
   _____
   _____
7. **Conclusions and recommendations:**
   _____
   _____
   _____

Project's Environmental Consultant: _____Signature: _____Date: _____

Annex 6

FIELD SITE VISIT CHECKLIST[27]

Project Name: **Date/time of Visit:**

Raion: **Visitors:**

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? Are there any structures on the site?
- What were previous uses of the site (give dates if possible)?

Environmental Situation

- Are there sensitive sites nearby (nature reserves, cultural sites, and historical landmarks)?
- Are there water courses on the site?
- What is the terrain or slope?
- Does the site experience flooding, water logging or landslides? Are there signs of erosion?
- What are the neighbouring 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)

[27] This checklist will be completed specifically for each sub-project site as not all these aspects are relevant to all types of projects

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 odours, smoke or visual dust emissions, standing water, etc.
- Note any signs of recent destruction of crops or physical structures.

Confirm that there has been no loss of physical and/or economic assets, that no informal land users have been displaced in preparation for the project. This can be done through visual inspection, discussions with the project proponent and nearby individuals, as necessary.

Annex 6/a

SAMPLE SITE MONITORING FORMAT FOR AGRICULTURE SECTOR SUB-PROJECTS DURING IMPLEMENTATION of the WB PROJECT

(to be completed by PFI staff or PMU environmental specialist)

Visual Inspection Procedures:

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

Project Name: _____

District: _____

Date/time of Visit: _____

PFI staff: _____

1. Location

Locate site on local map or indicate area (e.g. for farming)
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 were previous uses of the site (give dates if possible)?

2. Environmental Siting

Are there sensitive sites nearby (check against the PIAL)?
Does the site experience flooding, water-logging or landslides?
Are there signs of erosion?
Does the site experience extreme temperatures or droughts?
Will the proposed site affect transportation or public utilities?

3. Pesticide Situation

Are pesticides stored and disposed in safe manner?
Are applicators aware of, and practicing safe spraying and handling precautions?
For what pests and diseases are pesticides used and have alternative pest management approaches being tried?
Do applicators use proper safety precautions during spraying of pesticides?
Are farmers and farm assistants trained in proper pesticide use, storage and disposal?
Are there any environmental issues relating to pesticide use?

4. Licenses, Permits and Clearances:

Check against the list in the due diligence briefing note.
What environmental or other (e.g., health, forestry) authorities have jurisdiction over the site?
Are the required licenses and permits available for inspection?

5. Recommended Mitigation Measures:

Confirm proposed mitigation measures.
Any non-compliance.
Provide additional recommendations for satisfactory compliance.

6. Implementation of the Monitoring plan:

Is the monitoring plan implemented?
Provide additional recommendations for satisfactory compliance.

Annex 7

Environmental Management Plan Checklist (for small scale construction/rehabilitation subprojects) – tick the activities (Activity column) of sub-project (see Status column in the Table) and select mitigation measures in accordance with Additional reference column

ENVIRONMENTAL /SOCIAL SCREENING			
Will the site activity include/involve any of the following:	**Activity**	**Status**	**Additional references**
	Building rehabilitation	[ ] Yes [ ] No	See Section **B** below
	New construction	[ ] Yes [ ] No	See Section **B** below
	Individual wastewater treatment system	[ ] Yes [ ] No	See Section **C** below
	Historic building(s) and districts	[ ] Yes [ ] No	See Section **D** below
	Acquisition of land or loss of assets[28]	[ ] Yes [ ] No	See Section **E** below
	Hazardous or toxic materials[29]	[ ] Yes [ ] No	See Section **F** below
	Impacts on forests and/or protected areas	[ ] Yes [ ] No	See Section **G** below
	Handling / management of medical waste	[ ] Yes [ ] No	See Section **H** below
	Traffic and Pedestrian Safety	[ ] Yes [ ] No	See Section **I** below
ACTIVITY	**PARAMETER**	**MITIGATION MEASURES CHECKLIST**	
A. General Conditions	Notification and Worker Safety	The local construction and environment inspectorates and communities have been notified of upcoming activities The public has been notified of the works through appropriate notification in the media and/or at publicly accessible sites (including the site of the works) All legally required permits have been acquired for construction and/or rehabilitation All work will be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment. Workers will comply with international good practice (always hardhats, as needed masks and safety glasses, harnesses and safety boots) Appropriate signposting of the sites will inform workers of key rules and regulations to follow.	
B. General Rehabilitation and /or Construction Activities	Air Quality	During interior demolition use debris-chutes above the first floor Keep demolition debris in controlled area and spray with water mist to reduce debris dust Suppress dust during pneumatic drilling/wall destruction by ongoing water spraying and/or installing dust screen enclosures at site Keep surrounding environment (sidewalks, roads) free of debris to minimize dust	

[28] The project will support construction of new buildings only when the construction will not result in the taking of land resulting in: involuntary land acquisition or displacement of third parties using land; loss of assets or access to assets; or loss of income sources or means of livelihood, whether or not the affected persons must move to another location. Investors will be required to have landownership title as well as has to prove the land at the moment of subprojects application is not occupied or used even illegally.

[29] Toxic / hazardous material includes and is not limited to asbestos, toxic paints, removal of lead paint, etc.

		There will be no open burning of construction / waste material at the site There will be no excessive idling of construction vehicles at sites
	Noise	Construction noise will be limited to restricted times agreed to in the permit During operations the engine covers of generators, air compressors and other powered mechanical equipment should be closed, and equipment placed as far away from residential areas as possible
	Water Quality	The site will establish appropriate erosion and sediment control measures such as e.g. hay bales and / or silt fences to prevent sediment from moving off site and causing excessive turbidity in nearby streams and rivers.
	Waste management	Waste collection and disposal pathways and sites will be identified for all major waste types expected from demolition and construction activities. Mineral construction and demolition wastes will be separated from general refuse, organic, liquid and chemical wastes by on-site sorting and stored in appropriate containers. Construction waste will be collected and disposed properly by licensed collectors The records of waste disposal will be maintained as proof for proper management as designed. Whenever feasible the contractor will reuse and recycle appropriate and viable materials (except asbestos)
C. Individual wastewater treatment system	Water Quality	The approach to handling sanitary wastes and wastewater from building sites (installation or reconstruction) must be approved by the local authorities Before being discharged into receiving waters, effluents from individual wastewater systems must be treated in order to meet the minimal quality criteria set out by national guidelines on effluent quality and wastewater treatment Monitoring of new wastewater systems (before/after) will be carried out
D. Historic building(s)	Cultural Heritage	If the building is a designated historic structure, very close to such a structure, or located in a designated historic district, notify and obtain approval/permits from local authorities and address all construction activities in line with local and national legislation Ensure that provisions are put in place so that artifacts or other possible "chance finds" encountered in excavation or construction are noted, officials contacted, and works activities delayed or modified to account for such finds.
E. Acquisition of land or loss of assets	Activity will not eligible	If the activity will result in the taking of land resulting in: involuntary land acquisition or displacement of third parties using land; loss of assets or access to assets; or loss of income sources or means of livelihood, whether or not the affected persons must move to another location it will not be financed.
F. Toxic Materials	Asbestos management	If asbestos is located on the project site, mark clearly as hazardous material When possible the asbestos will be appropriately contained and sealed to minimize exposure The asbestos prior to removal (if removal is necessary) will be treated with a wetting agent to minimize asbestos dust Asbestos will be handled and disposed by skilled & experienced professionals

		If asbestos material is be stored temporarily, the wastes should be securely enclosed inside closed containments and marked appropriately The removed asbestos will not be reused
	Toxic / hazardous waste management	Temporarily storage on site of all hazardous or toxic substances will be in safe containers labeled with details of composition, properties and handling information The containers of hazardous substances should be placed in an leak-proof container to prevent spillage and leaching The wastes are transported by specially licensed carriers and disposed in a licensed facility. Paints with toxic ingredients or solvents or lead-based paints will not be used
G. Affects forests and/or protected areas	Protection	All recognized natural habitats and protected areas in the immediate vicinity of the activity will not be damaged or exploited, all staff will be strictly prohibited from hunting, foraging, logging or other damaging activities. For large trees in the vicinity of the activity, mark and cordon off with a fence large tress and protect root system and avoid any damage to the trees Adjacent wetlands and streams will be protected, from construction site run-off, with appropriate erosion and sediment control feature to include by not limited to hay bales, silt fences There will be no unlicensed borrow pits, quarries or waste dumps in adjacent areas, especially not in protected areas.
H. Disposal of medical waste	Infrastructure for medical waste management	In compliance with national regulations the contractor will insure that newly constructed and/or rehabilitated health care facilities include sufficient infrastructure for medical waste handling and disposal; this includes and not limited to: Special facilities for segregated healthcare waste (including soiled instruments "sharps", and human tissue or fluids) from other waste disposal; and Appropriate storage facilities for medical waste are in place; and If the activity includes facility-based treatment, appropriate disposal options are in place and operational
I Traffic and Pedestrian Safety	Direct or indirect hazards to public traffic and pedestrians by construction activity	In compliance with national regulations the contractor will insure that the construction site is properly secured and construction related traffic regulated. This includes but is not limited to Signposting, warning signs, barriers and traffic diversions: site will be clearly visible and the public warned of all potential hazards Traffic management system and staff training, especially for site access and near-site heavy traffic. Provision of safe passages and crossings for pedestrians where construction traffic interferes. Adjustment of working hours to local traffic patterns, e.g. avoiding major transport activities during rush hours or times of livestock movement Active traffic management by trained and visible staff at the site, if required for safe and convenient passage for the public. Ensuring safe and continuous access to office facilities, shops and residences during renovation activities, if the buildings stay open for the public.

Annex 8.1

Part 1

Environmental Management Plan Content

General Remarks. An Environmental Management Plan (EMP) should outline the mitigation, monitoring and administrative measures to be taken during project implementation to avoid or eliminate negative environmental impacts. (**Description of Environmental Management Plan** is provided in **Annex B/ Form 1 below**).

The Environmental Management Plan format provided in **Annex B/ Form 2 below.** It represents a model for development of an EMP. The model divides the project cycle into three phases: construction, operation and decommissioning. For each phase, the preparation team identifies any significant environmental impacts that are anticipated based on the analysis done in the context of preparing an environmental assessment. For each impact, mitigation measures are to be identified and listed. Estimates are made of the cost of mitigation actions broken down by estimates for installation (investment cost) and operation (recurrent cost). The EMP format also provides for the identification of institutional responsibilities for "installation" and operation of mitigation devices and methods.

To keep track of the requirements, responsibilities and costs for monitoring the implementation of environmental mitigation identified in the analysis included in an environmental assessment a monitoring plan is necessary. A **Monitoring Plan format** is provided in **Annex B/ Form 3 below** and includes a row for baseline information that is critical to achieving reliable and credible monitoring. The key elements of the matrix are:

- What is being monitored?
- Where is monitoring done?
- How is the parameter to be monitored to ensure meaningful comparisons?
- When or how frequently is monitoring necessary or most effective?
- Why is the parameter being monitored (what does it tell us about environmental impact)?

In addition to these questions, it is necessary to identify the costs associated with monitoring (both investment and recurrent) and the institutional responsibilities.

When a monitoring plan is developed and put in place in the context of project implementation, the PMU will request reports at appropriate intervals and include the findings in its periodic reporting to the World Bank and make the findings available to Bank staff during supervision missions.

Annex 8.2

Part 2

Description of the of the Environmental Management Plan

The Environmental Management Plan (EMP) identifies feasible and cost-effective measures that may reduce potentially significant adverse environmental impacts to acceptable levels. The plan includes compensatory measures if mitigation measures are not feasible, cost-effective, or sufficient. Specifically, the EMP (a) identifies and summarizes all anticipated significant adverse environmental impacts (including those involving indigenous people or involuntary resettlement); (b) describes--with technical details--each mitigation measure, including the type of impact to which it relates and the conditions under which it is required (e.g., continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate; (c) estimates any potential environmental impacts of these measures; and (d) provides linkage with any other mitigation plans (e.g., for involuntary resettlement, indigenous peoples, or cultural property) required for the project.

Monitoring

3. Environmental monitoring during project implementation provides information about key environmental aspects of the project, particularly the environmental impacts of the project and the effectiveness of mitigation measures. Such information enables the borrower and the Bank to evaluate the success of mitigation as part of project supervision, and allows corrective action to be taken when needed. Therefore, the EMP 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 EMP. Specifically, the monitoring section of the EMP provides(a) a specific description, and technical details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions; 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.

Capacity Development and Training

4. To support timely and effective implementation of environmental project components and mitigation measures, the EMP draws on the EA's assessment of the existence, role, and capability of environmental units on site or at the agency and ministry level.[3] If necessary, the EMP recommends the establishment or expansion of such units, and the training of staff, to allow implementation of EA recommendations. Specifically, the EMP provides a specific description of institutional arrangements - who is responsible for carrying out the mitigation and monitoring measures (e.g., for operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training). To strengthen environmental management capability in the agencies responsible for implementation, most EMPs cover one or more of the following additional topics: (a) technical assistance programs, (b) procurement of equipment and supplies, and (c) organizational changes.

Implementation Schedule and Cost Estimates

5. For all three aspects (mitigation, monitoring, and capacity development), the EMP provides (a)

an implementation schedule for measures that must be carried out as part of the project, showing phasing and coordination with overall project implementation plans; and (b) the capital and recurrent cost estimates and sources of funds for implementing the EMP. These figures are also integrated into the total project cost tables.

Integration of EMP with Project

6. The borrower's decision to proceed with a project, and the Bank's decision to support it, is predicated in part on the expectation that the EMP will be executed effectively. Consequently, the Bank expects the plan to be specific in its description of the individual mitigation and monitoring measures and its assignment of institutional responsibilities, and it must be integrated into the project's overall planning, design, budget, and implementation. Such integration is achieved by establishing the EMP within the project so that the plan will receive funding and supervision along with the other components.

Resource: OP 4.01, Annex C - Environmental Management Plan.
http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTOPMANUAL

Annex 8.3

Environmental Management Plan Format

Phase	Environmental Impact	Mitigating Measure(s)	Cost		Institutional Responsibility		Remarks
			Install	Operate	Install	Operate	
Construction							
Operation							
Decommissioning							

Annex 9

Example of an Environmental Monitoring Plan for small scale construction

PHASE	WHAT is the parameter to be monitored?	WHERE is the parameter to be monitored?	HOW is the parameter to be monitored??	WHEN is the parameter to be monitored? (frequency)?	WHY is the parameter being monitored?	COST	RESPONSIBILITY
Designing	Implementation of EMP guidelines (RECOMMENDATIONS)	Design project for construction, reconstruction and adaptation.	Review of elaborates and adaptation designs.	Prior approval for construction as part of project monitoring program.	Recommended due to national legislation requiring a construction permit.	Should be part of the Project	CEP Designer, Contractor
Construction	Parameters given in construction permit - all special conditions of construction issued by different bodies	Main Project documentation	A part of regular inspection by the Ministry of Environment and the Construction Inspection	During construction and prior to issuance of the Operation permit	Regular review stipulated in the Law, and if any public complaint is sent to the Ministry of Environment, or the Construction Inspection.	Included in the construction phase, costs of Contractors	Supervision Engineer, inspectorate of the CEP and Construction Inspection

PHASE	WHAT is the parameter to be monitored?	WHERE is the parameter to be monitored?	HOW is the parameter to be monitored??	WHEN is the parameter to be monitored? (frequency)?	WHY is the parameter being monitored?	COST	RESPONSIBILITY
	Construction waste management (including hazardous)	Supporting documents for waste, which is submitted to the competent communal enterprise	A part of regular inspection by the Ministry Environment Construction Inspection	After reporting on waste management	Needed in accordance with the waste-related regulations	Expenditure of the Ministry Environment and the Construction Inspection and low costs for the Contractor	Supervision Engineer, inspectorate of the CEP and Construction Inspection
Operation	Waste management	Based on the supporting documents for waste, which is submitted to the Ministry of Environment	Reports to the Ministry of Environment	After reporting to the Ministry of Environment on waste management.	Should be monitored in line with the regulations on waste management.	Costs of the project beneficiary and the Ministry of Environment	Project beneficiary, competent communal company and the CEP

Annex 10__[30]

Examples to be used in EMPs on
Impacts, Causes, Consequences and Mitigation measures
for sub-projects in Agricultural Production Sector

C-1 Mammalian livestock production*
C-2 Poultry production*
C-3 Annual crop production & plantation crop production, including orchards and vineyards*
C-4 Seeds
C-5 Fertilizers application
C-6 Pesticides application
C-7 Agricultural machinery (tractors, winnowers, sowing machines, etc.)
C-8 Vehicles
C-9 Buildings for crop stock, machinery and other agricultural needs

*****Resource: Environmental, Health, and Safety Guidelines. World Bank Group, 2007. http://www.ifc.org/ifcext/sustainability.nsf/Content/EnvironmentalGuidelines

[30] Mitigation measures presented here will be complemented by relevant monitoring activities once the specific EMP for a sub-project will be developed.

Table C-1. Mammalian livestock production				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
Overall Potential Impact: MODERATE TO HIGH				
Contribution to soil, surface water and groundwater pollution from generated wastes	Animal wastes can be either liquid, slurry, or solid, depending on the solids content Solid waste includes waste feed, animal waste, and carcasses.	Damage to environment	Wastes should be managed and disposed appropriately	Animal waste management systems involve the collection, transport, storage, treatment, and utilization (rather than disposal) of the waste to reduce such adverse impacts
Waste Feed	Livestock feed includes hay, grain and silage. Other wastes include various kinds of packaging, used cleaning materials, and sludge from septic tanks		To maximize the efficiency of the operation and minimize wasted feed	
Animal Waste	Most of the animal waste is generated at housing, feeding, and watering locations	Migration of contaminants to and pollution of surface water, groundwater and air	- To arrange manure storage facilities to prevent soil, surface water and groundwater pollution - Minimize the surface area of manure in storage -Locate manure stacks away from water bodies - Place dry manure or litter in a covered or roofed area; - Check for storage systems leakage regularly (e.g. inspect tanks for corrosion of seams) -Conduct manure spread only	Manure may be used as a fertilizer on agricultural land after careful assessment of potential impacts due to the presence of hazardous chemical and biological constituents . Ensure that manure is applied to agricultural land only during periods that are appropriate for its use as plant nutrient (generally just before the

Animal Carcasses	Mammalian meet processing		as part of well planned strategy that considers potential risks to health -Reduce mortalities through proper animal care and disease prevention; -Store carcasses until collection, using cooling if necessary to prevent putrefaction; - Where no authorized collection of carcasses is available, on-site burial may be one of the only viable alternatives, if allowed by the competent authorities	start of the growing season) Animal carcasses should be properly managed and quickly disposed to prevent the spread of odors
Contribution to surface and underground water pollution/ Wastewater	Livestock operations generate on-point source Some facilities may also include point sources which typically require collection and treatment prior to final discharge	Effluents due to runoff from livestock housing, feeding, and watering, waste management facilities, and areas of land application of manure	To reduce discharges to surface water and groundwater from mammalian livestock operations: - Reuse water used for cleaning milking equipment to clean the milking parlor; - Reduce water use and spills from animal watering by preventing overflow -Implement buffer zones to surface water bodies, avoiding land spreading of manure within these areas; - To reduce water consumption, especially where it may be a limited natural resource	Techniques for treating industrial process wastewater in this sector include: - Sedimentation for suspended solids reduction - Biological treatment, typically anaerobic followed by aerobic treatment, for reduction of soluble organic matter (BOD); - Biological nutrient removal for reduction in nitrogen and phosphorus; - Chlorination of effluent when disinfection is required
Air pollution/ Air Emissions	Air emissions include ammonia, methane, odors, and dust (e.g. form feed	Ammonia gas has a sharp and pungent odor can act as an irritant when present in	- Consider the sitting of new facilities taking into account distances to neighbors and the	The livestock account for 9% of anthropogenic CO_2 emissions (mostly from

	storage, loading, and unloading)	high enough concentrations.	propagation of odors; - Control the temperature, humidity, and other environmental factors of manure storage to reduce emissions; - Consider composting of manure to reduce odor emissions; - Reduce emissions and odors during land application activities by applying a few centimeters below the soil surface and by selecting favorable weather conditions (e.g. wind blowing away from inhabited areas); - If necessary, apply chemicals (e.g. urinase inhibitors) weekly to reduce conversion of nitrogen to ammonia - Control the temperature, humidity, and other environmental factors of manure storage to reduce methane and nitrous oxide emissions;. - Implement pasture/grazing management techniques to reduce nitrous oxide and methane emissions;	deforestation / land use changes for grazing and pasture for feed crops), 37% of anthropogenic methane emissions (mostly from enteric fermentation by ruminants), and 65 percent of anthropogenic nitrous oxide emissions, the majority of which from manure. Methane has 23 times the global warming potential (GWP) of CO_2, while nitrous oxide has 296 times the GWP of CO_2. By improving livestock production efficiency, producers can both increase profits and reduce methane emissions. Methane can also be produced from microbial action in manure
Dust		Dust reduce visibility, cause respiratory problems, and facilitate the transport of odors and diseases	-Install dust-collection systems at dusty operations, such as feed grinding; - Prevent overgrazing of pastureland;	

			- Implement fugitive-dust-control measures, such as wetting frequently traveled dirt roads, as necessary	
Soil and water pollution/ Pesticides	Pesticides may be applied directly to livestock or to infra-structures. Pesticides can also be used to control predators	Pesticides and their degradation products may enter groundwater and surface water in solution, in emulsion, or bound to soil particles. Some are s known to cause chronic or acute health hazards for humans as well as adverse ecological impacts	- Pesticides should be managed to avoid their migration into off-site land or water environments by establishing their use as part of an integrated pest management. - If the application of pesticides is warranted, spill prevention and control measures consistent with the recommendations applicable to pesticides and other potential hazardous materials should be followed. - Use of less harmful (non-persistent) pesticides; - Not to apply more pesticides than needed; - To ensure appropriate pesticides handling to avoid contaminated surface runoff, etc.	Integrated Pest Management (IPM) *inter alia* include: - Maintain structures to keep out pests (e.g. plug holes, seal gaps around doors and windows); - Use mechanical controls to kill, relocate, or repel pests; - Use predators to control pests
Other impacts Environmental damage Overgrazing	Livestock access to creeks, rivers, and other natural water sources; Alteration of the vegetation composition and associated	Contaminating the water with animal waste, destroying riparian habitat, eroding the stream banks Soil losses and a reduction in soil productivity	- Prevent animals' access to surface water bodies using fences, buffer strips or other physical barriers; -Prevent overgrazing of pastureland through use of:	

Soil erosion Loss of Biodiversity	organisms in rangelands		o Rotational grazing systems based on seasonal and local ecosystem resilience (e.g. riparian zones); o through properly evaluated pasture capacities, which are from 0,3 conv. cattle capita per ha on degraded lands to 1,5 conv. cattle capita on good lands; - Use of stabling; - Not to pasture in early spring and late autumn; - Use of livestock trails to reduce soil trampling and gully formation -Prior or more intensive land use for livestock production, survey the area to identify natural and modified habitat types and ascertain their biodiversity value; - Ensure that any natural or modified habitat to be converted to livestock production does not contain critical habitat, - Ensure minimum disturbance to surrounding areas when managing livestock	
Animal diseases	Animal diseases can enter a facility with new animals, on equipment, and on or people	Some diseases can weaken or kill large numbers of animals at an infected facility	- Control farm animals, equipment, personnel, and wild or domestic animals entering the facility; - Vehicles that go from farm to farm should be subject to	

			special precautions such as limiting their operation, etc. - Sanitize animal housing areas; - Identify and segregate sick animals and develop procedures for adequate removal and disposal of dead animals	
Residual Impact Assuming Full Mitigation: LOW– MODERATE; Risk: LOW				

Table C-2. Poultry production				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
Overall Potential Impact: MODERATE TO HIGH				
Soil, groundwater and surface water pollution/ Wastes	Solid waste generated during poultry production includes waste feed, animal waste, carcasses, and sediments and sludge from on-site wastewater treatment Other wastes include various kinds of packaging, used cleaning materials, etc	Contribution to soil pollution, surface water and groundwater pollution		
Waste Feed	Poultry feed primarily consists of corn and soy, although other grains, pulses, root crops, and substances of animal origin The feed is typically supplemented with amino acids, enzymes, vitamins, mineral supplements, and may contain hormones antibiotics,	Contamination of storm water runoff, primarily due to organic matter content	- Protect feed from exposure to rain and wind during processing, storage, transport and feeding; - Maintain feed storage , transport and feeding systems in good working condition; fertilizer;	

Animal Waste	and heavy metals Manure contains ammonia, nitrogen, phosphorus, and other excreted substances such as hormones, antibiotics, and heavy metals, as well as bacteria and pathogens	Air emissions of ammonia and other gases - a potential risk of contamination to surface or groundwater resources through leaching and runoff Pollution soil, water and food resources	- For waste feed which cannot be recycled due to potential biosecurity issues, alternative disposal methods should be secured in consultation with local health authorities - Match feed content to the specific nutritional requirements of the birds in their different production / growth stages; - Ensure that manure storage facilities are arranged to prevent manure contamination of surface water and ground water (e.g. use of concrete floors, etc.) - Keep waste as dry as possible, including by minimizing amount of water used during cleaning ; - Minimize the surface area of manure in storage; - Locate manure piles away from water bodies, - Check for leakage regularly (e.g. inspect tanks for corrosion of seams), - Place dry manure or litter in a covered or roofed area; Poultry carcasses should be properly and quickly managed as they are a significant source of disease and odors, and can attract vectors. - Reduce mortalities through	Collection, transport, storage, treatment, utilization and disposal of the waste. Manure is sometimes composted, but can also be stored in stacking sheds, roofed storage areas, outside and either covered or uncovered, or occasionally in ponds until it is ready for transport to a disposal site or land application area. Manure may be used as a fertilizer on agricultural land after careful assessment of potential impacts due to the presence of hazardous chemical and biological constituents Land spread manure directly after batch cleaning and only during periods that are appropriate for its use as plant nutrient (generally just before start of the growing season)

Poultry Carcasses			proper animal care and disease prevention; - Where no authorized collection of carcasses is available, on-site burial may be one of the only viable alternatives, if allowed by the authorities	
Contribution to surface and groundwater pollution/ Wastewater	Runoff from poultry housing, feeding, and watering; from waste storage and Application of manure, may generated non-point source effluents due to runoff	Contamination of surface water and groundwater with nutrients, ammonia, sediment, pesticides, pathogens, and feed additives, such as heavy metals, hormones, and antibiotics. Effluents from poultry operations typically have a high content of organic material, as well as nutrients and suspended solids	-Reduce water use and spills from animal watering by preventing overflow - Install vegetative filters to trap sediment; - Install surface water diversions to direct clean runoff around areas containing waste - Implement buffer zones to surface water bodies, as appropriate to local conditions and requirements; - Avoiding land spreading of manure close to water bodies -To reduce water consumption, especially where it may be a limited natural resource	Possible techniques for wastewater treatment: - Sedimentation for suspended solids reduction - Biological treatment for reduction of soluble organic matter (BOD); - Chlorination of effluent when disinfection is required; - Dewatering of residuals and composting or land application of wastewater treatment residuals of acceptable quality
Air pollution/ Air Emissions Ammonia and Odors	Include primarily ammonia, Odors and dust	 Ammonia gas deposition into surface waters may contribute to euthrophication. Release of ammonia gas also reduces the nitrogen content and, therefore, the fertilizer value of the	To minimize emissions - Consider the sitting of new facilities taking into account distances to neighbors and the propagation of odors; - Consider composting of manure to reduce odor emissions; - Reduce emissions and odors	

Dust	Reduce visibility, cause respiratory problems, and facilitate transport of odors and diseases	manure	during land application activities by applying a few centimeters below the soil surface and by selecting favorable weather conditions (e.g. wind blowing away from inhabited areas); - If necessary, apply chemicals (e.g. urinase inhibitors) weekly to reduce conversion of nitrogen to ammonia - Implement fugitive dust-control measures (e.g. wetting vehicle parking lots and frequently traveled dirt roads, as necessary)	
Water and soil pollution/ Pesticides use	Pesticides may be applied directly to birds or to infra-. Pesticides can also be used to control predators.	Pesticides and their degradation products may enter groundwater and surface water in solution, in emulsion, or bound to soil particles. Pesticides may, in some instances, impair the uses of surface waters and groundwater. Some pesticides are known to cause chronic or acute health hazards for humans as well as adverse ecological impacts	- Maintain structures to keep out pests (e.g. plug holes, seal gaps around doors and windows); - Use mechanical controls (e.g. traps, barriers, light, and sound) to kill, relocate, or repel pests; - Use predators to control pests. -Protect natural enemies of pests by providing a favorable habitat (e.g. bushes for nesting sites and other indigenous vegetation) that can house pest predators; - Use good housekeeping practices; - Consider covering manure piles with geotextiles (which allow water to enter the pile and maintain composting	Pesticides should be managed to avoid their migration into off-site land or water environments by establishing their use as part of an Integrated Pest Management (IPM)

			activity) to reduce fly populations; - If pesticides are used, identify in the IPM plan the need for the pesticide and evaluate their effectiveness, to ensure that the pesticide with the least adverse impact is selected	
Animal Diseases	Animal diseases can enter a facility with new animals, or equipment, and on people.	Some diseases can weaken or kill large numbers of animals at an infected facility. Both poultry manure and carcasses contain pathogenic organisms which can infect humans, for example viruses such as Avian Influenza (strain HN51), and parasites such as parasitical worms	To minimize the potential for the spread of poultry pathogens: - Establish sound biosecurity protocols for the entire poultry operation that control animals, feed, equipment, and personnel, entering the facility - Prevent the interaction of wild birds with feed, as this interaction could be a factor in the spread of avian influenza from sparrows, crows, etc. - Vehicles that go from farm to farm (e.g. transport of veterinarians, farm suppliers, buyers, etc.) should be subject to special precautions such as limiting their operation to special areas - Sanitize bird housing areas; - Identify and segregate sick birds and adequately remove and dispose dead birds □	
Residual Impact Assuming Full Mitigation: LOW– MODERATE; Risk: LOW				

Table C-.3. Annual crop production & plantation crop production

Overall Potential Impact: MODERATE				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
Water Consumption	Water intake for irrigation:	Stress on water resources	- Select crops compatible with water availability in the area; - Maximize the use of available precipitation ("rain harvesting"), where feasible, by: o Reducing runoff by methods such as conservation tillage, terraces, and raised ridges that follow the land contour o Reduce seepage losses in channels o Control weeds on inter-row strips and keep them dry o Avoid over and under-irrigation to decrease potential for soil salinization o Maintain border vegetation in canals and drainage systems	Water management for annual crop production should aim to optimize crop yield, while conserving the quantity and quality of water resources
Soil erosion and loss of productive capacity	Poor management especially due to excessive use of machinery and over-intensive farming practices	Soil degradation Soil erosion may be enhanced by heavy rain falls, storms, and steep or long slopes, and may contribute to subsequent sedimentation of surface water bodies	Soil loss prevention practices: - Use crops suited or adapted to the local climate and soil conditions; - In areas with steep slopes, carefully consider planting zones and the direction of planting in relation to land contours to avoid erosion caused by precipitation or irrigation; - Use stone barriers, vegetative cross-slope barriers, terraces, or drainage and diversion canals	

			to prevent wind and water erosion; - Use appropriate machinery to avoid soil compaction caused by excessively heavy equipment; - Use plant cover or intercrops and shelterbelts to reduce erosion from wind and heavy rain; - Increase the organic matter content in the soil by applying organic matter such as crop residues, compost, and manure to protect the soil physically from sun, rain, and wind and to feed soil biota; - Consider adding lime to soil maintain stable pH levels	
Soil, groundwater and surface water pollution/ Pesticides	Application	Contamination of soil, groundwater and surface water by pesticides/ impact on human health and biodiversity	The preference should be given to alternative pest management strategies, with the use of synthetic chemical pesticides as a last option. ***Pesticide Application*** If pesticide application is warranted, then the following measures are recommended: -Train personnel to apply pesticides; -Review the manufacturer's directions on maximum recommended dosage or treatment, and apply the minimum effective dose; -Avoid the use of banned and obsolete pesticides	Pesticides should be managed to avoid their migration into off-site land or water environments

			- Use only pesticides that are labeled in accordance with international standards and norms; - Use certified application equipment; - Establish untreated buffer zones or strips along water sources, rivers, streams, ponds, lakes, and ditches to help protect water resources -Store pesticides in their original packaging, in a dedicated, dry, and well aerated location ; - Mixing and transfer of pesticides should be undertaken by trained personnel in areas, dedicated for this purpose; - Purchase and store no more pesticide than needed	
Surface water pollution/ Nutrients	Nutrients input from area under the crop production (mainly from mineral fertilizers)	Eutrophication of surface water/ dissolved oxygen depletion	- Balance nutrient application, including considering the use of reduced or no soil tillage techniques, nutrient recycling, one-pass soil preparation and sowing; - Use crop rotation methods to enable cultivation of leguminous plants with nitrogen fixation capabilities; - Use plants to cover the soil, especially during a fallow period to reduce loss of nutrients; - Incorporate organic waste materials into soils rather than	

			burning; - Avoid excess fertilization; - Assess soil acidity, which is important for achieving maximum uptake of phosphates; - Not to apply solid or liquid manure directly onto grazing areas or edible crops	
Loss of biodiversity	Soil degradation, fragmentation and disturbance of habitats, etc**.**	Loss of Genetic Resources and Variability	- Where possible, maximize reuse of residue from the previous crop on the soil surface; - Reduce soil preparation to maintain the structure of soil Ecosystems; - Utilize field borders to provide wildlife corridors around fields used for annual crop production; - Provide buffer zones on farmland bordering natural or semi-natural habitats; - Ensure protection of the natural enemies of pests by providing favorable habitats, such as hedges, nesting sites, and original vegetation, to house pest predators; and - Promote the use of organic agricultural practices to the extent feasible	
Soil pollution/ Crop residues and other solid waste	Often relate to pesticide containers and obsolete, expired pesticides		-Recycle crop residues and other organic materials by leaving the materials in the fields, plowing, and / or composting;	

			-Manage expired and unwanted pesticides as hazardous wastes	
Air pollution/ Air emissions	Fuel combustion by-products resulting from the operation of mechanized equipment or from combustion by-products from the disposal or destruction of crop residues.		-Manage emissions from mechanized farm equipment both mobile and stationary; - Reduce particulate matter emissions by avoiding burning; - Avoid unintended emissions of persistent organic pollutants (POPs) which may arise from open burning of pesticide treated agricultural wastes	
Residual Impact Assuming Full Mitigation: LOW– MODERATE; Risk: LOW				

Table C-4. Seeds				
Overall Potential Impact: MODERATE				
Potential Impacts	**Causes**	**Consequences**	**Mitigation/prevention required**	**Remarks**
Soil, groundwater and surface water pollution/ Use of chemical fertilizers, and pesticides		Surface water pollution by nutrients resulting in water bodies eutrophication Water and soil pollution by pesticides/ impact on human health and biodiversity	Avoid excess fertilization (for other fertilize-related measures refer to Table B-.3 Annual Crop Production & Plantation Crop Production); -Avoid the use of banned and obsolete pesticides - Use only pesticides that are labeled in accordance with international standards and norms (for other pesticide-related measures refer to Table B-3 Annual Crop Production & Plantation Crop Production)	
Risk for introduction of genetically modified plant seed	Transfer of introduced genes to other species (possibly weedy or invasive), unanticipated impact on	Genetic drift into other areas where GMOs are not wanted	- Use certified crop seeds that do not contain seeds from invasive alien species; -The introduction of GMO crops	

	beneficial insects, or increased pest resistance. Another concern related to the introduction or export of plants and plant products is the potential for introduction of pests		should be assessed for compliance with the existing host country regulatory framework for such introductions	
Residual Impact Assuming Full Mitigation: LOW– MODERATE; Risk: LOW				

Table C-5. Fertilizers application				
Overall Potential Impact: MODERATE TO HIGH (cumulative impact)				
Direct Impacts	**Causes**	**Consequences**	**Mitigation Required**	**Remarks**
Soil degradation/ Reduction in soil organic content	Reliance on chemical fertilizers which do not have an organic component – less reliance on compost material and manure for meeting soil fertility requirements.	Modified soil structure and reduction in soil moisture holding capacity; increase in soil acidity. In the long run, possible loss of productivity as a result of insufficient soil moisture; loss of soil's natural fertility	-Apply organic matter, such as manure, to replace chemical fertilizers to the extent practical; -Incorporate manure into the soil or apply between growing crops to improve plant utilization of nutrients and thereby reduce nutrient loss, etc.	To develop application rates and best land husbandry and crop rotation plans
Air pollution	Emission of greenhouse gases from chemical fertilizers.	Contribution to global warming resulting in climate change	- Where feasible, use biofuels instead of fossil energy to reduce net GHG emissions; - Adopt reduced tillage options to increase the carbon storage capacity of soils	
Water pollution	Nutrient enrichment of water bodies from fertilizer runoff	Eutrophication of water bodies Modified aquatic ecosystems .	-Time the application of crop nutrients using meteorological information to avoid, where feasible, application during or close to precipitation events; -Use appropriate technical equipment for spraying	To develop and implement the most appropriate to the area land and crop practices Impact form a single husbandry will not be significant but cumulatively, over many husbandries

			manure; -Establish buffer zones, strips, or other "no-treatment" areas along water sources, rivers, streams, ponds, lakes, and ditches to act as a filter to catch potential runoff from the land	within the same watershed the impact could be significant
Probable Residual Impact Assuming Full Mitigation: LOW – MODERATE				

Table C-6. Pesticides application*				
Significance of Overall Potential Impact: HIGH (cumulative impact)				
Potential Impacts	**Causes**	**Consequences**	**Mitigation Required**	**Remark**
Diseases/ Illness	Improper handling, application and storage of pesticides. Consumption of crops with high levels of pesticide residues	Increased healthcare costs; lost work time; lost family income.	Proper handling and use of pesticides; Proper storage of pesticides; Use only approved pesticides; Sanitary measures (proper cleaning, washing, etc.) (for other pesticide-related measures refer to Table B-3)	
Soil contamination	Residual pesticides in soil.	Loss of soil productivity; long term loss / altered soil micro-fauna important to soil / plant relationships.	Use of approved pesticides and recommended application rates, scheduling and mode of application (for other pesticide-related measures refer to Table B-3)	
Loss of biodiversity	Pesticide ingestion by fauna.	Loss of fauna	Use of approved pesticides and recommended application rates, scheduling and mode of application (for other pesticide-related measures refer to Table B-3)	
Water pollution	Ground and surface water contamination.	Impaired health of local and downstream water	Use of approved pesticides and recommended application	International waterways may be affected.

		consumers; increased health costs; lost work time; lost family income Damage to aquatic ecosystems Loss of biodiversity.	rates, scheduling and mode of application (for other pesticide-related measures refer to Table B-3)	Pesticide use not likely significant on a single husbandry but cumulatively on many farms within the same watershed, impact could be significant
Probable Residual Impact Assuming Full Mitigation: MODERATE; Risk: HIGH				

* Note: More detailed description of the pesticides application and handling is presented in the Table C-.3. Annual crop production & plantation crop production of current volume and Chapter "Pest Management Issues" in Volume I.

Table C-7. Agricultural Machinery (tractors, winnowers, sowing machines, etc.)				
Significance of Overall Potential Impact: MODERATE TO HIGH				
Potential Impacts	**Causes**	**Consequences**	**Mitigation Required**	**Remarks**
Soil and water pollution	Contamination from machine fuels and lubricants.	Loss of soil productivity Decrease of crop production Deterioration of potable water quality	Good practices to be carried out by equipment operators Agricultural machinery should be kept in good conditions Fuels and lubricants are to be stored and handled in devoted areas, etc.	This is a minor impact and awareness to operators to refuel under safe conditions is all that would be required.
Air pollution	CO_2 releases	Contribution to greenhouse gasses and global warming.	To ensure that all machinery engines are efficient and well maintained	
Soil erosion	Tillage against the contour	Increase surface runoff contributing to increased surface water bodies alluviation Reduced soil percolation capacity, etc.	Tillage on the contour	To advise farmers on proper tilling techniques with tractors
Soil compaction	Use of heavy machinery	Soil erosion and alluviation of water bodies Poor water permeability of the soil profile/ decrease of soil moisture, etc.	Ensure equipment of a size that suitable for soil conditions	Large farms require more machinery
Probable Residual Impact Assuming Full Mitigation: LOW				

Table C-8. Vehicles				
Potential Overall Impact: LOW				
Potential Impacts	**Causes**	**Consequences**	**Mitigation Required**	**Remarks**
Air pollution	CO^2 emissions	Contribution to global warming/ climate change.	Efficient engines Where possible, to use-biofuel	
Soil and water pollution	Use, handing and storage of fuel and lubricants	Leakages into soil and groundwater	To maintain engine a good conditions to avoid machine oil leakages To use specially organized sites for handling and storage of fuel and lubricants	
			For other measures refer to Table C-13. Fuel & Lubricants' Storage and Handling	
Probable Residual Impact Assuming Full Mitigation: LOW; Risk: LOW				

Table C-9. Buildings for crop stock, machinery and other agricultural needs				
Potential Overall Impact: LOW				
Potential Impacts	**Causes**	**Consequences**	**Mitigation Required**	**Remarks**
Soil degradation/ Loss of productive topsoil	Improper location of buildings	Reduced income from lower amount of crop production	Location of buildings in sites with low soil productivity; Proper design to minimize area under construction	This is not likely to be an important consideration
			For other measures refer to Table E-1 Construction activities	
Residual Impact Assuming Full Mitigation: LOW; Risk: LOW				

Annex 11[31]

Examples to be used in EMPs
for the assessment of Impacts, Causes, Consequences and Mitigation measures
for sub-projects in Agro-processing & Food production Sectors

D-1 Poultry & meet processing*
D-2 Dairy*
D-3 Vegetable oil processing*
D-4 Vegetable processing and canning*
D-5 Flour milling
D-6 Warehousing

*****Resource: Environmental, Health, and Safety Guidelines. World Bank Group, 2007. http://www.ifc.org/ifcext/sustainability.nsf/Content/EnvironmentalGuidelines

[31] Mitigation measures presented here will be complemented by relevant monitoring activities once the specific EMP for a sub-project will be developed.

Table D-1. Poultry & meet processing				
Overall Potential Impact: HIGH (due to human health threat)				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
Soil, groundwater and surface water pollution/ Solid organic wastes and by-products	Slaughtering and rendering activities	***Poultry:*** the carcass yield is, on average, 75% of the live bird weight ***Meet***: Waste products and by-products of slaughtering processes The quantity of by-products from cattle often exceeds 50%of the animal's live weight, and 10 to 20% for pigs Special Risk Materials (SRM .	***Poultry:*** Provision of adequate slurry storage capacity for excreta until it is transported for disposal or for use as agricultural fertilizer ***Meet:*** continuously collect by-products dry and segregated from each other, along the length of the slaughter-line and throughout animal by-products treatment; optimise bleeding and the collection of blood; use sealed, storage, handling and charging facilities for animal by-products	
Animal and birds diseases ***Birds:*** Highly Pathogenic Avian Influenza (HPAI)	Batch of birds delivered to the slaughterhouse is suspected of infection with Highly Pathogenic Avian Influenza (HPAI)	Other birds and human diseases.	***Poultry***: Birds must be stored separately to avoid contact with healthy birds - HPAI should be suspected when the dead-on-arrival frequency is abnormally high, and in connection with other symptoms (- If HPAI is confirmed, the entire carcass of the dead birds should be handled as high risk material and transported safely to a rendering facility.	

Livestock: bovine spongiform encephalopathy (BSE), etc.			- The slaughterhouse should be cleaned and disinfected, and a minimum operational shutdown of 24 hours should be applied, etc. ***Livestock:*** should be separated and transported to external facilities in separate containers for treatment and final disposal. - Tissue of a livestock treated as Special Risk Material should be destroyed through incineration with a minimum gas temperature of 850^{o}C; - Collecting animals not approved by veterinary inspection and segregating them from animal materials sent by the slaughterhouse for off-site rendering	
Soil and water pollution/ Sludge Treatment and Disposal	Poultry and meat processing operators	Surface water, groundwater and soil pollution	***Poultry:*** - Reuse of high-quality, low risk by-products; - Disposal of fat at landfills if it cannot be used for biogas production ***Livestock:*** -Reuse materials that may be separated from pretreatment processes in the manufacture of high-quality by-products (e.g. pet food or technical fat for manufacturing); -If no other alternatives are feasible, dispose of fat at landfills	

Surface and groundwater pollution/ Wastewater	***Poultry*** processing activities ***Meet*** process activities	***Poultry & Meet:*** Effluents with high content of organic matter, nitrogen, phosphorus, residues of chemicals, pathogens	***Poultry:*** - Organic materials to collect separately for recycling; -Ensuring that leakage from animal by-product storage containers is avoided; -Use of dripping trays to collect blood to transport to the blood tank rather than into the wastewater stream; Application of appropriate tank and equipment cleaning procedures -Choosing cleaning agents and application rates that do not have adverse impacts on the environment, or on wastewater treatment processes and sludge quality for agricultural application ***Meet:*** - Prioritize the removal of solid waste before it enters the wastewater stream; - Collect blood for use in food, feed or in the pharmaceutical industry; -Prevent direct runoff to water courses, especially from manure storage areas, etc	
Water Consumption	***Poultry & Meet*** processing operations	Stress on water resources	- Optimizing water consumption for rinsing and cooling without jeopardizing food safety; -Prefer a dry cleaning process areas before cleaning with	

			water	
Air pollution/ Air emissions Odor Dust	Poultry & meet processing ***Meet:*** singeing, scalding, lair age, wastewater treatment and rendering	***Meet:*** Odor may often be the most significant form of air pollution	***Poultry:*** -Maintenance of clean live bird handling areas by removing fecal matter and dead birds on a daily basis; -Reducing the inventory of raw carcasses, waste, and byproducts and minimizing any storage to short periods of time in a cold, closed, well-ventilated area. - Dead birds, waste, and byproducts should not be stored in open spaces, where possible ***Meet:*** -Consider the location of new facilities, taking into account proper distances to neighbors and the propagation of odors; Pasteurize organic material before processing it to halt biological processes that generate odor; -Clean pens and livestock yards on a timely basis; -Empty and clean fat traps frequently ***Meet:*** -Clean and maintain a sufficient level of humidity in pens and livestock yards; Reduce fugitive dust by minimizing surface areas with exposed soil surfaces, and by	

			planting hedges or erecting fences to minimize wind turbulence, etc.	
Energy Consumption	Heating of water and producing steam for process applications, cleaning purposes and operation of mechanical and electrical equipment, refrigeration, and air compressors	Stress on natural resources	***Poultry & Meet:*** - Control of water levels and recirculation of water; - Improvement in cooling efficiency by insulating refrigeration room / areas and doors; installation of an automatic door closing mechanism, etc.	
Probable Residual Impact Assuming Full Mitigation: LOW				

Table D-2. Dairy				
Overall Potential Impact: HIGH (primarily due to human health threat)				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
Contribution to surface water pollution/ Wastewater	Silk solids (e.g. protein, fat, carbohydrates, and lactose) Salting activities during cheese	Significant organic content, high salinity levels; other pollutants: acids, alkali, and detergents, etc. as well as pathogenic microorganisms and viruses	To prevent contamination of wastewater: -Avoid milk, product, and by-product losses; -Install grids to reduce or avoid the introduction of solid materials into the wastewater drainage system; -Adopt best-practice methods for facility cleaning systems, using approved chemicals and / or detergents with minimal environmental impact and compatibility with subsequent wastewater treatment processes	

Soil, groundwater and surface water pollution/ Solid Waste	Production processes	Nonconforming products and product losses, grid and filter residues, sludge from centrifugal separators and wastewater treatment, and packaging waste	-Where possible and subject to sanitary requirements, segregate solid process waste and non-conforming products; -Optimize product filling and packaging equipment to avoid product- and packaging-material waste; -Optimize the design of packaging material to reduce the volume of waste - Plastic waste from packaging cuttings can be reused, or should be sorted as plastic waste for off-site recycling or disposal, etc.	
Air Pollution/ Air Emissions Dust Odor	Dairy processing activities Dairy processing facilities are related to on-site wastewater treatment facilities, in addition to fugitive odor emissions from filling/emptying milk tankers and storage silos	Fine milk powder residues in the exhaust air from the spray drying systems and bagging of product	Installation of exhaust ventilation equipped with dry powder retention systems (e.g. cyclones or bag filters -Ensure wastewater treatment facilities are properly designed and maintained for the anticipated wastewater load; - Keep all working and storage areas clean; - Empty and clean the fat trap frequently (e.g. daily emptying and weekly cleaning); -Minimize stock of waste and by-products and store for short periods in cold, closed, and well-ventilated rooms	
Energy consumption	Dairy processing facilities consume considerable amounts of energy	Stress on natural resources	-Reduce heat loss by : - Using continuous, instead of batch, pasteurizers; - Partially homogenizing milk	Approximately 80% of the energy requirements are for thermal uses to generate hot water and produce steam for

			to reduce the size of heat exchangers; - Improve cooling efficiency	process applications (e.g. pasteurization, evaporation, and milk drying) and cleaning purposes. The remaining 20% is used as electricity to drive processing machinery, refrigeration, ventilation, and lighting
Probable Residual Impact Assuming Full Mitigation: NONE				

Table D-3. Vegetable oil processing				
Overall Potential Impact: LOW				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
Soil, groundwater and surface water pollution/ Solid waste and by-products	Vegetable oil processing activities generate significant quantities of organic solid waste and by-products. . Other solid wastes from the vegetable oil manufacturing process include soap stock and spent acids from chemical refining of crude oil; spent bleaching earth containing gums, metals, and pigments; deodorizer distillate from the steam distillation of refined edible oils; mucilage from degumming; and spent catalysts and filtering aid from the hardening process		-Use uncontaminated sludge and effluent from on-site wastewater treatment as fertilizer in agricultural applications; -Dispose of contaminated sludge from wastewater treatment at a sanitary landfill or by incineration. - Reduce product losses through better production control (e.g. monitor and adjust air humidity to prevent product losses caused by the formation of molds on edible materials)	The amount of waste generated depends on the quality of the raw materials and the use or reprocessing of the discarded materials into commercially viable by-products
Contribution to surface water pollution/ Wastewater	Oil washing and neutralization (waters contain organic, high content of		-Use emulsion breaking techniques to segregate high BOD and COD oils from	

	suspended solids, organic nitrogen, and oil and fat, and may contain pesticide residues from the treatment of the raw materials		wastewater; - Use grids to cover drains in the production area and to prevent solid wastes and concentrated liquids from entering the wastewater stream; - Select disinfection chemicals to match the cleaning operation being applied on the process equipment to the type of problem; - Apply cleaning chemicals using the correct dose and application; -When feasible, replace phosphoric acid with citric acid in degumming	
Water consumption	Vegetable oil facilities require significant amounts of water for crude oil production (cooling water), chemical neutralization processes, and subsequent washing and deodorization	Stress on water resources	- When economically viable, consider the use of physical refining instead of chemical refining to reduce water consumption; - Recover condensate from heating processes and reuse; - Close the cooling water circuit and re-circulate cooling waters	
Air pollution/ Air Emissions Particulate matter Volatile Organic Compounds	Vegetable oil processing Dust: - from processing of raw materials, including cleaning, screening, and crushing Use of oil-extraction solvents, normally hexane	Combustion byproducts such as NOx, SOx, PM , volatile organic compounds (VOCs), and greenhouse gases (CO and CO_2)	To prevent and control dust: - Ensure proper maintenance of cleaning, screening, and crushing equipment to reduce emissions of fugitive dust; - Reduce odor emissions with a caustic, alkaline, or ozone scrubber system To prevent and control VOCs: - - Ensure the efficient recovery	

(VOCs) Exhaust Gases	..		of solvent by distillation of the oil from the extractor; - Management strategy is a reduction in energy demand, use of cleaner fuels; - Application of emissions controls, where required, etc.	
Water and energy consumption	Heating of water and producing steam for process applications (especially for soap splitting and deodorization) and cleaning processes Refrigeration and compressed air	Stress on water and other natural resources	To use energy and water save technologies and machinery	
Illness	Cold pressed oil contains high amounts of fatty acids and pesticide residues.	Severe diseases resulting in lower labor efficiency and income	Use alternative pressing process	
Injuries	Open machinery	Lost productivity, work days and income.	Safety instructions; safety clothing where appropriate (e.g. hard hats); protective guards on all machinery.	
Probable Residual Impact Assuming Full Mitigation: NONE				

Table D-4. Vegetable processing and canning				
Overall Potential Impact: LOW				
Potential Impacts	**Causes**	**Consequences**	**Mitigation Required**	**Remarks**
Water pollution	Residue from vegetable and fruits allowed to be dumped into surface waters.	Damage to aquatic ecosystems (high organic resulting in dissolved oxygen depletion).	Compost vegetative waste.	
Soil, groundwater and surface water pollution/ Solid waste	Raw material, canning material scrap, etc		Recycle metal back to metal processor.	
Diseases/ illness	Canning uses lead solder for	Lead (Pb), a carcinogen, is	Use tin (Sn) for soldering or	

	can seams	cumulative in humans	adopt other appropriate sealing methods.	
Injuries	Open machinery	Lost labor efficiency &income	Safety instructions; safety clothing where appropriate (e.g. hard hats); protective guards on all machinery.	
Residual Impact Assuming Full Mitigation: NONE; Risk: LOW				

Table D-5. Flour milling				
Overall Potential Impact: LOW				
Potential Impacts	**Causes**	**Consequences**	**Mitigation Required**	**Remarks**
Soil and water pollution/ Solid waste	Wheat husks left from milling dumped at municipal disposal site		Recover bran; Use for animal feed	
Injuries	Open machinery.	Lost of labor efficiency and income.	Safety instructions; safety clothing where appropriate (e.g. hard hats); protective guards on all machinery.	
Illness	Flour dust	Respiratory irritation	Provide masks to workers	
Residual Impact Assuming Full Mitigation: NONE; Risk: LOW				
Table D-6. Warehousing				
Overall Potential Impact: LOW				
Potential Impacts	**Causes**	**Consequences**	**Mitigation Required**	**Remarks**
Only those during sitting, construction and decommissioning phases.				
Residual Impact Assuming Full Mitigation: NONE; Risk: LOW				

Annex 12

Examples to be used in EMPs for the assessment of Impacts, Causes, Consequences and Mitigation measures for Contraction activities & sub-projects in Manufacturing Sector

G-1 Construction activities
G-2 Construction material extraction*
G-3 Cement and lime manufacturing*
G-4 Ceramics manufacturing*
G-5 Glass manufacturing*
G-6 Textile manufacturing*
G-7 Tanning and leather finishing*
G-8 Soap and detergent manufacturing
G-9 Printing*
G-10 Sawmilling and manufactured wood products*
G-11 Board and particle-based products manufacturing*
G-12 Pharmaceuticals and biotechnology manufacturing*
G-13 Semiconductors and other electronics manufacturing*
G-14 Pulp and paper mills manufacturing*
G-15 Surface treatment of metals and plastics*
G-16 Metal, plastic and rubber products manufacturing*
G-17 Foundries*

*Resource: Environmental, Health, and Safety Guidelines. World Bank Group, 2007. http://www.ifc.org/ifcext/sustainability.nsf/Content/EnvironmentalGuidelines

Table G-1. Construction activities				
Potential Impacts	**Causes**	**Consequences**	**Mitigation Required**	**Remarks**
Planning Phase:				
Loss of biodiversity	Poor location analysis not taking into account important biophysical values.	Loss of flora and fauna.	Location in areas that are not high priority for biodiversity protection.	
Loss of cultural features	Poor location analysis not providing consideration to cultural values.	Loss of important cultural sites and structures.	Location in areas of little or no cultural significance.	Public participation is a requirement for all EIAs and if properly conducted during EIA will ensure input required to select appropriate alternative sites.
Socially unacceptable	Poor location analysis not taking into consideration local communities' lifestyle, movement patterns and values.	Nuisance factor to local communities; loss of peace and quiet; loss of access to other areas or sites (e.g. school children may have to walk greater distances due to loss of direct route to school.	Location in areas where noise, odor or aesthetics will not be a problem; location to be selected which doesn't interfere with important access (e.g. to schools).	Public participation is a requirement for all EIAs and if properly conducted during EIA will ensure input required to select appropriate alternative sites (and *modus operandi*) for enterprise.
Construction Phase :				
Soil erosion	Vegetation and topsoil is removed for initial construction and access, exposing bare soil that is vulnerable to erosion, particularly in rainy periods.	Further soil erosion off-site and downstream; increased sediment loads in receiving streams resulting in aquatic habitat changes.	Ensure awareness by workers; adopt appropriate soil protection techniques; ensure exposed soil surfaces are kept to a minimum and for short periods of time; conserve topsoil, recover and replant when construction is completed.	If possible construction should occur in dry periods or seasons, particularly in situations where soil erosion could be a problem.
Soil pollution	Spilled and dumped fuels, and other chemicals. Ineffective on-site sewage treatment during construction phase.	Loss of soil productivity. Contaminated groundwater.	Environmental awareness; training in handling and storage of fuels, lubricants and chemicals; provision of proper on-site storage facilities.	
Water pollution	Spilled and dumped fuels and other chemicals.	Contaminated groundwater and surface water resulting in contaminated drinking water and in the case of surface	Same as above. Provision of waste containing toilets which waste can be transferred to a municipal	

Table G-1. Construction activities				
Potential Impacts	**Causes**	**Consequences**	**Mitigation Required**	**Remarks**
		water, damaged aquatic ecosystem.	treatment facility.	
Noise and dust	Vehicles and construction machinery; dirt access roads.	Nuisance factor to neighboring communities.	Operations during normal working hours only; access roads to be watered during dry periods.	
Loss of habitats and biodiversity	Construction activities	Noise pollution, disturbance on natural ecosystems, etc.	-To avoid or minimize construction and operational activities during breeding and migration periods - Consideration of alternative locations, where possible - Careful timing of works and work seasonally, as appropriate: no construction during breeding season - Where possible, to fence the area under construction to lessen even occasional disturbance on habitats and biodiversity -Inform personnel about importance of adjacent environmentally important area, if any	
Solid waste	Littering of unused construction materials and workers personal garbage.	Unsightly and remnant construction materials could pose a safety hazard.	Effective disposal of materials and garbage in designated waste disposal sites.	
Loss of access	Construction site may have formerly been used as an access for local population (and vehicles) for various sections of the community.	Nuisance and possibly economic hardship.	During planning phase ensure that local people are aware of restrictions during construction and alternative arrangements for access are provided.	Public participation during planning phase should identify this and similar conflicts.
Injuries	Inadequate safety procedures for workers; inadequate signage and construction	Injury / death resulting in lost work days (for construction workers and general public;	Ensure construction workers are given safety instruction; ensure safety officers on site;	

Table G-1. Construction activities				
Potential Impacts	**Causes**	**Consequences**	**Mitigation Required**	**Remarks**
	activities exposed where public can interface with such.	lost income.	ensure effective signage for the public and ensure that all exposed construction areas are barricaded from public access.	
Decommissioning Phase: (it is unlikely that any of the enterprises will undergo decommissioning in a 25-50 period from initial start up or refurbishment but if such should occur then the listed impacts should be considered).				
Same as above for construction plus:	See above	See above	See above	
Waste	Concrete, blocks, steel, glass will result from demolition; old equipment will be dismantled.	Public safety hazard. Waste of resources.	Removal and recycling or effective disposal of all toxic materials; complete demolition after recycling useful materials; removal to a designated and environmentally safe disposal site and burial of clean and inert materials.	
Aesthetics		Unsightly site (as are many industrial sites from former Soviet times).	Following removal of all materials (see above), site to be formed (topsoil where relevant and feasible) and landscaped, where appropriate, to suit surrounding areas.	
Soil erosion	As for construction phase above.			
Safety	As for construction phase above.			

Table G-2. Construction material extraction				
Overall Potential Impact: MODERATE				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
Air pollution/ Air Emissions • Particulate matter	The principal source of air emissions is fugitive dust from	Impact to human health, damage to environment	-Land clearing, removal of topsoil and excess materials,	

Table G-2. Construction material extraction				
Overall Potential Impact: MODERATE				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
○ Dust Other Air Pollutants • Combustion by-products • Toxic and nontoxic gases • NO_2, CO and NO	earth works and materials handling and transport activities: crushing–grinding, drilling, blasting and transport Vehicles and other combustion sources installed in the quarrying site Blasting activities Explosions		location of haul roads, tips and stockpiles should be planned with due consideration to meteorological factors; -Dust emissions from drilling activities should be controlled at the source by dust extractors, collectors; -Internal roads should be adequately compacted; -A speed limit for trucks should be considered; Exposed surfaces of stockpiled materials should be vegetated -Alternatives to blasting, -If blasting is necessary, planning of the blasting (should be implemented; -The correct burning of the explosive should be ensured by minimizing the presence of excess water and avoiding incorrect or incomplete mixing of explosive ingredients	
Water consumption Hydrology	Diamond-wire cutting activities, aggregate-washing plants, and dimension stone quarrying activities Flow diversions, water intake, and changes to the drainage pattern	Stress on natural resources Alteration of surface water regime	- Reduce water consumption; through recirculation and reuse, implementing closed-circuit systems from sedimentation ponds to the quarrying process - Quarry pond dredging activities should be designed and implemented to minimize drawdown with consideration of potential impacts to surface and groundwater resource flow and availability, including	

Table G-2. Construction material extraction				
Overall Potential Impact: MODERATE				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
Wastewater	Dewatering of the quarrying pit, diamond-wire cutting and surface water runoff		potential ecological impacts -Construction of a dedicated drainage network; -Reduce water consumption	Construction materials extraction operations do not typically generate point sources of effluents or emissions
Hazardous Materials	Use, storage and transfer of varying quantities of fuels and lubricants; Impurities and trace components included in the exploited (waste) rocks (e.g. asbestos or heavy metals or minerals	Soil and surface water & groundwater pollution Acidic runoff	Operational design and planning should include procedures for the reduction of waste production; -Topsoil, overburden, and low-quality materials should be properly removed, stockpiled near the site, and preserved for rehabilitation; -Hazardous and non- hazardous waste management plans should be developed and adopted during the design and planning phase	
Solid waste generation		Surface and groundwater pollution, soil pollution	- Cleanup and maintenance in receiving areas can reduce this waste and allow material spills to be collected and added to the raw materials; - Paving the receiving areas; - Cleanup and maintenance in receiving areas can reduce this waste and allow material spills to be collected and added to the raw materials	
Noise and Vibrations • Noise	Al extraction activities, including construction material and dimension stone	Hearing loss (hypoxia)	--Installation of proper sound barriers and (or) noise containments	

Table G-2. Construction material extraction				
Overall Potential Impact: MODERATE				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
	quarrying. drilling, breaking, crushing and handling– moving, screening, and transport. In dimension stone quarrying, flame-jet cutting is a specific noise source		-Use of rubber-lined or -Installation of natural barriers at facility boundaries (e.g. vegetation curtains or soil berms); -Optimization of internal-traffic routing, particularly to minimize vehicle-reversing needs; -A speed limit for trucks should be considered	
• Vibration	Mainly blasting activities; crushers and plant screening equipment; minor emissions are commonly associated with use of rock hammers		-Vibration and overpressure control with appropriate drilling grids; -Development of blast design, including a blasting-surfaces survey, to avoid over confined charges	
Land conversion	Excavation activities at construction materials extraction sites	Topographical and land-cover changes; clearing of preexisting vegetation	-Selection of appropriate low-impact extraction (e.g. excavation, quarrying, and dredging) methods; -Establishment of buffer zones from the edge of extraction areas, considering the characteristics of the natural habitats and the type of extraction activities; -To reduce the consumption of land area and, consequently, the loss of soil; - The land should be appropriately rehabilitated. --Hydrological systems should be restored	Opportunities to create ecologically valuable habitats should be considered (e.g. small lakes and pools with a complex shoreline and shallow water zones, after dredging or areas for natural succession
Land instability	Large-scale spoil-material	Landslide or collapse that	- To undertake a geological and	

Table G-2. Construction material extraction				
Overall Potential Impact: MODERATE				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
	disposal, water ponds, or mined land	could cause catastrophic incidents in surrounding populated area	hydro-geological survey ; -Geological and geotechnical control programs in large areas, specifically focused on long-term land stability; -Geo-technical monitoring of slopes, disposal sites	
Residual Impact Assuming Full Mitigation: LOW; Risk: LOW - MODERATE				

Table G-3. Cement and lime manufacturing				
Overall Potential Impact: HIGH				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
Air Pollution/ Air Emissions (Particulate matter, NO_X, SO_2,, CO_2 emissions)	Handling and storage of intermediate and final materials, and by the operation of kiln systems, clinker coolers and mills	Contribution to global warming/ Wide range of health impacts (mortality, respiratory disease, cardiovascular disease, eye irritation, and others)	-Use of a simple layout for materials handling operations to reduce the need for multiple transfer points · Storage of crushed and preblended raw materials in covered or closed bays · Implementation of routine plant maintenance and good housekeeping to keep small air leaks and spills to a minimum; · Conduct material handling (e.g. crushing operations, raw milling, and clinker grinding) in enclosed systems maintained under negative pressure by exhaust fans. · Implementation of automatic bag filling and handling systems to the extent possible · Using electrostatic precipitators	

Table G-3. Cement and lime manufacturing				
Overall Potential Impact: HIGH				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
			(ESPs) or fabric filter systems (bag houses) to collect and control fine particulate emissions in kiln gases	
Energy consumption and fuels	Kilns, coolers, fuels	Exhausting of natural resources	- Use of dry process kilns - No toxic emissions are generated from the firing of waste in cements kilns; -Adequate monitoring should be conducted when waste fuels are being fired at cement plants	-For new systems, optimizing energy efficiency in the design of the installation, unit or system and in the selection of processes for existing systems, optimizing the energy efficiency of the system through its operation and management, including regular monitoring and maintenance
Soil and water pollution from wastewater	Utility operations for cooling purposes in different phases of the process (e.g. bearings, kiln rings)	Threat to human health and damage to aquatic environment	Reduce water consumption	
Solid waste generation	Clinker production waste, mainly composed of spoil rocks, which are removed from the raw materials during the raw meal preparation; kiln dust removed from the bypass flow and the stack, if it is not recycled in the process	Air, soil and water pollution	Appropriate waste water management	
Noise	Raw material extraction, grinding and storage; raw material, intermediate and final product handling and transportation; and operation of exhaust fans.	Hearing loss (hypoxia)	- Selecting equipment with lower sound power levels - Improving the acoustic performance of constructed buildings, apply sound insulation - · Limiting the hours of operation for specific pieces of equipment or operations, especially mobile sources	

Table G-3. Cement and lime manufacturing				
Overall Potential Impact: HIGH				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
			operating through community areas · Re-locating noise sources to less sensitive areas to take advantage of distance and shielding	
Residual Impact Assuming Full Mitigation: MODERATE; Risk: HIGH				

Table G-4. Ceramics manufacturing				
Overall Potential Impact: MODERATE				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
Air pollution/ Air Emissions • Particulate matter • SO_2 emissions	Storage and handling of raw materials and during firing or spray drying of ceramics Handling of raw materials; drying, and finishing operations Depends on the sulfur content of the fuel and certain raw materials (e.g. gypsum, pyrite, and other sulfur compounds)	Human health impacts	Arrange barriers for wind protection (if raw material is stored in open piles; -Use of wet dust separators to treat emissions from spray drying and glazing processes in fine ceramic manufacturing. -Use of fuels with a low sulfur content, such as natural gas or liquefied petroleum gas; -Use of low-sulfur raw material -Reducing the nitrogen content	
Contribution to surface water pollution from wastewater	Preparation and casting units, and various process activities (e.g. glazing, decorating, polishing, and wet grinding		-Reduce water consumption; -Use dry off-gas cleaning systems; -Where practical, install waste glaze collection systems; -Install slip conveying piping systems; - Dewatering and disposal of residuals in landfills, or if hazardous in designated	

Table G-4. Ceramics manufacturing				
Overall Potential Impact: MODERATE				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
			hazardous waste disposal sites	
Waste generation	Process waste originating from the manufacture of ceramic products mainly consists of different types of sludge, including sludge from process wastewater treatment, and process sludge resulting from glazing, plaster, and grinding activities. Other process wastes include broken ware from process activities: solids from dust treatments; spent plaster molds; spent sorption agents (limestone and limestone dust); and packaging waste	Surface and groundwater pollution, soil pollution	Enhancements related to such activities as : - Increasing the lifespan of plaster molds; - Installing electronic controls for the firing curve (to optimize the process and reduce the amount of broken ware); - Installing spray booths that allow reclaiming of excess glaze; -Reduce waste generation; -Internal reuse of cuttings, broken ware, used plaster molds, and other byproducts, including sludge - Recycle, as raw material, dust collected in abatement systems and through different process activities, in addition to cuttings and other process losses	***BATs to reduce solid process losses/solid waste*** -Feedback of unmixed raw materials Feedback of broken ware into the manufacturing process -Use of solid process losses in other industries -Electronic controlling of firing applying optimized setting
Energy consumption	Operational process	Stress on natural resources	-Improve design of kilns and dryers -Applying a fuel switch in the kiln firing process	
Noise	Operational process	Hearing loss (hypoxia)	-Using silencers and slow rotating fans -Situating windows, gates and noisy units away from neighbors -Sound insulation of windows and walls -Closing windows and gates -Good maintenance of the plant	

Table G-4. Ceramics manufacturing				
Overall Potential Impact: MODERATE				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
Residual Impact Assuming Full Mitigation: LOW; Risk: MODERATE				

Table G-5. Glass manufacturing				
Overall Potential Impact: LOW				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
Air pollution/ Air Emissions • Particulate matter • Dust • NO_2 • Greenhouse gas (CO_2) emissions • SO_2 emissions	Container press and blow machines generate most emissions due to contact between molten glass (the "gob") and equipment lubricants. Melting process: Raw materials transportation, handling, storage, and mixing Raw materials, cullet, fuels High furnace temperatures, and the oxidation of nitrogen contained in fuels Linked with the type of glass, the type of fossil fuels used, Depends on the sulfur content in the fuel and in the raw materials	Affects environment and human health	-To consider product light weighting in containers and tableware; - Increased cullet utilization; -Optimization of furnace design and geometry; -Use of fuels with low sulfur content; -Consideration of material charging patterns, grain size, and moisture optimization; - End-of-pipe prevention and control techniques to reduce dust and NO_2 emissions; -Maximizing cullet use to increase energy efficiency and to limit the use of carbonate raw materials; -Reduction in the amounts of sodium or calcium sulfate in the batch materials	
Contribution to surface water pollution/ Wastewater	Processing	Aquatic environment deterioration	-Reduce water consumption; - Screening and sedimentation for suspended solids reduction using settling basins - Dewatering and disposal of	In general, emissions to the water environment are relatively low and there are few major issues that are specific to the glass industry.

Table G-5. Glass manufacturing				
Overall Potential Impact: LOW				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
			residuals in landfills, or if hazardous in designated hazardous waste disposal sites	Water is used mainly for cleaning and cooling and can be readily recycled or treated using standard techniques
Solid waste generation		Surface and groundwater pollution, soil pollution	- Paving the receiving areas; - Cleanup and maintenance in receiving areas can reduce this waste and allow material spills to be collected and added to the raw materials	Most activities of the glass industry produce relatively low levels of waste
Noise	High pressure in the cooling-mold process, raw material preparation, pressing and granulation processes, cutting, grinding	Hearing loss (hypoxia)	-Enclosure of units --Sound insulation of windows and walls -Closing windows and gates -Carrying out noisy (outdoor) activities only during the day -Good maintenance of the plant	
Energy consumption		Stress on natural resources	-Melting technique and furnace design; -Combustion control and fuel choice; -Cullet usage; -Waste heat boilers	
Residual Impact Assuming Full Mitigation: LOW; Risk: LOW				

Table G-6. Textile manufacturing				
Overall Potential Impact: HIGH (primarily due to toxic chemicals in effluent discharge)				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
Hazardous materials • Chemical Selection and Use	Pretreatment, dyeing, and other processes to provide the final product with desired visual and functional properties	Environmental pollution	- Potentially hazardous surfactants should be replaced by biodegradable, where possible; - Appropriate storage and	

Table G-6. Textile manufacturing				
Overall Potential Impact: HIGH (primarily due to toxic chemicals in effluent discharge)				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
			handling of hazardous materials	
Contribution to surface water pollution/ Wastewater	Wet operations, which are conducted during different parts of the textile manufacturing process	Damage to aquatic environment	- Control water usage; -Use of readily biodegradable; -Optimization of mechanical removal of water prior to the drying process; -Use of organic solvent washing for non-water soluble lubricants; - The oil separated should be collected to limit effluent contamination; -Use of hydrogen peroxide bleaching agent, instead of sulfur- and chlorine-based bleaches; -Use of automatic systems for dosing and dispensing dyes; -Conduct dyeing in high temperature conditions	Wastewater from textile manufacturing is typically alkaline and has high BOD (from 700 to 2,000 mg/l) and COD loads Pollutants in textile effluents include suspended solids, mineral oils (e.g. antifoaming agents, grease, spinning lubricants, non-biodegradable or low biodegradable surfactants other organic compounds, including phenols from wet finishing processes (e.g. dyeing), and halogenated organics from solvent use in bleaching. Effluent streams from dyeing processes are typically hot and colored and may contain significant concentrations of heavy metals
Water consumption	Use of freshwater, wastewater/sludge production, and energy used in heating	Exhausting of natural resources	Using mechanical dewatering equipment to reduce water content of the incoming fabric. -Use of water flow–control devices to ensure that water only flows to a process when needed	
Air pollution/ Air emissions	Coating and dyeing operations, include drying, printing, fabric preparation and wastewater treatment residues	Damage to environment and human health	-Use of emissions control techniques (e.g. absorption and chemical scrubbing)	

Table G-6. Textile manufacturing				
Overall Potential Impact: HIGH (primarily due to toxic chemicals in effluent discharge)				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
• Dust • Volatile Organic Compounds and other chemicals	Bale breakers, automatic feeders, separators and openers, mechanical conveyors, pickers and cards Stented frames, which are used in drying.		-Enclosure of dust producing equipment, and use of local exhaust ventilation, etc. -Use printing pastes with no or low VOC emissions; -Installing and modifying equipment to reduce solvent use; -Adopting water-based methods for removing oil and grease from fabric instead of using volatile solvents	
Odors	Dyeing and other finishing processes, and use of oils, solvent vapors, formaldehyde, sulfur compounds, and ammonia		-Substituting odor-intensive substances with less impacting compounds; -Installing and modifying equipment to reduce use of odorous chemicals	
Energy consumption	Drying and curing operations and in activities involving wet treatments	Stress of natural resources	-Water temperature control (optimum at 65° C) and dryer automatic humidity control using sensors typically leads to energy reduction. - Consider efficient combination of operations, such as scouring and bleaching, to save energy and water	
Contribution to surface water pollution through generation of solid and liquid waste	Manufacturing wastewater contains trials, selvedge, trimmings, cuttings of fabrics, spent dyes, pigments, printing pastes	Damage to environment	-Solid and liquid wastes should be effectively recycled or reused within the process or externally -Dewatering and disposal of residuals in designated hazardous waste landfills	

Table G-6. Textile manufacturing				
Overall Potential Impact: HIGH (primarily due to toxic chemicals in effluent discharge)				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
Residual Impact Assuming Full Mitigation: LOW – MODERATE; Risk: MODERATE - HIGH				

Table G-7. Tanning and leather finishing				
Overall Potential Impact: HIGH (primarily due to toxic chemicals in effluent discharge)				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
Contribution to surface water pollution/ Wastewater	The main releases to water originate from wet processing in the beam house, the lanyard, and the post-tanning operations	Damage to aquatic environment	Containment and treatment facilities to ensure that effluent discharges are within the established limits	
Water Consumption	Large tannery uses large amounts of water.	Stress on water resources	- Water re-use - To improve the matching of water flow to the requirements of the process and to use 'batch' versus 'running water' washes; - The use of short-float techniques can be achieved either by modifying the equipment to utilize short floats, or by installing modern tannery machines	In tanneries with poor water management only 50 % of the water consumed is actually used in the process.. With a combination of batch washing and short floats, savings of water consumption up to 70 % can be achieved, compared with a conventional process
Air pollution/ Air Emissions (organic solvents, VOC, sulfides, ammonia, dust, and odors)	The main releases to air are due to the dry-finishing processes, although gaseous emissions may also arise in all other parts of the tannery.	Damage to environment and human health	-Consider water-based formulations (containing low quantities of solvent) for spray dyeing; -Implement organic solvent-saving finishing techniques; - Use of adequate ventilation, followed by wet scrubbing; - Use of a centralized system, employing cyclones, scrubbers, and / or bag filters, as needed -Ventilate tannery areas and control	

Table G-7. Tanning and leather finishing				
Overall Potential Impact: HIGH (primarily due to toxic chemicals in effluent discharge)				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
			exhaust from odorous areas	
Soil and underground water pollution arising form solid waste	The main sources of solid wastes originate from fleshing, splitting and shaving.		-Reduce inputs of process agents to the practical extent; -Segregate different waste/residue fractions to facilitate recovery and re-use; -Dispose of non-recoverable and non-recyclable waste and sludge by appropriate methods	
Hazardous Materials (biocides, halogenated organic compounds, etc.)	Tanning and leather finishing processes		- Where possible, substitution of hazardous materials; -To maintain an inventory of inputs and outputs, their fate in processes and releases -To measure appropriate parameters to monitor the environmental releases	
Energy consumption	Forced drying of leather is among the most energy intensive processes in the tannery	Exhausting of natural resources	Considerable reductions in energy consumption can be achieved by optimizing the mechanical dewatering processes prior to drying	
Residual Impact Assuming Full Mitigation: LOW – MODERATE; Risk: MODERATE - HIGH				

Table G-8. Soap and detergent manufacturing				
Overall Potential Impact: MODERATE				
Potential Impacts	**Causes**	**Consequences**	**Mitigation Required**	**Remarks**
Construction phase				
Dust, noise, mud due to use of heavy machinery	Site preparation and construction of building	Affect humans	To minimize area under construction activities, Scheduling of work activities To keep noise level within permissible level to not disturbed neighbors	

Table G-8. Soap and detergent manufacturing				
Overall Potential Impact: MODERATE				
Potential Impacts	**Causes**	**Consequences**	**Mitigation Required**	**Remarks**
Generation of excavated soil, debris, construction wastes	Site preparation and construction of building	May be dumping into bare lands, water bodies and drains	All solid wastes should be collected and properly disposed	
Hazardous material (fuel, lubricants, et.)	Site preparation and construction of building	Soil & water pollution, fire hazards		
Operation phase				
Air pollution (dust, VOC	Combustion of fuel		Emission values to comply with established limits	
Odor		Nuisance to the nearby inhabitants	Channeling of flue and odor gases at possible extent	
Solid & hazardous wastes	Processing	Visual impacts & Risk of contamination of surface water	Appropriate disposal of hazardous wastes and their further neutralization Petroleum hydrocarbons and other chemicals to have secondary containment	The secondary containment shall have a storage capacity of 110% of the capacity of storage tank
Contribution to surface water pollution/ Wastewater (the most significant,- phosphates)	Processing	Phosphor the most significantly contributes to eutrophication which remains one of the most important threats to fresh and marine waters	Effluent values to comply with established limits	The EC, on the base of Art. 16 Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents, concerning the use of phosphates, recalls Member States may proceed with measures to replace phosphate-based detergents where this can be justified on environmental grounds (currently, in Europe only in 6 counties are 100% used P-free detergents; these are Germany, Austria, Luxemburg, Italy, Ireland, Netherlands, Belgium, In Slovenia -95% use)
Hazardous material	Processing		Appropriate handling and storage of hazardous material to	

Table G-8. Soap and detergent manufacturing				
Overall Potential Impact: MODERATE				
Potential Impacts	**Causes**	**Consequences**	**Mitigation Required**	**Remarks**
			minimize risk of pollution and accidental spill	
Residual Impact Assuming Full Mitigation: NONE; Risk: LOW				

Table G-9. Printing				
Overall Potential Impact: MODERATE				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
Air pollution/ Air Emissions (Volatile Organic Compounds (VOC), other toxic compounds, particulate matter)	Evaporation of the fountain, from lacquering with solvent-based lacquers laminating with solvent-based adhesives, flexography, screen-cleaning operation in screen printing, etc.	Damage to environment and human health	- Use of approved methods and techniques to prevent and control emissions -Selection of materials or processes with no or low demand for VOC-containing products, - Installation of baffle separators, where possible	
Contribution to surface water pollution/ wastewater	Photo and plate processing activities		- To minimize the generation of wastewater:: - Use of water-developed films and water-developed plates; - Use of countercurrent rather than parallel rinse processes to reduce the amount of clean water used; - disposal of residuals in designated hazardous waste landfills	Wastewaters from the industrial process may contain metal compounds (e.g. silver and mercury), cleaning solutions may contain pigments, acids, and solvents (e.g. toluene). Acid plate-etching chemicals used in gravure may contain nitric acid, erchloroethylene, and butanol
Soil and underground water pollution / Wastes	Waste generation		-Reduction in the generation of hazardous and nonhazardous waste Appropriate management of hazardous wastes: handling, disposal, neutralization	
Energy consumption	Printing process	Stress on natural resources	-Minimize energy consumption when optimizing waste gas	***BAT*** is to: -Seek opportunities to recover

Table G-9. Printing				
Overall Potential Impact: MODERATE				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
			treatment in all sites	and use any surplus energy in all sites
Residual Impact Assuming Full Mitigation: LOW; Risk: MODERATE				

Table G-10. Sawmilling and manufactured wood products				
Overall Potential Impact: MODERATE				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
The major environmental impact of sawmilling and wood products manufacturing concerns the management of forest resources	Utilization of forest resources	While not managed properly damage environment	In sawmilling and manufacturing of wood products, forestry impacts are minimized by maximizing wood conversion efficiency	
Solid waste generation	Solid waste generation is directly related to the conversion efficiency of roundwood to sawn lumber or other final products.		- Optimizing primary log breakdown technology and techniques; - To establish the optimum cutting pattern; -Use of relevant technology to maximize utilization of sawn boards; -Operator training and monitoring to ensure awareness and implementation of measures to improve conversion -Maximum waste recycling: - Use of wood and bark chips as mulch for gardens and agriculture; - Use of sawdust and wood shavings for animal bedding; etc.	The use of modern equipment and trained staff may increase conversion efficiencies to 70 percent Conversion efficiencies from round wood to sawn lumber are often below 40 percent Opportunities for recycling of wood waste may exist through use of waste as inputs for secondary products in other industries or as a source of fuel for heat, etc.
Air pollution/ Air Emissions	Pre-treatment, coating, dryers (solvents, particulate matter, - odor, combustion gases, etc.)	Threat to human health and damage to environment	- To control air emissions associated with wood residue incineration and combustion in	

Table G-10. Sawmilling and manufactured wood products				
Overall Potential Impact: MODERATE				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
			boilers; -Provide consistent fuel supply; -Where fly ash reinjection is used to improve furnace efficiency, -Use of filters and / or electrostatic precipitators, and / or scrubbers to control particulate matter; -Collection and distillation recovery of cleaning solvents; etc.	
Contribution to soil and water pollution/ wastewater	Storage tank leaks, pipework leaks, spent pre-treatment liquors, wash waters, etc.	Damage to environment	-Process wastewater containing chemical preservatives should be contained as part of a closed loop application system; -Containment of runoff from log yards through use of impervious surfaces; -Lining of log ponds to prevent contaminants leaching into the soil and groundwater	Toxic wood preservation chemicals may include polynuclear aromatic hydrocarbons, compounds of chrome, copper and arsenic. The runoff from log yards and log ponds may contain toxic chemicals leached from the timber, and soil and other materials washed out of the bark
Hazardous materials	Facilities involved in application of wood preservative treatments or the coating of products may store large volumes of hazardous chemicals such as wood preservatives, paints, lacquers, and solvents.		Measures, specific to wood preservative treatment facilities: -Storage tanks and components should meet relevant standards for design and operational performance; -Chemical storage and treatment sites and tanks should be situated in containment areas, etc.	Containing copper oxide and quaternary ammonium, Copper Azole and Borates may be used in dry situations, in addition to alternative building materials
Residual Impact Assuming Full Mitigation: LOW; Risk: LOW				

Table G-11. Board and particle-based products manufacturing				
Overall Potential Impact: MODERATE				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
The main issue is: sustainable forestry management and practices	Utilization of forest resources	While not managed properly damage environment	Use of more recycled or recovered fiber in board manufacturing	
Air pollution/ Air Emissions (particulate matter, dust, gases, chemicals, etc.)	Combustion process, utility boilers, hot gas generators, thermal fluid heaters, application of decorative coatings for boards, mechanical operations		- In utility plants, the general energy efficiency techniques should be adopted where appropriate; - Electricity use can be reduced - Energy used in drying can be reduced through use of relatively dry raw materials, including recycled wood matter in particle board manufacturing; - Provision of dust control equipment for areas identified with high potential for dust generation	
Contribution to groundwater and surface water pollution/ Wastewater	Board and particle-based product mills	Damage to aquatic environment	- To prevent and control leaching; -Biological treatment for reduction of BOD; - Dewatering and disposal of residuals in designated waste landfills	The quantity of effluent arising from manufacture should be minimized by the recycling techniques
Hazardous Materials	The manufactured products may contain a variety of toxic compounds; including formaldehyde	Threat to human health, damage to environment Potential hazard if spills, and an occupational health and safety hazard if not handled appropriately	Appropriate hazardous materials handling and hazardous waste management, including its disposal and neutralization	
Solid Waste	Wood waste (e.g. board off cuts), waste from water treatment processes, and ash from combustion of wood waste		- Ash may be returned to the forest or to some other site for inclusion in the soil as a fertilizer and soil improver; following an evaluation of	

Table G-11. Board and particle-based products manufacturing				
Overall Potential Impact: MODERATE				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
			- Board off-cuts should be minimized, etc.	
Noise	Debarking drums and chipping machinery (the most noise), mechanical breakdown processes, sanding and cutting machinery	Threat to human health	- Debarking and chipping should be carried out in enclosed buildings; - Noise generating machinery should be regularly maintained; - Sound reducing earth banks or sound reflecting screens should be installed, as necessary	
Residual Impact Assuming Full Mitigation: LOW; Risk: LOW				

Table G-12. Pharmaceuticals and biotechnology manufacturing				
Overall Potential Impact: HIGH				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
Air pollution/ Air emissions (volatile organic compounds, acid gases, greenhouse gas and particulates)	Pharmaceuticals and biotechnology manufacturing facilities; milling, mixing, compounding, formulation, tableting, and packaging	Threat to human health, damage to environment	-Reducing or substituting the use of solvents and other materials which have a high VOC content, -Implementation of VOC leak prevention and control strategies from operating equipment; -Reduction of equipment operating temperatures, where possible; -Installation of dedicated filtration systems to control particulate matter emissions	
Odor	Fermentation activities		Use of wet scrubbers to remove odors with a high affinity to water; -Condensation of vapors combined with scrubbers - Considering the location of	

Table G-12. Pharmaceuticals and biotechnology manufacturing				
Overall Potential Impact: HIGH				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
			new, taking into account proper distances to neighbors and the propagation of odors	
Contribution to surface water pollution/ wastewater	Industrial wastewater may include: chemical reactions streams; product wash water; spent acid and caustic streams, etc. The main conventional pollutants of are BOD, COD, total suspended solids (TSS), ammonia, toxicity, bio degradability, and pH; other pollutants are organic and inorganic acids, ammonia, cyanide, toluene, and active pharmaceutical ingredients (API)		- Material substitution, where possible; -Condensation and separation processes to recover used solvents and aqueous ammonia	
Water Consumption		Stress on water resources	Reduce water consumption, especially where it may be a limited natural water resource	
Solid and Hazardous Wastes	Chemical synthesis processing generates wastes containing spent solvents, reactants, spent acids, bases, aqueous or solvent liquors, still bottoms, cyanides and metal wastes. Fermentation: spent solids, intermediates, residual products		-Waste reduction by material substitution; -Process modifications, is appropriate; -Potentially pathogenic waste from biotechnology manufacturing should be inactivated through sterilization or chemical treatment before final disposal	
Hazardous Management			To develop a Hazardous Materials Management Plan for which prior to: -Identify and implement	

Table G-12. Pharmaceuticals and biotechnology manufacturing				
Overall Potential Impact: HIGH				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
			management procedures including process safety, training, employee participation, etc. -Implement prevention measures including process hazard analysis, etc.	
Threats to Biodiversity	Collection of genetic resources (bio prospecting), which may be part of certain pharmaceutical or biotechnology projects		-Avoiding or minimizing harm to biodiversity in compliance with applicable legal requirements; -Development and application of bio prospecting procedures that are consistent with recognized standards	
Residual Impact Assuming Full Mitigation: MODERATE, Risk: HIGH				

Table G-13. Semiconductors and other electronics manufacturing				
Overall Potential Impact: HIGH				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
Hazardous material and waste	Spent deionized water, solvents and developers, solutions, epoxy material, cyanide solutions, and soldering fluxes and metals residue	Damage to environment and threat to human health	-Implementing process or equipment modifications, where possible; -Raw material substitution or elimination; -Hazardous substance and waste segregation, separation, and preparation; -Substitute hazardous substances, where possible	Hazardous materials management in this sector include: - Process chemicals storage areas should be regularly checked to identify leaks; - Waste spill containment trays should be used .-Metal-bearing sludge should be disposed in secure landfills
Air Emissions (Perfluorocarbon Compounds (PFC) and other greenhouse	Diffusion, cleaning, wet-etching and other processes	Damage to environment and threat to human health	Most toxic gases can be controlled in special cabinets that are scrubbed or scrammed to	

Table G-13. Semiconductors and other electronics manufacturing				
Overall Potential Impact: HIGH				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
gases, toxic, reactive, and corrosive substances (acid fumes, dopant, cleaning gases, and volatile organic compounds [VOCs])			atmosphere after careful monitoring of gas concentration to ensure that the gases are safely released with no impact on health and environment	
Energy Consumption	Thermal processes and wafers handling is highly mechanized, semiconductor manufacturing involves significant energy use	Stress on natural resources	- Air-handling equipment that controls humidity and temperature, - High-efficiency chillers, etc.	
Contribution to surface water pollution/ wastewater	Wastewater effluents may be impacted by organic and inorganic compounds, such as metals, acids and alkalis, cyanides and suspended solids	Damage to aquatic environment	To minimize both water use and potential discharge impacts	
Residual Impact Assuming Full Mitigation: MODERATE, Risk: HIGH				

Table G-14. Pulp and paper mills manufacturing				
Overall Potential Impact: HIGH				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
Contribution to surface water pollution/ wastewater	The industry generate big volumes of wastewater contaminated by suspended solids, BOD, COD, dissolved organic compounds and other hazardous substances	Damage to aquatic environment	The most commonly used systems include a combination of i)activated sludge; ii) aerated lagoons; iii) biological filters of various types, often used in combination with other methods; iv) anaerobic treatment used as a pre-treatment stage, followed by an aerobic biological stage	End of pipe wastewater treatment technologies will depend on several factors including effluent composition, measurable effluent quality requirements, and discharge location (e.g. direct to water course or pre-treatment before discharge to municipal or other WWTP)
Air pollution/ Air Emission (malodorous and flue gases, CO^2, particulate matter, sulfur	Process gases, flue gases from incineration plants and from auxiliary steam and power	Threat to human health and damage to aquatic environment	To execute strict primary and secondary control of air emissions	

Table G-14. Pulp and paper mills manufacturing				
Overall Potential Impact: HIGH				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
dioxide, nitrogen oxides and sometimes hydrogen sulfide)	generating units			
Solid waste	Pulp and paper mills typically generate significant quantities of non-hazardous solid wastes but very little hazardous wastes		- Solid waste volumes should be reduced to the extent feasible through in- situ reuse and recycling of materials	
Energy Consumption	Pulp and paper mills are large energy and steam consumers	.Stress on natural resources	-Reducing heat losses and heat consumption - Increasing effectiveness of the secondary heating system concentration, as well as maintaining a tightly closed water system and a partially closed bleaching plant	
Noise	Mechanical equipment, transport vehicles, physical activities, and energy usage, notably vacuum pumps, liquid pumps and steam generation systems		Good practice techniques, e.g. closing bay doors, minimizing deliveries and adjusting delivery times, or if necessary, by specific engineered solutions	
Residual Impact Assuming Full Mitigation: MODERATE, Risk: HIGH				

Table G-15. Surface treatment of metals and plastics				
Overall Potential Impact: MODERATE				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Best Available Techniques**	**Remarks**
Energy consumption	Processing	Stress on natural resources	To minimize electrical losses in the supply system as well as to reduce heat losses from heated processes To minimize water usage	
Raw material	Processing	Damage to environment	- To minimize material losses by retaining raw materials in	

			process vats and at the same time minimize water - To use recycling and recovery, where possible	
Contribution to surface water pollution/ wastewater	Operational process	Damage to environment	- Chemical treatment of waste water, oil separation, sedimentation and/or filtration.	.
Air pollution/ Air emissions	Operational process	Damage to environment	To prevent fugitive emissions from some processes by extraction and treatment.	
Noise	Operational process	Threat to human health/hearing loss (hypoxia)	Good practice techniques, e.g. closing bay doors, minimizing deliveries and adjusting delivery times, or if necessary, by specific engineered solutions	
Hazardous substances	Raw material	Damage to environment	To use less hazardous substances/ substitution of hazardous material, where possible	
Residual Impact Assuming Full Mitigation: LOW, Risk: LOW				

Table G-16. Metal, plastic and rubber products manufacturing				
Overall Potential Impact: HIGH				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
Metal products manufacturing				
Air pollution/ Air Emissions (dust, metals, etc)	Processing (sintering may generate combustion by-products and greenhouse gases; inorganic and organic volatile compounds may be generated from oxides, dusts and lubricants used in the charges before compaction., handling of micro-sized metallic particles may generate metallic dust).	Damage to environment & threat to human health	-Installation of refrigerator coils (or additional coils) above the degreaser vapor zone; - During welding and coating, metal surfaces should be carefully cleaned; -Installation of in-line aspirators with filters or scrubbers; -Where possible, maintaining wetness on the metal surface in order to prevent or minimize dust production	

Table G-16. Metal, plastic and rubber products manufacturing				
Overall Potential Impact: HIGH				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
Contribution to surface water pollution / wastewater and liquid wastes	Water-based cleaning and rinsing streams; cooling water; alternative cleaners; wastewater generated from cutting, blasting, deburring and mass finishing activities, etc.		Thermal pollution from discharge of non-contact cooling water should be avoided by use of recirculating cooling systems; - Use appropriate housekeeping techniques to prevent cutting oils from being contaminated with solvents; -Solvents should be carefully managed to prevent spills and fugitive emissions; - Use less hazardous degreasing agents; -Use mechanical cleaning techniques instead of chemicals where possible; -Avoid and substitute the use of chlorinated solvents with non-toxic or less toxic solvents as cleaning agents	Good process control and drag-out reduction are key factors for reducing the consumption of hazardous raw materials, and respectively, more clean effluents
Solid Waste	During thermal treatments oxide scales are formed. Metal forming produces a large quantity of metal chips (scrap metal), etc.		-If reuse or recycling is not possible, the waste should be treated as hazardous wastes and disposed and neutralized appropriately	
Water consumption		Stress on water resources	The management of water consumption is crucial, as it also reduces the usage of raw materials and their loss to the environment.	
Plastics and rubber products manufacturing				
Plastics				
Air pollution/ Air Emissions (VOC, particulate matter)	Compounding and forming operations, especially when heated, during shaping, etc.		-Use of enclosed storage for all solvent and cleaning fluids, and for all low boiling point reagents;	

Table G-16. Metal, plastic and rubber products manufacturing				
Overall Potential Impact: HIGH				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
	Handling of dry additives and granulation of polymers (additionally, heating of thermoplastics during compounding and forming may result in formation and release of fine aerosols)		-Installation of ventilation control systems, especially at the-points of highest processing temperatures along the production line; -Installation of local exhaust extraction systems	
Contribution to surface water pollution/ Wastewater process and treatment	Wastewaters are formed by: cooling (or heating) water for plastics production, surface cleaning and wash water, and finishing operation water	Cooling (and heating) water may be a source of thermal pollution; toxic pollutants include phthalates. Cleaning water may be characterized by significant levels of BOD_5, COD, total suspended solids (TTS), total organic carbon, oil and grease, phenols, and zinc. Finishing water may contain significant levels of TSS and phthalates	-Adoption of good housekeeping practices; -For contact water and finishing water, installation of activated carbon process to remove soluble organics, -For cleaning and finishing water, recycling process water through sedimentation / settling units and removal of the suspended solids, oils and grease	
Rubber				
Air pollution/ Air Emissions (particulate matter, dust, VOC)	Rubber products processing (emissions of VOC and hazardous pollutants may be generated from used solvents)	Threat to human health & damage to environment	-Use of chemicals in small, pre-weighed, sealed bags to limit dust generation; -Emissions from the internal mixers should be controlled using bag filters; -Dust and fine rubber particles should be controlled; -Solvents should be minimized and carefully managed to prevent spills and fugitive emissions	
Contribution to surface water pollution/ Wastewater	Wastewater originates from many production processes: cooling, heating, vulcanizing, and cleaning operations.	Damage to aquatic environment	Solids settling, pH adjustment, or oil removal systems as needed. Wastewater should be trapped in a rubber trap, to let	

Table G-16. Metal, plastic and rubber products manufacturing				
Overall Potential Impact: HIGH				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
	Suspended solids, and oil and grease are potential contami-nants of concern, in addition to trace metals. Effluents may be also impacted by additives, solvents, oils, water-soluble and insoluble organic matter		rubber float to the top for recycling / reuse. Wastewater should then be conveyed to treatment plant. Closed-loop water cooling or heating systems should also be considered	
Plastics & Rubbers				
Solid wastes	Scorched rubber from mixing, milling, calendering, and extruding may be a t solid waste source, in addition to waste rubber produced during rubber molding operations. Particulate matter is generated from bag filters in compounding areas, Banburys and grinders		-Waste streams should be properly segregated; -Uncured rubber, as well as slightly cured waste rubber, should be recycled; -Cured and off-specification rubber waste should be either recycled at the facility or reused; -Scrap from thermoplastic polymers should be reground and mixed with virgin materials; -If reuse or recycling is not possible, the waste rubber should be disposed properly	Significant quantities of solid waste are not typically generated in plastics and rubber manufacturing as scrap materials resulting from shaping and finishing operations can be recycled
Residual Impact Assuming Full Mitigation: MODERATE; Risk: MODERATE				

Table G-17. Foundries				
Overall Potential Impact: MODERATE				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
Air pollution (dust & particulate matter, NO_2, SO_2, CO, VOC, greenhouse gases, etc.)	Dust and particulate matter are generated in each of the process steps with varying levels of mineral oxides, metals and metal oxides. Dust emissions arise from thermal,	Threat to human health, damage to environment	- Implement routine plant maintenance and good housekeeping - Use indoor or covered stockpiles or, when open-air stockpiles are unavoidable, use	Recommended pollution prevention techniques: - Use of induction furnaces, where possible; - Use of open hearth furnaces is no longer

Table G-17. Foundries				
Overall Potential Impact: MODERATE				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
	chemical/ physical processes and mechanical actions; NO_2 emissions are caused by high furnace temperature and the oxidation of nitrogen; SO_2 are emitted from waste gases in cupola and rotary furnaces; CO is generated from the oxidation of the graphite electrodes and the carbon from the metal bath during the melting and refining phases; emissions of VOCs, mainly consisting of solvents are primarily generated by the use of resins, organic solvents, or organic-based coatings in molding and core making		water spray system, dust suppressants, windbreaks, and other stockpile management techniques; - Use dry dust collection technologies; -Install closed de dusting units in working areas. - Minimize the air / fuel ratio in the combustion process; -Use low NO_X burners in fuel firing furnaces, when possible; - Use fuel with low sulfur content, such as natural gas, - Improve thermal efficiency of the process; -Minimize binder and resin use through optimization of process control and material handling	considered good practice for steel smelting and should be avoided
Soil and water pollution from solid wastes generation and handling	These are: sand waste, slag from desulfurization and from melting, dust collected within emissions control systems, refractory waste, and scrubber liquors and sludge	Damage to environment	- Maximization of ***sand*** reuse within the facility; - External re-use of sand waste should be considered, Control of slag waste includes the following: - Slag production should be minimized through process optimization measures including: o Lower metal melting temperatures o Optimizing use of fluxes and refractory lining	Slag Wastes often has a complex chemical composition and contains a variety of contaminants from the scrap metals. It may constitute about 25% of the solid waste stream from a foundry. Common slag components include metal oxides, melted refractories, sand, and coke ash (if coke is used). Fluxes may also be added to help remove the slag from the furnace. Slag may be hazardous if it contains lead, cadmium, or chromium from steel or

Table G-17. Foundries				
Overall Potential Impact: MODERATE				
Environmental issues/ impacts	**Sources/ causes**	**Consequences**	**Prevention/ mitigation required**	**Remarks**
				nonferrous metals melting
Contribution to surface water pollution through wastewater discharge	The most significant use of water in foundries is in the cooling systems of electric furnaces (induction or arc), cupola furnaces, and in wet de dusting systems		- Install closed loops for cooling water to reduce water consumption and discharge; - Recycle tumbling water by sedimentation or centrifuging followed by filtering; - Store scrap and other materials under cover and / or in bunded area to limit contamination of storm water and facilitate drainage collection	
Noise	The foundry process generates noise from various sources, including scrap handling, furnace charging and EAF melting, fuel burners, shakeout and mould/ core shooting, and transportation and ventilation systems	Threat to human health/ hearing loss (hypoxia)	- Enclose the process buildings and/or insulate them; - Cover and enclose scrap storage and handling areas, - Enclose fans and insulate ventilation pipes; - Implement management controls, including limitation of scrap handling and transport during nighttime	
Residual Impact Assuming Full Mitigation: LOW; Risk: MODERATE				

Annex 13. Providing of services – examples of good practices

Type of services	Good Practices
Trade (wholesale and retail) – rural markets	- location of markets to take into account micro-environmental effects such as erosion and potential water contamination market operations to be guided by a printed and displayed list of good practices including waste disposal and sanitary procedures
Ecotourism, agrotourism	- environmentally sensitive areas not disturbed - hygiene standards to meet national requirements - energy efficient heating and cooking - safe work environment. proper disposal of wastes preventing water contamination, disease and vermin
Accommodation (Hotels, resort hotels, suite/apartment hotels, motels, holiday homes, youth hostels, cottages and cabins camping grounds, recreational vehicle parks, trailer parks)	- avoid use of sensitive water courses - avoid location on sensitive sites - effective waste disposal - safety precautions and systems during construction - control of effluents and emissions
Food and beverage service activities (restaurants and bars)	- avoid use of sensitive water courses - avoid location on sensitive sites - effective waste disposal - safety precautions and systems during construction - control of effluents and emissions - safe work environment.
Information service activities	safe work environment.
Administrative and support service activities (i.e. Rental and leasing activities as Renting and leasing of motor vehicles, Renting and leasing of cars and light motor vehicles, Renting and leasing of trucks, Renting and leasing of personal and household goods, Renting and leasing of agricultural machinery and equipment etc.)	• safe work environment; • control of effluents and emissions, • keep good maintenance of equipment; • relevant occupational health and safety arrangements (i.e. Eye and face protection from Flying particles, molten metal, liquid chemicals, gases or vapors, light radiation by special PPE as Safety Glasses with side-shields, protective shades, etc.
Provision of services for construction activities	proper occupational health and safety arrangement (i.e. Head protection from falling objects, inadequate height clearance, and overhead power cords by Plastic Helmets with top and side impact protection; Hearing protection from Noise, ultra-sound by Hearing protectors (ear plugs or ear muffs); Foot protection from falling or rolling objects, pointed objects, corrosive or hot liquids by safety shoes and boots for protection against moving & falling objects, liquids and chemicals etc.

Annex 14. List of chemicals and biological substances permitted for use in inTajikistan by Commission on Chemical Security[32]

Insecticides and acaricides			
Aktellik (pirimiphosmethyl) Ambuf (permethrin) Anthio (25%) (phormotion) Apollo (clophentyzin) Applaud (buprophezin) Arrivo (cypermethrin) Benzophosphate (30%) (fozalon) Be–58 (dimetoat) Vismethrin (permethrin) Volaton (foxym) Gexasulfan (endosulfan) Danitol (phenoropathrin) Decis (deltamethrin) Dilor (betadihydrogeptachlorine)	Dimilin (diflubenzuron)DNOK (Dinitroortokrezol) Zolon 35%, 30% (fozalon) Incegar 25% (phenoxycarb) Karate 5% (lyambdacyhalothrin) Carbofos 50% (malathion) Croneton 50% (ethiophencarb) Mavric 2^E 25% (fluvalinate) Calcium Polisulphide Mezox 25%, 50% (metoxychlorin) Mitak 20% (Amitras) Neoron 50% (Brompromilate) Nossoran 10% (gexyithiazox) Nitrafen 60% (nitroalkilphenolat)	Sulfur Omite 30%, 57% (propargit) Oil Ripcord 40% (cipermethrin) Rovikurt 25% (permethrin)Sunmite 20% (piridaben) Sonet 10% (gexafluron) Sumi-Alfa (esphenvalerat) Sumiticin (phenvalerat) Talstar 10% (biphenthrin) Tiodan 35%, 50% (endosulfan) Trebon 30% (etophenprox) Festak 10% (alfamethrin) Fenval 20% (phenvalerat)	Fenrio 20% (phenvalerat) Fozalon 35% (fozalon)Phosphoamid 40% (dimethoat) Furi 10% (zetamethrin) Khostakvik 50% (heptenophos) Simbush 25% (cypermethrin) Siperkil 25% (cypermethrin) Sitkor 25% (cypermethrin) Sherpa 25% (cipermetrine) Aim 12% (chlorfluazuron) Ecamet 50% (etrinphos) Endosel 35% (endosulphan)
Fungicides			
Alto 40% (cyprokonazol) Arcerid 60% (metalaxyl+policarbicin) Afugan 30% (pirazophos) Byleton 25% (triadimeffon) Boricid 70% (sulfur+policarbycin) Vitaxid 70% (oxadixil+polikhol) Derozal 50% (carbedazim) DNOK 40% (Dinitriortokrezol)	Karatan FN-57b8b 25% (dinocap) KMAX 50% (2-carbometoxiaminochinazol) Copper sulphate 98% (copper sulphate) Green vitriol (iron sulphate) Calcium polysulphide Sulfatimis + calcium hydroxide Nitraphen 60% (cytroalkilphenolate)	Oxichom (oxadixil + copper oxychloride) Sulfur Polichom 80% (policarbacyn 60% + copper oxychloride) Ridopolichom 60% (metalaxyl + policarbicin) Saprol 20% (triforin)	Scor 25% (diphenconazol) Sportak 45% (prochloraz) Tilt 25% (propiconazol) Topaz 10% (penconazol) Topcin-M 70% (thyophanatemethyl) Copper oxychloride 90%, 50% Euparen 50% (dichlofluand)
Chemicals for seed treatment			
Agrocit 50% (benomal) Apron 35, 38, 9% (metalaxyl) Baytan 15% (triadimenol) Botran 75% (dichloran)	Bronotac 12% (bronopol) Vandidat 98% (potassium viniloxyethildithiocarbamate) Vitavax 75% (carboxyn)	Derozal 50% (carbendazim) Nitrafen 60% (nitroalkilphenolate) Policarbicin 80%	Sumi-8 2% (diniconazol) TMTD 80% (thiram) Formalin 40% (formaldehyde) Fundazol 50% (benomil)

[32] Approved by Resolution N4 of the Commission on Chemical security of Tajikistan, 11 June 2004

		(complex of salts of ethilenbisdithiocarbamin + ethilenthyuramdisulphate, 1:8)	
Biological chemicals			
Agri 50% (deltaendotoxycin bisilusa turingisa) Baktospein (bisilusa turingisa) Bitoxybacillin (exotokcin bisilusa turingisa) Virin-OS (granulez virus + poliedroz virus of autumn warm)	Gomelin (bisilusa turingisa) Dendrobacillin (bisilusa turingisa, dendrolimus variety) Dipel (bisilusa turingisa, kurstaki variety)	Lepidocid (bisilusa turingisa, kurstaki variety) Trichodermin (trichoderma, trichodermin, veridin, glitoxyl) Trichodermin-BL (--»--)	Turingin-1 (exotoxyn bisilusa turingisa, turingensis variety) Turingin-2 10% (exotoxyn bisilusa turingisa, turingensis variety) uricid (bisilusa turingisa)
Herbicides			
Alirox 80% (ERTS) 72% + antidot AD-67) Acenit 50% (acetochlorus) Bazagran 48% (bentazon) Banvel 48% (dikamba) Basta 20% (ammonium gluphosinate) Gazargard-50, 50% (promethrin) Dalapon 85% (dalapon) Dual 96% (metalochlorus) Zellek 12,5% (galoxyphonetoxetyl) Zellek super, 12,5% (galoxyphonetoxyetyl)	Zenkor 70% (methribuzin) Kotoran 80% (fluometuron) Kotofor 80% (dipromethrin) Kuscid 97% (monochloracetate diethilenglycolium) Nitran 30% (thrifluralin) Olitref 25% (thrifluralin) Ordam 6E 72% (molinate) Pakhton 80% (dipromethrin) Penitran 33% (pendimetalin)	Proemetrin 50% (promethrin) Pripinat 85% (dilapon) Risan 50% (benthiocarb) Rozalin 50% (5-chlor-2-methilbenzimidazol) Saturn 50% (benthiocarb) Sonalan 33% (etalfluralin) Stomp 33% (pendimetalin) Totril 22,5% (ioxynil) Treflon 24% (thryfluralin)	Fluometuron 80% (fluometuron) Fuzilad 25% (fluaziphonbutil) Eradican 6E 72% (ERTS 72% + antidot) Yalan 60%, 10% (molinat) Sherpa 25% (cypermethrin) Aim 12% (chlorfluazurin) Ekamet 50% (etrimphos) Endosel 35% (endosulphan)
Defoliants and desicants			
Basta 14% (gluphosinate ammonium) Butylcaptax 80% (butilcaptax-2-n-butilbenzotianazol+MSF+magnium chlorate)	Gemetrel 60% (derivatives of chloretylphosphone acid) Dropp 50% (tidiazuron) Drop-Turbo 20% (tidiazuron)	Threecarbamide chlorate of sodium Khayot 85% (diaquatetracarbamidechlorate of calcium) Harveid 25 F (dimedipin)	Magnium chlorate 60% Calcium chlorate-chloride 42%, 62%

Annex 15. Classification of pesticides prohibited for use by WHO[33]

Table 1. High toxicity pesticides prohibited to use

Aldicarb - Алдикарб Brodifacoum -Бродифакоум Bromadiolone -Бромодиолон Bromethalin - Брометалин Calcium cyanide-цианид Калция Captafol- каптафол Chloretpoxyfos – Хлорэтоксифос Chlormephos- хлормефос	Chlorophacinone – хлорофацинон Difenacoum- дифенакоум Difethialone- дифетиалон Diphacinone- дифацинон Disulfoton- дисулфотон Ethoprophos- этопрофос Flocoumafen- флокоумафен	Fjnofos- фонофос Hexachlorobenzene - гексахлорбензен Mercuric chloride- хлорид ртути Mevinphos- мевинфос Parathion- паратион	Parathion-methyl- паратион метил Phenylmercury acetate - фенилацетат ртути Phorate - форат . Phosphamidon- фосфамидон Sodium f1uoroacetate фтороацетат натрия Sulfotep- сульфотеп Tebupirimfos -тебупиримфос Terbufos- тербуфос

Table 2. Medium toxicity pesticides prohibited for use

Acrolein Allyl alcohol Azinphos-ethyl Azinphs-methyl Blasticidin-S Butocarboxim Butoxycarboxim Cadusafos Calcium arsenate Carbofuran Chlorfenvinphos 3-Chloro-l,2-propanediol Coumaphos Coumatetralyl Zeta-cypermethrin	Demetol1-S-methyl Dichlorvos Dicrotophos Dinoterb Edinofenphos Ethiofencarb Famphur Fenamiphos Flucythrinate Fluoroacetamide Formtanate Furathiocarb Heptenophos Isazofos Isofenphos	Isoxathion Lead arsenate Mecarbam Mercuric oxide Methamidophos Methidathion Methiocarb Methomyl Monocrotophos Nicotine Omethoate Oxamyl Oxydemeton-methyl Paris green {C} Pentachloropheno1	Pindone Pirimiphos-ethyl Propaphos Propetamphos Sodium arsenite Sodium cyanide Strychnine Tef1uthrin Thallium sulfate Thiofanox Thiometon Triazophos Vamidothion Warfarin Zinc phosphide

[33] WB Land Registration and Cadastre System for the Agriculture Sustainable Development Project, 2010

Table 3. Moderate toxicity pesticides prohibited for use

Alanycarb	Cynalotlhrin	Phenthoate	Methasulfocarb
Anilofos	Cypennethrin	Phosalone	Methyl isothiocyanate
Azaconazole	Alpha-cypemlethrin	Phoxim	Metolcarb
Azocyclotin	Cyphenothrin	Piperophos	Metribuzin
Bendiocarb	Deltamethrin	Pirimicarb	Molinate
Bensulide	Diazinon	Prallethfin	Nabam
Bifenthrin	Difenzoquat	Profenofos	Naled
Bilanafos	Dimetoate	Propiconazole	Pyroquilon
Bioallethrin	Dinobuton	Propoxur	Quinalphos
Bromoxynil	Diquat	Prosulfocarb	Quizalofop-p-tefuryl
Brobuconazole	Endosulfan	Prothiofos	Rotenone
Bronopol	Endothal-sodium	Pyraclofos	Sodium fluoride
Butamifos	Esfenvalerate	Pyrazophos	Sodium hexafluorosilicate
Butylamine	Ethion	Pyrethrins	Spiroxamine
Carbaryl	Etrimfos	Fuberidazole	Sulprofos
Carbosulfan	Fenitrothion	Gamma-HCH	Terbumeton
Cartap	Fenobucarb	Guazatine	Tetraconazole
Chloralose	Fenpropidin	Haloxyfop	Thiacloprid
Chlordane	Fenpropathrin	Heptachlor	Thiobencarb
Chlorfenapyr	Fenthion	Imazalil	Thiocyclam
Chlorphonium chloride	Fentin acetate	Imidacloprid	Thiodicarb
Chlorpyrifos	Fentin hydroxide	Iminoctadine	Triazamate
Clomazone	Fenvalerate	Ioxynil	Trichlorfon
Copper sulfate	Fipronil	Ioxynil octanoate	Tricyclazole
Cuprous oxide	Fluxofenim	Isoprocarb	Tridemorph
Cyanazine	Formothion	Lambda-cynalothrin	Vemolate
Cyanophos	Paraquat	Mercurous chloride	Xylylcarb
Cyflutllrin	Pebulate	Metaldehyde	
Beta-cyfluthrin	Permethrin	Metam-sodium	
		Methacrifos	

Annex 16. Principles of IPM, use and handling of pesticides

1.Principles of the Integrated Pest Management[34]. 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). The IPM 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. 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.

2.*Alternatives to Pesticide Application*. Where feasible, the following alternatives to pesticides should be considered:

- 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.

3.*Pesticide Application.* 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;

[34] This section is based on the World Bank Group in the Environmental, Health, and Safety Guidelines prepared in 2007.

- 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.

A copy of the national pesticide registration list is attached below in *Annex E.*

4. *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.

70. *Pest Management Plan (PMP).* The content of the Pest Management Plan should apply to all the activities and individuals working. It should be emphasized also that non-chemical 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 Pest Management Plan 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 F.*

71. *Reviewing and approving Pest Management Plan.* A PMP should be prepared in all cases of direct purchasing and usage of pesticides by all subprojects beneficiaries. The draft PMP should be reviewed by the PFIs loan officers as well as by the PMU environmental specialist, who will provide its approval. These documents are also subject to WB prior review for the first two such types of subprojects from the each PFI.

5. *Recommended modules for Pest management trainings*. Pest management Plan can include the training activities organized either broadly throughout the project districts or in some particular district of bigger importance. The recommended modules are the following:
• Basic concepts of the integrated method of plant and animal protection;
• Alternatives to the use of pesticides, training of workers in their use, and the application of the minimum effective dose;
• Study of pests, entomophages, their biology, microbiological preparations and the role of biological factors in the regulation of pest numbers;
• Compliance with the environmental requirements of the pest control system, crop diseases and weeds. Description of environmental measures to ensure the conservation and enhancement of the crop;
• Requirements for environmental and industrial safety in the storage, transportation and use of pesticides;
• Selection of technologies and applications to reduce unintentional emissions or chemical diversions, in accordance with the provisions of the integrated plant pest management program under controlled conditions, compliance with international and local environmental safety standards and standards;
• Templates of the Environmental and Social Management Plan (using the experience of other WB projects) as well as plans for combating agricultural pests.

Annex 17. Recommended Structure of a Pest Management Plan

Following review of the Environment Screening Checklist submitted by the applicant for a sub-project loan, the PFI Loan Officer and/or PMU Environmental Specialist will determine if the applicant needs to prepare a PMP. This determination would be made on the basis of toxicity of the pesticides to be used and the environmental risks posed by the activity. When, a determination is made that a PMP is to be prepared by the sub-project loan applicant, a two stage process would be applied towards the preparation of the PMP.

Stage A: Additional Information Request

The applicant would provide the following information:

1. ***Types and application of pesticides***

(i) What are the pesticides that are to be purchased, including name of product, type of formulation, concentrations of the active ingredient?
(ii) Where are the pesticides to be purchased from, including name of store and location?
(iii) What are the quantities of pesticides to be purchased and the package sizes and quantities in each package?
(iv) What type of equipment is to be used to apply the pesticides
(v) Are applicators trained in the proper and safe use of the pesticides?

2. ***Purpose and appropriateness of pesticides***

(i) What crops to you plan to use the pesticide?
(ii) What pests and/or diseases are to be controlled by the pesticide?
(iii) What non-chemical pest control measures have been used in the past to control the pests and/or diseases mentioned in (ii) above?
(iv) How often is the pesticide to be applied and in what quantities in any given application?
(v) How will the timing of the application of the pesticide be decided?
(vi) Have you been trained or received advice on non-chemical pest control or integrated pest control (IPM)?
(vii) If not trained, how do you plan to obtain assistance, advice or training in pesticide application quantities and methods; calibration of spraying equipment; use of protective gear; storage and disposal methods, etc.

3. ***Handling, storage and disposal of pesticides***

(i) How will the pesticides be transported to the project site?
(ii) Where will the pesticides be stored in the farm?
(iii) Will the storage location of the pesticide be secured / locked and who will have access to these stores?
(iv) How will animals, children and unauthorized persons be excluded from access to the storage areas?
(v) Where will mixing of pesticides happen and what precautions will be taken to keep the storage and pesticide mixing areas away from grain stores and production areas?
(vi) How will excess unused and mixed pesticide products be disposed of?
(vii) How will empty pesticide containers be disposed of?
(viii) How will pesticide records in terms of purchase, use and disposal be maintained?

4. ***Environmental Aspects***

(i) Are pesticide application areas near water bodies, wetlands or areas of known natural habitats?

(ii) Are there know natural pollinators found in the vicinity of the application areas? If so what precautions would be used to ensure that non-target beneficial species are not harmed?

Stage B: Preparation of Pest Management Plan

Based on the information provided by the subproject loan applicant, the PFI Loan Officer (if necessary, in consultation with PMU Environmental Officer) will identify the risks associated with the application of the pesticide and the more important and most practical mitigation measures that need to be applied, including any complementary measures using non-chemical control measures. The PFI Loan Officer will advise the applicant on the scope and nature of the PMP to address potential impacts of the subproject activities. If needed, the PFI Loan Officer and/or PMU Environmental Specialist can advise the loan applicant on professional services that could be obtained for completion of the subproject specific PMP. Typically the outline of the PMP would be the following:

(a) Purpose of Activity provides information on extent and severity of pest and diseases in the crops to be grown

(b) General Information of Area which should provide data on land use and soil, water resources, layout of facilities, etc.

(c) Review of Existing Pest Management Practices and Capacity which should provide data on current practices (chemical and non-chemical) in control of the particular pests and diseases, constraints and track record and extent to which pest and diseases of fruit and agricultural crops have been managed and controlled; and reasons for enhanced pesticide applications through the proposed subproject loan.

(d) Types, amounts and application of Pesticides provides information on the types, amounts and nature of the pesticides to be purchased and used and the current and proposed handling, application, storage and disposal methods for the pesticides

(e) Capacity, training and knowledge of the safe application and use of pesticides provides information on existing knowledge and capacity of staff and personnel in the safe use and application of pesticides and identification of gaps in training and knowledge for improving capacity.

(f) Potential risks and hazards associated with application and use of pesticides in subproject loan would provide information on the environmental and human health impacts associated with the handling, application, storage and disposal of pesticides under the subproject loan, including potential impacts on non-target beneficial species, soil and water and natural habitats.

(g) Mitigation Measures to avoid and manage potential pesticide impacts that would provide information on the following:

- Mechanical and physical control, cultural and biological control measures, if any that can be used in conjunction with or without pesticide applications to suppress or reduce the severity of the target pest or disease to be controlled;
- Chemicals and chemical procedures that will be used to control pests and diseases, conditions under which the chemicals will be used, including climatic conditions, vegetation conditions, timing of applications, to improve the effectiveness of the pesticide and reduce its environmental impacts as well as specific measures to be employed to protect sensitive ecosystems, aquatic systems and ground water;

- Management of health and safety aspects that would define measures to ensure safe handling, transport, application, storage and disposal of pesticides so as to reduce environmental and health risks;
- Measures that would be introduced for public safety and protection during pesticide applications;
- Measures to track and monitor pesticide use and effectiveness in controlling desired pests;
- Measures to be undertaken to create awareness, improve information flow and improve capacity of farm workers on the hazards on the unsafe use, handling and storage of pesticides and measures for reducing such risks, as well as options for integrated pest management;
- Measures to be taken to obtain technical support for pest management and safe use and application of pesticides, when necessary;
- Budget estimate for implementation of the PMP.

Annex 18. Safety provisions and rules for usage, storage and handling of mineral fertilizers

1. *Main requirements while using mineral fertilizers.* The usage of different mineral fertilizers should be done depending on such factors as type and quality of the soil, type of the crop, system of crop rotation, weather and climate conditions, ways and terms of their application.

2. *Provisions with regard to fertilizers storage:*

- Keep stocks of fertilizers, and soil amendment materials to the minimum required.
- Ensure that the storage facility is appropriately secured.
- Fertilizers and soil amendment materials are not to be stored in contact with ground surfaces.
- Storage areas/facilities are to weather-proofed and able to exclude runoff from other areas.
- Do not store in close proximity to heat sources such as open flames, steam pipes, radiators or other combustible materials such as flammable liquids.
- Do not store with urea.
- Do not contaminate fertilizers, and soil amendment materials with other foreign matter.
- In case of fire flood the area with water.
- If augers are used to move the material ensure that any residue(s) in the immediate area is cleaned up.
- Dispose of empty bags in the appropriate manner.

3. *Provisions with regard to fertilizers field usage:*

- Keep fertilizer amounts to a minimum and covered to avoid unnecessary expose to open air.
- Keep spreaders and air seeders that are left in the field overnight covered.
- Cover spreader and air seeders between jobs.
- Ensure that the drill, air seeder and/or fertilizer box is completely empty at the end of each day. If the drill, air seeder and/or fertilizer box cannot be fully emptied fill to capacity prior to storage for the night.
- Do not store dry urea with dry ammonium nitrate.

4. *Ensuring minimization of hazards associated with inappropriate handling and usage of fertilizers:*

The Table 1 below provides information about typical hazard scenarios that that may arise in conjunction with the procurement, handling and storage of fertilizers as well as the recommended measures to control the potential risks.

Table 1. Typical hazard scenarios and recommended measures

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.
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 labeled. 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 e.g. training records, risk assessments, maintenance schedules, recipes for fertilizer blends, MSDS's etc.

Annex 19

MINUTES OF CONSULTATIONS WITH INTERESTED PARTIES ON DRAFT ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK, LIST OF PARTICIPANTS

A. Public Consultations on results of the social analysis, draft Environmental and Social impacts assessment framework document for Agriculture Commercialization Project of Tajikistan - Additional financing - in Khatlon oblast

Date: 20 May 2017
Location: Jaihun (former Kumsangir district), conference-hall of Khukumat building
Purpose: To describe the objectives and additional activities for the proposed Project Additional Financing, including environmental and social management framework issues and solicit feedback

Invitees	Comments, notes, conclusions
Chairman of Jaihun district women Committee Teshaeva S., Director of resource center – Ashurova Z., head of department of social protection – Boboev S., and also 35 participants (List of participants is presented below).	At the meeting, presentations were made on the results of a social survey and environmental and social management framework issues for the proposed Additional Project funding. Information was given on the level of commercialization of agricultural production, the status of the current mechanism of business incubators and the existing experience of agricultural producers. The issues of commercialization of agricultural production and access to financial resources, conflict situations in this direction facing the population are also touched upon. The participants actively participated in the discussions, which were mainly focused on the following: the responsibility of borrowers (beneficiaries) for carrying out activities on a grant, credit, the organization of experience exchange with developed economies, the need for management training, marketing and financial literacy, Coverage of the project and selection criteria for sub-projects; Capacity building activities and the need for a campaign to disseminate information and trainings for farmers; Use of alternative methods of pest control instead of chemicals, etc., allowed for use in the country, etc. Particular attention was paid to the relevance of the project for returning migrants, women, women heads of households, vulnerable groups of the population, including disabled people. The beneficiaries noted that it would be timely for the Project to organize educational and financial programs, grant or concessional loans for this category of the population. During the discussion participants pointed to certain problems of farmers related to the lack of storage facilities for agricultural products, the need to train farmers in modern technologies for the use of storage facilities (temperature, agricultural output, etc.), lack of knowledge about preparing business plans using crop rotation, problems With the possible sustainability of the project, as well as proposals to revitalize and strengthen the consultation centers, improve coordination between government agencies to implement Projects, the same or in similar directions, the provision of appropriate reporting and awareness in the implementation of the project, its consequences. Participants noted that the components of the proposed project will help increase agricultural production and provide timely economic support to poor farmers that will mitigate the negative impact of high and ever-changing food prices, improve the country's food security, and help prevent the risk of a decline in the productivity of irrigated agriculture as a result of land degradation and soil fertility.

	Proposals of participants on social issues: 1. Freezing of interest in banks, in case the dehkan farm faces special force majeure situations and will not be able to obtain a decent harvest (bad weather, natural disasters) or mass loss of farms due to poor quality seeds (when several hundred hectares of land were affected); 2. For new generators of dehkan farms, poor people to provide concessional loans, low interest; 3. To assist in the form of financial programs for women with small children in the construction of field kindergartens, arbors for rest during the lunch period, construction of local infrastructure in the form of toilets, draw a line for drinking water; 4. Provide concessional loans for the construction of storage of vegetables and fruits; 5. Initiate financial programs for the issuance of mixed grant-credit supports for young families, single women, disabled people (able-bodied or parents with disabled children); 6. Conduct educational programs and seminars on the following topics: Methods of storage, on drip irrigation, conduct trainings on drafting business plans, for proper use of loans, conduct trainings to increase financial literacy. 7. Provision of educational, legal and financial support for the creation of the Association of Disabled Persons. **Proposals of participants on environmental issues**: 1. To assist farmers, women, and disabled people in purchasing information materials about the methods of using mineral fertilizers. It should be accessible to all farms producing agricultural products. 2. Conduct more trainings on environmental issues. All participants concluded that the implementation of the ESMF provisions and appropriate mitigation measures for the consequences of the project activities will have a largely positive impact on the agricultural sector and the business climate of the country.

Greeting of public consultations participants and presentations of social survey results and main aspects of ESMF– Jaihun district

List of public consultations participants in Jaihun district, 20 May 2017

N	Name of participants	Profession
1	Sirojov M.	Farmer
2	Holova Sh.	Farmer
3	Sharipova J.	Farmer
4	Muhtarova J/	Disabled person
5	Dadabaeva M.	Hospital nurse
6	Safarova M.	Cleaner
7	Shoeva Sh.	Cleaner
8	Piromshoeva M.	Nurse
9.	Rustaova N.	student
10	Nemat I.	Farmer
11	Mahmadiev B.	Medical centre
12	Tabarova N.	Chairman of dehkan farm
13	Rahmihudoeva D.	Farmer
14	Muhitdinov O.	Dehkan Farm Association, farmer
15	Hushkulov A.	Head of DFA
16	Saadi A.	Environment protection department specialist
17	Kamolov M.	Dehkan farm “Behruz”
18.	Hasanov D.	Dehkan farm “Jahongiri”
19	Kaharov I.	Dehkan farm “Behruz”
20	Rahmatullaev I.	Farmer
21	Asalmamadova H.	Women Centre “Markazi munir”
22	Nozariloeva K.	Specilaist of NGO “Mohi munir”
23	Nosirov R.	ACP PIU, environmental specialist
24	Pandakova M.	WUA specialist, farmer
25	Izodiev S.	“Eshata bank”, accountant
26	Teshaeva S.	Women affairs Committee
27	Saifullaeva S.	Khukumat department on population employment
28	Ashurova Z.	NGO “Mohi Munir”
29	Hojaeva B.	Farmer
30	Hojaev J.	Farmer
31	Pirov B.	Farmer
32	Gafurov S.	Executive director of company :Holding
33	Azizov S.	WUA, farmer
34	Hakimov D.	WUA farmer
35	Hojaeva I.	Worker


РӮЙХАТИ

соли 2017

№	НОМУ НАСАБ	ҶОИ КОР/ ФАЪОЛИЯТ	РАҚАМИ ТЕЛЕФОН	ИМЗО

B. Public Consultations on results of the social analysis, draft Environmental and Social impacts assessment framework document for Agriculture Commercialization Project of Tajikistan - Additional financing - Sughd oblast

Date: 22 May 2017
Location: Penjikent, conference-hall of Khukumat building
Purpose: To describe the objectives and additional activities for the proposed Project Additional Financing, including environmental and social management framework issues and solicit feedback

Invitees	Comments, notes, conclusions
Deputy Chairman of Khukumat in Penjikent – Shodozoda P., Director of Women resource center "East Women" Sharipova Z., and also 32 participants (list of participants is presented below).	At the meeting, presentations were made on the results of a social survey and environmental and social management framework issues for the proposed Additional Project funding. Information was given on the level of commercialization of agricultural production, the status of the current mechanism of business incubators and the existing experience of agricultural producers. The issues of commercialization of agricultural production and access to financial resources, conflict situations in this direction facing the population are also touched upon. The participants actively participated in the discussions, which were mainly focused on the following: the responsibility of borrowers (beneficiaries) for carrying out activities on a grant, credit, the organization of experience exchange with developed economies, the need for management training, marketing and financial literacy, Coverage of the project and selection criteria for sub-projects; Capacity building activities and the need for a campaign to disseminate information and trainings for farmers; Use of alternative methods of pest control instead of chemicals, etc., allowed for use in the country, etc. Particular attention was paid to the relevance of the project for returning migrants, women, women heads of households, vulnerable groups of the population, including disabled people. The beneficiaries noted that it would be timely for the Project to organize educational and financial programs, grant or concessional loans for this category of the population. Participants noted that the components of the proposed project will help increase agricultural production and provide timely economic support to poor farmers that will mitigate the negative impact of high and ever-changing food prices, improve the country's food security, and help prevent the risk of a decline in the productivity of irrigated agriculture as a result of land degradation and soil fertility. **Proposals of participants on social issues:** 1. Conducting seminars among borrowers on issues of financial, economic and legal literacy; 2. Providing mixed loans (credit and grant) to vulnerable groups of the population. (30% of the grant and 70% of the loan);

	3. For the purchase of small vehicles (tractor), vulnerable groups of the population are provided with soft loans; 4.Open the laboratory and consultative environmental points on the diagnosis of seeds. 5. At the district level, support entrepreneurs for the creation of mini-enterprises for packing agricultural products; 6.Organizovat fairs of agricultural products in order to get acquainted with the types of products from different regions (exchange of experience), identify new approaches to the cultivation of a product, increase awareness of sales, market and storage of products; 7. To re-examine the issue of land cadastre, with the aim of supporting landowners from vulnerable segments of the population. **Proposals of participants on environmental issues:** 1. Create points, laboratories for determining quality seeds 2. Conducting seminars, trainings on the production of biological minerals, the use of fertilizers, etc. . All participants concluded that the implementation of the ESMF provisions and appropriate mitigation measures for the consequences of the project activities will have a largely positive impact on the agricultural sector and the business climate of the country.

Greeting of public consultations participants and presentations of social survey results and main aspects of ESMF– Penjikent, 22 May 2017

List of public consultations participants in Penjikent district, 22 May 2017

N	Name of participants	Profession
1	Zokirov Sh.	Department of education, specialist
2	Imomov A.	Department of education, specialist
3	Homidov K	Department of education, specialist
4	Rustamov A.	WUA “Odil Temur”, farmer
5	Muhabbatov A.	Hospital of Penjikent city, doctor
6	Ahmedov F.	Specialist of economics department
7	Hamzaev F.	Head of Economics and trade department
8	Nurullaev M.	Economics and trade department
9	Oblokulov H.	Disabled worker
10	Mahmadyourov B.	Chaiman of WUA
11	Boboeva O.	WUA, farmer
12	Kamolov A.	Statistic department, specialist
13	Bahromov D.	Head of statistics department
14	Kayumov J.	Chaiman of WUA “Vahdat”
15	Hakimov Sh.	Manager of Assiciation”Tuhsankoriev”
16	Valiev B.	WUA “Obod davron”
17	Ikromova S.	Student
18	Yahshibaev J.	Water department Obi Sharshara”
19	Rajabova R.	Farmer
20	Jalilov Y.	Chairman of farm “Chinor”
21	Zoirov M.	Farm “Hafiz Mahsum”
22	Ruzieva Z.	Chief specialist on communication
23	Bahrieva N.	Specialist on communication
24	Boboeva M.	farmer
25	Nozomov N.	Specialist of investment department
26	Zamonova N.	Senior specialist of Department of work with women
27	Erova H.	Specialist of Department of work with women
28	Yusupova M.	Specialist of Department of work with women
29	Sanginov F.	Chaiman of WUA, farmer
30	Zarifov S.	Chaiman of WUA “Fuzruz”
31	Bobomurodova S.	Director of company “Modika va hamkoron
32	Sharipova Z.	Director of Women resource center “East Women”

РӮЙХАТИ

иштирокчиёни муаррифот оид ба хисоботи баходихии ичтимоию экологии Лоихаи "Тичоратикунонии соҳаи кишоварзӣ" дар шаҳри Панчакент

"[illegible]" [illegible] соли 2017

№	НОМУ НАСАБ	ЧОИ КОР/ ФАЪОЛИЯТ	РАҚАМИ ТЕЛЕФОН	ИМЗО
1.	[illegible]	[illegible]	926330506	
2.	[illegible]	[illegible]	927632121	
3.	[illegible]	[illegible]	926361515	
4.	[illegible]	АҶО [illegible]	927150978	
5.	[illegible]	[illegible]	927130646	
6.	[illegible]	[illegible]	927234100	
7.	[illegible]	[illegible]	929943668	
8.	[illegible]	[illegible]	926360270	
9.	[illegible]	[illegible]	нест	
10.	[illegible]	[illegible] АҶО	920022310	
11.	[illegible]	АҶО, [illegible]	921465990	
12.	[illegible]	[illegible]	938530606	
13.	[illegible]	[illegible]	934890101	
14.	[illegible]	[illegible] АҶО [illegible]	927037958	
15.	[illegible]	[illegible]	927213813	
16.	[illegible]	АҶО [illegible]	926338800	
17.	[illegible]	[illegible]	92864798	
18.	[illegible]	[illegible]	920330301	
19.	[illegible]	[illegible]	926363638	
20.	[illegible]	[illegible]	902302552	
21.	[illegible]	[illegible]	927393393	
22.	[illegible]	[illegible]	928014554	
23.	[illegible]	[illegible]	928110204	
24.	[illegible]		929453534	
25.	[illegible]	[illegible]	931018821	
26.	[illegible]	[illegible]	928021123	
27.	[illegible]	[illegible]	929255331	
28.	[illegible]	[illegible]	929223727	
29.	[illegible]	[illegible] АҶО	927201124	
30.	[illegible]	[illegible] АҶО [illegible]	926117120	
31.	[illegible]	[illegible]	[illegible]	
32.	[illegible]	[illegible]	[illegible]	
33.				
34.				
35.				
36.				

C. Public Consultations on results of the social analysis, draft Environmental and Social impacts assessment framework document for Agriculture Commercialization Project of Tajikistan - Additional financing - in DRS

Date: 25 May 2017
Location: Rasht district, conference-hall of Khukumat building
Purpose: To describe the objectives and additional activities for the proposed Project Additional Financing, including environmental and social management framework issues and solicit feedback

Invitees	**Comments, notes, conclusions**
Head of executive body of the district Mr.Ortikov Kh., Chairman of agriculture department Mr.Salomov A., Chairman of Dekhkan farms Associations Mr.Goibov Kh. And 34 participants (list of participants is presented below)	At the meeting, presentations were made on the results of a social survey and environmental and social management framework issues for the proposed Additional Project funding. Information was given on the level of commercialization of agricultural production, the status of the current mechanism of business incubators and the existing experience of agricultural producers. The issues of commercialization of agricultural production and access to financial resources, conflict situations in this direction facing the population are also touched upon. The participants actively participated in the discussions, which were mainly focused on the following: the responsibility of borrowers (beneficiaries) for carrying out activities on a grant, credit, the organization of experience exchange with developed economies, the need for management training, marketing and financial literacy, Coverage of the project and selection criteria for sub-projects; Capacity building activities and the need for a campaign to disseminate information and trainings for farmers; Use of alternative methods of pest control instead of chemicals, etc., allowed for use in the country, etc. Particular attention was paid to the relevance of the project for returning migrants, women, women heads of households, vulnerable groups of the population, including disabled people. The beneficiaries noted that it would be timely for the Project to organize educational and financial programs, grant or concessional loans for this category of the population. **Proposals of participants on social issues** 1. Conduct trainings on legal issues; 2. Creation of small enterprises for the production of packages and other containers; 3. Training of women in processing milk, dairy products and dried fruits; 4. Create conditions for the collection and sale of medicinal plants (wild cherry); 5. Creation of silk worm processing workshops. **Proposals of participants on environmental issues**:

	Conduct more trainings on environmental issues. All participants concluded that the implementation of the ESMF provisions and appropriate mitigation measures for the consequences of the project activities will have a largely positive impact on the agricultural sector and the business climate of the country.. .

Greeting of public consultations participants and presentations of social survey results and main aspects of ESMF– Rasht district, 25 May 2017

List of public consultations participants in Rasht district, 25 May 2017.

N	Name of participants	Profession
1	Saidov M.	Amonatbank, specialist
2	Kabutov M.	farmer
3	Rajabov F.	Fam “Asim”
4	Safarov S.	Chairman of farm
5	Kamolov M.	farmer
6	Bedimogov A.	Farmer
7	Bobohojaev B.	Rasht Khukumat department
8	Sirojzoda Z.	Worker
9	Giyosov Sh.	Committee of emergency situations, specialist
10	Aliev H.	Head of farm
11	Hafizova S.	Farm “Niso”
12	Salomiddin N.	Corporation “Milo”
13	Sheraliev M/	Environmental Centre
14	Azizbekov A.	Worker
15	Sirojov D.	Worker
16	Idaeva H.	housewife
17	Safarova D.	Centre of assistance, specialist
18	Rajabalieva M.	Centre of assistance, specialist
19	Shahanov S.	Head of procurement department
20	Rustamov T.	Education department, specialist
21	Nematov M.	Chairman of dehkan farm “Zamoniyoun”
22	Davlatova N.	housewife
23	Halimova K.	housewife
24	Alimahmadova R.	housewife
25	Hojaeva N.	housewife
26	Nosimov D.	Agriculture engineer
27	Hikmatov Z.	Engineer
28	Goibov H.	Dehkan farm Association specialist
29	Rahmatova D.	ACP PIU
30	Odilova R.	WB expert
31	Saidova D.	expert
32	Haidarov A.	MoF PIU
33	Nosirov R.	ACP PIU
34	Tojiev A.	MoF PIU

РЎЙХАТИ

иштирокчиёни муаррифот оид ба хисоботи баходихии ичтимоию экологии Лоихаи "Тичоратикунонии сохаи кишоварзӣ" дар шахраки Рашт

"23" [illegible] соли 2017

№	НОМУ НАСАБ	ЧОИ КОР/ ФАЪОЛИЯТ	РАКАМИ ТЕЛЕФОН	ИМЗО
1.	Саидов Маҳмадкарим	[illegible]	918380796	
2.	Сафаров Маҳмадали	(Ҳисор) ҷ/д	90068 5876	
3.	Раҷабов Фаррух	Раиси «Асил» шуъба	939911707	
4.	Сафаров Салоҳиддин	раиси ҷ/д	907249772	
5.	Камолов Маҳмадназар	ҷ/д	777011210	
6.	Бегимов Азизали	ҷ/д роҳб. муҳ. [illegible]	938020395	
7.	Бахтовар [illegible]	Меҳроб [illegible]	918705428	
8.	Сирожзода Ҷ. Асрор	муҳосиб	918272836	
9.	Ниёзов Шодмон	МЧС	937702920	
10.	Алиев Холиқ	роҳб. ҷ/д	935973930	
11.	Ҳафизова [illegible]	Тоҷ. [illegible] «Нисо»	918677235	
12.	Ҳабибов Саломиддин	Корп. микро-	934004773	
13.	[illegible] Мирзоалӣ	марк. [illegible]	935128384	
14.	[illegible]	шуъба	937284838	
15.	[illegible]	шуъба	935703376	
16.	[illegible]	[illegible]	918468418	
17.	Сафарова [illegible]	марк. [illegible]	937291060	
18.	Раҷабалиева [illegible]	[illegible] марк. [illegible]	907742295 918217732	
19.	[illegible] Саидалӣ	[illegible] амвол	918787831	
20.	[illegible]	маориф	935175189	
21.	[illegible]	р/ҷ/д [illegible]	918821220	
22.	[illegible]		937875062	
23.	Камолова Сарина		985711234	
24.	[illegible] Фозила		985421223	
25.	[illegible] Мухтор		985553121	
26.	[illegible]	муҳандиси кишоварзӣ	935807001	
27.	Бикматов Валерий	[illegible] КУМАК-[illegible]	927334141	
28.	Гаибов Худойназар	[illegible]	934449929	
29.	[illegible]	[illegible]	[illegible]	
30.	[illegible]	[illegible]	918695013	
31.	[illegible]	[illegible]	985236161	
32.	[illegible]	[illegible]	937305020	
33.	[illegible]	[illegible]	[illegible]	
34.	[illegible]	[illegible]	[illegible]	
35.				
36.				

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D. Public Consultations on results of the social analysis, draft Environmental and Social impacts assessment framework document for Agriculture Commercialization Project of Tajikistan - Additional financing - National level (Dushanbe)

Date: 20 July 2017
Location: Dushanbe, conference-hall of the Strategic Research Center, 40 Rudaky Avenue.
Purpose: To present draft ESMF, describe the objectives and additional activities for the proposed Project Additional Financing, including environmental and social management framework issues and solicit feedback

Invitees	Comments, notes, conclusions
List of participants is presented below (28 participants)	During the consultation, the Client has presented a summary of a draft Environmental Management Framework to public. Particularly, the audience was informed about screening procedures of the sub-projects, types of Environmental Impact Assessment for sub-projects, potential impacts which may by generated by sector activities as well as measures to be taken to prevent/mitigate potential impacts. The consultation meeting's attendees actively participated in discussions which were mainly focused on proposed environmental screening procedures and capability of financial intermediaries and implementing agencies to perform environmental management and monitoring of sub-projects; the responsibility of borrowers (beneficiaries) for carrying out activities on a grant, credit, the organization of experience exchange with developed economies, the need for management training, marketing and financial literacy, Coverage of the project and selection criteria for sub-projects; Capacity building activities and the need for a campaign to disseminate information and trainings for farmers; Use of alternative methods of pest control instead of chemicals, etc., allowed for use in the country, etc. The beneficiaries noted that it would be timely for the Project to organize educational and financial programs, grant or concessional loans for women, youth and disabled people. Participants noted that the components of the proposed project will help increase agricultural production and provide timely economic support to poor farmers that will mitigate the negative impact of high and ever-changing food prices, improve the country's food security, and help prevent the risk of a decline in the productivity of irrigated agriculture as a result of land degradation and soil fertility. **Proposals of participants** **Proposals of participants on environmental issues:** 1. In each training module which will be developed for beneficiaries for different agriculture commercialization purposes, for MSMEs, include environmental component to rder to increase environmental literacy; 2. Strengthen the cooperation with similar projects; 3. Take into account international experience of developed countries

	while conducting seminars, trainings on pastures improvement, fodder management and etc. . All participants concluded that the implementation of the ESMF provisions and appropriate mitigation measures for the consequences of the project activities will have a largely positive impact on the agricultural sector and the business climate of the country.

Consultation workshop in Dushanbe – 20 July 2017

List of public consultations participants in Dushanbe, 20 July 2017.

N	Name of participants	Profession, organization
1	Kamilova L.	NGO “Kuhiston”
2	Alihanova T.	Consulating company “BARS consulting”
3	Odilova R.	Expert on social issues
4	Saidova J.	Expert on social issues
5	Urinbaev N.	PMU, MoA
6	Haidarov A.	PMU, MoA
7	Karimov Kh.	MoA specialist
8	Khasanov T.	MoA specialist
9	Barhonov K.	MoA specialist
10	Kazarian B.	MoA specialist
11	Abdulloeva N.	MoA specialist
12	Kurbonov B.	Centre for strategic research
13	Akramov A.	Association of dehkan fams of Tajikistan
14	Ahmedov J.	Committee for environmental protection, specialist
15	Saidova R.	Committee for environmental protection, specialist
16	Karimov Kh.	PMU AED
17	Rahmatova D.	Socioligist, PMU AED
18	Nosirov R.	Environmental speiclaist, PMU AED
19	Akramov U.	Agency of forestry, Department on specially protected areas, deputy Head
20	Rahimov L.	Ministry of agriculture, specialist
21	Akramov A.	NGO “Dusti”, Director
22	Muhammadiev U.	Ministry of agriculture, specialist
23	Sharipova Sh.	PU AED, specialist
24	Khaidarov A.	Ministry of finances
25	Kholova G.	ADB gender consultant
26	Saidov I.	Academy of sciences, Institute of water problems
27	Rahmatillov R.	Tajik Agrarian University
28	Nazrieva R.	ICWC Secretariat consultant

«ПРОЕКТ КОММЕРЦИАЛИЗАЦИИ СЕЛЬСКОГО ХОЗЯЙСТВА В РЕСПУБЛИКЕ ТАДЖИКИСТАН (ПКСХ)»

Дополнительное финансирование
Консультационный семинар
«Экологический и социальный анализ,
Рамки управления по окружающей среде»

20 июля Душанбе, 2017 г.

Место проведения: здание Центра стратегических исследований, конференц-зал, 2-й этаж, пр.Рудаки 40

№	Ф.И.О	Организация, контактные данные (тел., эл. адрес)	Подпись
1.	Камилова Лариса	КПО, Кухистон 907-83-20-88	
2.	Михайлова Татьяна	Конс. комп. „Баро" 93-555-37-61	
3.	Орлова [illegible]	Эксперт ВБ 918645013	
4.	Сафарова Чамила	Эксперт ВБ 915-23-61-61	
5.	Уринбаев	ЦРП ПКСХ	
6.	Хайдаров Алишер	ЦРП ПКСХ	
7.	Каримов [illegible]	ЦРП ПКСХ	
8.	Хасанов Т.	ЦРП ПКСХ	
9.	[illegible]	ЦРП ПКСХ	
10.	[illegible]	ЦРП ПКСХ	
11.	[illegible] Н.	ЦРП ПКСХ	
12.	Курбонов Бобомурод	МФ РССК	
13.	[illegible] А	93 557 00 00 АМХЭ ПТ	
14.	[illegible] Ч.	988545857 Кумитаи хифзи муҳит	
15.	Саидова Ф.	908 66 51 99 Кумитаи хифзи муҳит	
16.	[illegible] Х.Ю.	МФ РССК	
17.	[illegible] Д	МФ РССК	
18.	Назаров Э	МФ РССК	
19.	Акрамов А	ООО Душан[illegible] 935007928	
20.	Акрамов У.	918332978 МФ КТИ [illegible]	
21.	[illegible] А	МСХ РТ [illegible]	
22.	Мухаммадиев Ч	93-927-09-59 Вазорати [illegible]	
23.	Шарипов Ш.	МФ РССК	
24.	Хайдаров А.	93-730-50-00 Махфил.	
25.	~~[illegible] Х.~~	~~МТС 93 [illegible]~~	
26.	Рамазонов С.	МФ РССК	
27.	Усмонова Г.	АБР Консультант	
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