

Tajikistan

Ministry of Agriculture

TAJIKISTAN AGRICULTURE COMMERCIALIZATION PROJECT

Environmental Management Framework

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Acronyms

ADB	Asian Development Bank
ATC	Agricultural Training Center
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
EAP	Environmental Action Plan
EA	Environmental Assessment
EMF	Environmental 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
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
NGO	Non-governmental Organization
OP	Operational Policy
PAU	Poverty Assessment Update
PIU	Project Implementation Unit
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
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 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 direct beneficiaries of the project would include (i) commercially-oriented producer associations and farmers, agro-processors, agri-business enterprises and agro-input dealers engaged in the value chains supported by the project; (ii) participating financial institutions; and (iii) public and academic institutions.

2. *Project description.* The project consists of 3 Components which will increase the commercialization of agriculture using a coherent and complementary approach, addressing all the main aspects of this effort, by: increasing the capacity of farmers, traders, agri-business and agro-processors to engage in agricultural markets through access to knowledge and technical assistance; improving access to investment finance; and strengthening critical elements of the institutional framework and sector's academic knowledge base required to support commercial activity. Particular emphasis will be given to strengthening the ability of the new generation of small-scale, private farmers to engage in market activity. Measures to boost private sector activity will be the project focus, but measures to strengthen public capacity will be included where they complement private sector activity.

3. *Location.* The grant and sub-project locations will be chosen during the implementation phase. The project will be located in rural areas where agricultural potential 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 Rayons of Republican Subordination (RRS)

4. *Project category.* In accordance with the Bank's safeguard policies and procedures, including OP/BP/GP 4.01 *Environmental Assessment*, the project category is B. As during appraisal it is not possible to identify which subproject or grant will be financed, it is necessary to prepare an Environmental Management Framework (EMF) which would specify all rules and procedures for the subprojects EA.

5. *Purpose of Environmental Management Framework.* The purpose of the EMF was to provide the World Bank's and national rules and procedures for project Environmental Impacts Assessment (EIA), identify potential 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 plan) to prevent, eliminate or minimize any anticipated adverse impacts on environment. The EMF 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 has shown that national institutions and implementing entities although have basic capacities to perform their duties concerning EA and enforcing the EMF provisions, there is need for additional capacity building activities. In this regard the Project will support additional information dissemination and training activities to ensure the environmental requirements and the EMF provisions would be fully implemented. A special attention will be paid to training of PFIs and PIU which should play a major role in grants and subprojects EA.

7. *Potential environmental impacts.* The project will support mostly various types of agricultural production and agro-processing 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, 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) 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; (b) *agro-processing*: contribution to surface water pollution, wastes generation, odor; (c) *small scale construction and/or rehabilitation of the existing premises*: soil and air pollution; acoustic, construction wastes, and potential asbestos issues, etc. All these impacts are expected to be easily mitigated through good projects design and implementation practices.

9. *Potential social impacts*. 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 is currently under preparation and aims to identify social issues to be addressed throughout the project implementation. Once finalized the SIA report will be disclosed for all interested parties.

10. *Environment Management Framework (EMF)*. 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.

11. *EMF disclosure and consultation*. The Project Implementation Unit (PIU) has disseminated the draft summary EMF to the Ministry of Agriculture, Committee for Environmental Protection, and other relevant ministries for their review and comments, and also, on February, 18, 2014, the Executive Summary of the document was posted on websites of the Regional Environmental Centre for Central Asia (www.carecnet.org) for its access to wide public. On February 28, 2014, the PIU has organized a consultation on Draft Environmental Management Framework. After the consultation, draft EMF document was revised to consider inputs from consulted parties. The final EMF will be posted on the website of the Ministry of Agriculture and disclosed in the World Bank Infoshop on March 14, 2014.

1. Introduction

1. *Project Background.* The original project development objective is to increase the commercialization of agriculture using a coherent and complementary approach, addressing all the main aspects of this effort, by: increasing the capacity of farmers, traders, agri-business and agro-processors to engage in agricultural markets through access to knowledge and technical assistance; improving access to investment finance; and strengthening critical elements of the institutional framework and sector's academic knowledge base required to support commercial activity. Particular emphasis will be given to strengthening the ability of the new generation of small-scale, private farmers to engage in market activity. Measures to boost private sector activity will be the project focus, but measures to strengthen public capacity will be included where they complement private sector activity. The project will further the twin goals of the World Bank to reduce poverty and promote shared prosperity. People in rural areas, the major locus of poverty in Tajikistan, will benefit from access to the wider range of farming, business and employment opportunities generated by increased agricultural commercialization, raising incomes and reducing poverty. The rationale for increasing the commercialization of agriculture is also recognized in the comprehensive new Agrarian Reform Program prepared recently by the government and donors as the basis for future reform and investment. Among its priorities, this strategy identifies the need to strengthen agricultural input and output markets and to increase agricultural productivity through improved access to seed, credit and extension services. In line with these strategic objectives, the Government of Tajikistan has requested Bank support for a project to increase commercialization of the sector, strengthen the links between producers and processors, and support producer associations.

Thus, the direct beneficiaries of the project would include (i) commercially-oriented producer associations and farmers, agro-processors, agri-business enterprises and agro-input dealers engaged in the value chains supported by the project; (ii) participating financial institutions; and (iii) public and academic institutions. The project will focus on farms with up to 2 ha of arable land per shareholder, with most of beneficiaries expected to be from Khatlon, Sugd and the Rayons of Republican Subordination (RRS).

2. *Proposed Project Activities.* Project consists of next 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.

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

A. *Legal framework for environmental protection*

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

Table 1: Selected environment-related legislation

<i>Air quality</i>	Law on Air Protection Law on Hydrometeorological Activity
<i>Mineral resources</i>	Law on Mineral Waters Water Code
<i>Land management</i>	Land Code Law on Land Administration Law on Land Valuation
<i>Forests</i>	Forestry Code
<i>Animals and factories</i>	Law on Protection and Use of Animals Law on Protection and Use of Factories Law on Factories Quarantine
<i>Health and safety</i>	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
<i>Waste and chemicals management</i>	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.

5. *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. 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.

6. *Water Code*. The Water Code (2000) stipulates the policies on water management, permitting, dispute resolution, usage planning and cadastre. 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.

7. *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...¹.” 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.

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

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

Table 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.

10. 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.

11. The *Law on Ecological Expertise (2011)* 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

¹ Land Code (1992)

manages the system of registration, testing and control of pesticides². 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.

12. *Quarantine*³. In 2001, a technical review workshop on Union of Independent Governments (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.

13. The qualifying requirements for physical and legal entities of the Republic of Tajikistan operating with application of the pesticides by aerosol and fumigation methods are⁴:

- 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,
- 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.

14. 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.

15. *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;

²UN Economic Commission for Europe: Tajikistan Environmental Performance review, 2004

<http://www.unece.org/env/epr/studies/Tajikistan/welcome.htm>

³ WB Tajikistan Community Agriculture and Watershed Management Project. (CAWMP), Pest Management Plan. 2004.

⁴ WB Tajikistan Farm Privatization Support Project (FPSP) Integrated Pest Management Plan, 2005

- 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); and
- The Convention on the Conservation of Migratory Species of Wild Animals (2001).

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.

B. Legal framework for EA, environmental licensing and permitting

16. *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.

17. *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 and in the Law on the State Ecological Expertise (2011). The EIA is the responsibility of the project proponent. 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 2011 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.

18. *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 sent 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.

19. *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. Currently there is no EIA categorization system in place and environmental impacts of most construction activities are reviewed on a case by case basis. According to the existing laws, the Project should not be required to prepare any EIA, however, as soon as the Project is approved, it will be necessary to consult with the CEP experts and receive further guidance on the SEE compliance requirements.

20. *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.

21. *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.

22. *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 health⁵. 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

⁵ United Nations Economic Commission for Europe: Environmental Performance Review of Tajikistan. Review, 2012 (see: www.unece.org/index.php?id=31560)

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.

23. *Environmental 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.

24. *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.

25. *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 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

26. *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.

27. *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 Competiveness Enhancement Project's New Credit Line Component are indicated in the Table 3 below.

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

Safeguard Policies	Relevance
<p>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</p>	<p>Yes. (refer to the description below)</p>
<p>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</p>	<p>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 support investments only in the settlements or on existing agricultural lands. The EMF 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.</p>
<p>Forestry (OP/BP 4.36) This Policy is to ensure that forests are managed in a sustainable manner; significant areas of forest are not encroached upon; the rights of communities to use their traditional forest areas in a sustainable manner are not compromised</p>	<p>No. (no sub projects that might trigger this policy will be supported – no commercial wood harvesting subprojects or those which might affect the status of forests)</p>
<p>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</p>	<p>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 EMF will include a list of eligible pesticides in the country and guidance on their use.</p>
<p>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</p>	<p>No. (as the project will be implemented on agricultural lands there will be no physical cultural resources in their vicinity)</p>

<p>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.</p>	<p>No. (this Policy is not applicable for Tajikistan).</p>
<p>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</p>	<p>No. Under Component 2 the project will provide finance credit lines for medium-term investment loans/leases, support to 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. <i>The project will not finance activities that result in the involuntary taking of land</i> 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. An Environmental Management Plan (EMP) checklist which will be part of operational procedures for the PFIs will be used to screen out projects with OP 4.12 impacts.</p>
<p>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</p>	<p>No. (the project will not support any activities which might have impact on dams safety)</p>
<p>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</p>	<p>No. (the project not finance any subprojects which may affect international waterways including: 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.</p>
<p>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</p>	<p>No. (the project will not support any activities in disputed areas)</p>

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 in the WB Infoshop)
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28. *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 impacts⁶. 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 (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

⁶ See: Environmental Assessment Update Sourcebook, Environmental Department April 1993. The World Bank

this policy. The Bank may, if appropriate, require additional EA work, including public consultation and disclosure.

General examples of projects that fall under Categories A, B, and C are provided in the Table 4 below. However, this list is just a good starting point and framework for the screening decision. Because of other factors involved such as project sitting, the nature of impacts, and the need for the EA process to be flexible enough to accommodate them, the lists should not be used as the sole basis for screening.

Table 4. Types of projects under the World Bank’s Categories A, B, and C

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

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

29. *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.

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

31. *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.

32. *Differences in screening categories.* As mentioned above in the point 19, currently there is no clear EIA categorization system in Tajikistan. 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, - 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.

33. *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.

34. *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

35. *Differences with regard to disclosure and public consultation.* Conducted analysis shows there is no harmonization between World Bank and national requirements in this regard. According to national legislation, the EA disclosure and public consultation is 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 PIU 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 PIU 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

PIU 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 PIU website.

V. Project Description

36. *Project development objectives and activities.* The project development objective is to increase the commercialization of farm and agri-business products in selected areas of Tajikistan, by improving the performance of selected value chains and providing financial and capacity building services to project beneficiaries. The project will increase the commercialization of agricultural products by using a coherent and complementary approach, addressing all the main aspects of this effort, by: increasing the capacity of farmers, traders, agri-business and agro-processors to engage in agricultural markets through access to knowledge and technical assistance; improving access to investment finance; and strengthening critical elements of the institutional framework and sector's academic knowledge base required to support commercial activity. Particular emphasis will be given to strengthening the ability of the new generation of small-scale, private farmers to engage in market activity. The project will have the following components:

Component I: TA Support to Commercialization will support training program to value chain participants. For farmers, the project will support three main types of training : (i) extension services and technological advice, on as needed basis, to farmers on specific subjects of agricultural production and processing; (ii) training activities to all value chain participants, on the benefits of participation in a value chain, and duties and responsibilities of the various participants; and (iii) to very small farmers, to increase their commercialization potential, on the benefits, duties and responsibilities of establishment and participation in productive partnerships. For agro-processors and agri-business enterprises the potential (demand-based) training activities will include: strategies for improving links with producers and producer organizations; strengthening aggregation activities; business management, marketing and quality control; improvements to product quality along the value chain; sources and use of market information; market studies and test marketing, roundtables, attendance at trade fairs and mentoring services to help participants understand market requirements. The support would be provided to agro-processors, agri-business enterprises, agro-input dealers and commercially oriented farmers and producer associations to develop business plans and investment proposals for productive linkages, and guidance on how to finance the necessary investment. Capacity building in the country's consulting sector, through transfer of global knowledge and good practices, on how to support agribusiness sector development and value chain/productive linkage development activities will ensure that such capacity remains in the country after the project closes.

Component II: Access to Finance for Commercial Farms and Agribusinesses will promote to potential investments which include: improved on-farm technology, storage, processing, new products, marketing, quality enhancement and food safety. In frame of this component to address the current market failure to provide medium-term credit for investment, a credit line will be provided to government to support medium-term lending and leasing for investment activities by agro-processors and other agri-businesses involved both in the selected value chains, but also to other credit-worthy agri-businesses. This credit line will be for loans or leases of up to 7 years, for investment in modern technological plant and equipment. Also matching grants will be provided in the following two types of support: (i) to complement the commercial credit line described above and (ii) to provide the start-up capital of the productive partnerships created under Component 1, which target the smaller and poorer farmers, the partnerships will be eligible to receive a matching grant for investment purposes (procurement of small-scale equipment, building of storages, etc.).

Given the novelty of the medium-term investment lending and value chain financing concepts, the Project will implement a capacity building program for the financial institutions involved in the Project. The PFIs will receive training in two subjects: (i) Appraisal of agricultural investment loans and leases, (ii) Financial Products for financing of value chains. Management and minimizations of the risks associated with these new products will be part of the training program; and (iii) Conducting subprojects EA.

Component III: Institutional Capacity Building and Project Management will strengthen the capacity of public institutions responsible for relevant services and policies; and the capacity of the Ministry of Agriculture to manage this and other donor projects for following aspects: a) Market Information for farmers and agribusinesses; b) Upgrading of the technological skills in the agro-processing sector; c) Support to the policy and regulatory reform for input use and marketing; and d) Project Management.

38. *Sub-Projects Coverage and Potential Activities.* The project will support various agricultural production, agro-processing activities, 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. Activities not supported by the World Bank will include: *tobacco growing/ processing; 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, etc.*

39. *Implementing arrangements.* Responsibility for implementing of the project, including access to finance component will lie with the PFIs and the PIU. The PIU 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. He/she should have environmental background and professional experience, being subordinated to the PIU Chairman. The Environmental Specialist will receive the reporting outputs from the PFIs and will be responsible for producing monthly, quarterly and annual reports for the PIU, 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 EMF implementation are presented below in the section XI of the document.

40. *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 impacts

41. *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
<ul style="list-style-type: none"> • Physical component of ecosystems (habitats) • Air • Soil (quality, structure, fertility, erodibility) • Land • Water resources (surface water &, underground water: quality, availability, hydrological regime); 	<ul style="list-style-type: none"> • Fauna • Flora • Vegetation communities/ forests • Animals' and plants' populations (number, abundance, distribution, etc.) • Biological component of forest, aquatic, meadow, steppe and other ecosystems 	<ul style="list-style-type: none"> • Human health • Settlements • Cultural heritages • Employment • Demography • Income • Poverty • Gender • Education • Migration

Landscape/ Aesthetics, etc.	(as a whole), etc. • Micro-organisms, etc	
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42. *Subprojects’ potential impacts.* 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.

43. *Subprojects’ potential risks.* 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 the risk from them is 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 training of both PIU staff and loan officers will also further reduce environmental risks. The project does not entail any direct social risks as its implementation doe 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.

44. *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 increased agricultural production and agro-processing activities 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

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.

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 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: Meat & Poultry Processing	Improved farm income & rural economic situation; contribution to country's food security, etc.
Machinery and other equipment – Agriculture, Agro-processing,	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 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, decrease of fuel wastage; decrease spoilage of crops and grains resulting in improved economic efficiency and higher farm incomes

45. *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 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 agro-processing 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.

46. 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
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Enterprise Category	Potential Impacts	Level of Significance
Agro-processing:	Water and energy consumption Water pollution Soil pollution Odor Air emissions	High High Moderate High Moderate
Agriculture Production	Soil degradation (soil erosion, loss of productive capacity, compaction, etc.) Soil pollution (e.g., by pesticides) Surface (through runoffs) and underground (through infiltration) water pollution Loss of agricultural biodiversity (due to cattle grazing)	High High High High
Construction/reconstruction	Soil erosion Soil pollution Land degradation Air pollution Acoustic Water pollution Asbestos	Moderate Moderate High Moderate High Moderate High

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 C and D*).

47. *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 watershed, without effective waste management, the main river of the watershed could become heavily polluted as a result of a high concentration of livestock. Some activities may require additional water consumption thus contributing to lowering of groundwater table, or contribute to water pollution through 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 watershed 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 PIU will take measures to mitigate and prevent the possible pollution and negative impacts.

48. *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 C and D*. 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
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, asbestos	Low

49. *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. Environmental Guidelines

50. *Purpose of Environmental Guidelines.* The purpose of the project Environmental Guidelines is to assist the PFI loan officers, PIU staff, sub-borrowers in determining the potential environmental 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, PIU and loan officers will use three sets of tables presented in the Annexes C and D, which will assist them in determining of environmental 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.

51. *Content of Environmental Guidelines.* The Environmental 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 A (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 impacts that may occur as a result of sub-project activities as well as needed mitigation measures two main sectors: Agricultural Production (*Annex C*) and Agro-processing (*Annex D*), which may be financed by the credit.

52. *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 or alter environmentally important areas, including wetlands, native forests, grasslands, and other major natural habitats; (b) “significant” potential impacts might be also considered the following: direct pollutant discharges that are large enough to cause degradation of air, water or soil; (c) large-scale physical disturbance of the site and/or surroundings; (d) extraction, consumption, or conversion of substantial amounts of forest and other natural resources; (e) measurable modification of hydrologic cycle; (f) hazardous materials in more than incidental quantities; (g) 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 — wetlands, wild lands, and habitat of endangered species; (b) in or near areas with archaeological and/or historical sites or existing cultural and social institutions; (c) in densely populated areas, where resettlement may be required or potential pollution impact and other disturbances may significantly affect communities; (d) in regions subject to heavy development activities or where there are conflicts in natural resource allocation; along watercourses, in aquifer recharge areas or in reservoir catchments used for potable water supply; and on lands or waters containing valuable resources (such as fisheries, minerals, medicinal plants, prime agricultural soils). 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 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.

Examples of projects that fall under Categories A, B, and C are provided in the Table 4 above. However, this list is just a starting point and framework for the screening decision. Because of other factors involved such as project sitting, the nature of impacts, and the need for the EA process to be flexible enough to accommodate them, the lists should not be used as the sole basis for screening.

Types of sub-projects that will be not supported by the project. The project does not support sub-projects, and will be excluded from the sub-project financing, that do not fall within one of its environmental conditions summarized below:

- (i) in the case some of the sub-projects may cause significant impacts for which it would be necessary a full EIA (Category A sub-projects);
- (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).

The CEP II will also not support other types of subprojects that are specified in the Project Exclusion List (*Table 11*).

Table 10. The Project Exclusion List

<input checked="" type="checkbox"/> 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.
<input checked="" type="checkbox"/> Production or trade in weapons and munitions.*
<input checked="" type="checkbox"/> Production or trade in alcoholic beverages (excluding beer and wine).*
<input checked="" type="checkbox"/> Production or trade in tobacco.*
<input checked="" type="checkbox"/> Gambling, casinos and equivalent enterprises.*
<input checked="" type="checkbox"/> 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.
<input checked="" type="checkbox"/> Production or trade in unbonded asbestos fibers. This does not apply to purchase and use of bonded asbestos cement sheeting where the asbestos content is less than 20%.
<input checked="" type="checkbox"/> Drift net fishing in the marine environment using nets in excess of 2.5 km. in length.
<input checked="" type="checkbox"/> Production or activities involving forced labor**/harmful child labor.***
<input checked="" type="checkbox"/> Production or trade in wood or other forestry products other than from sustainably managed forests.
<input checked="" type="checkbox"/> 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.
<input checked="" type="checkbox"/> Production or activities that impinge on the lands owned, or claimed under adjudication, by Indigenous Peoples, without full documented consent of such peoples.

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.

53. *Proposed subprojects environmental categorization.* Based on the information presented above it is proposed to assign the following environmental category for the potential types of subprojects as presented in the table 11.

Table 11. Subprojects environmental category⁷

Types of subprojects	Environmental category	Remarks
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⁷ Based on national legislation and EBRD environmental guidelines and procedures for local Banks which are applied in Tajikistan

Mammalian livestock production	B	Up to 750 capita
Poultry production	B	Up to 40 000 capita
Fertilizers usage	B	
Pesticides usage	B	
Construction/Rehabilitation of buildings for crop stock, machinery and other agricultural needs	B	New construction require a site assessment and a simple EMP; Building rehabilitation – requires an EMP Checklist
Vehicles	C	
Annual crop production & plantation crop, including new plantations of orchards and vineyards	B and/or C	Larger than 500 ha of new orchards and vineyards are category B, the rest – category C
Seeds purchasing	C	
Bee keeping	C	
Agricultural machinery (tractors, winnowers, sowing machines, etc.)	C	
Poultry & meet processing ⁸	B	
Dairy	B	
Vegetable oil processing	B	
Vegetable processing and canning	B	
Flour milling	C	
Warehousing	C	

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 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).

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 PIU environmental specialist.

The screening process and criteria outlined 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.

⁸ Depends on scale and location, could be "A" in some cases, but taking into account the scale of financing which is less than 200 000 USD these are category B projects

54. *Sub-projects Environmental Assessment.* After the environmental screening for the Category B projects it is required to conduct some Environmental Assessment (site specific EIA and EMP and/or prepare a simple EMP and/or a EMP checklist) in order to identify, evaluate and prevent potential environmental impacts and identify mitigation measures that may be incorporated into the project design. 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 study and to prepare the EMP.

55. *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 PIU, 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 sub-project activities, the generated negative environmental impacts and environmental issues might be such as: surface and underground water pollution, including by hazardous chemicals; soil and water pollution due to wastes generation and improper disposal; as well as use and storage of hazardous materials; air pollution due to emission; soil and land degradation; loss of biodiversity and habitats; water and energy consumption; noise, odor and others; which may affect various environmental components. 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 are presented in the point 5 of the *Annex A form 1* and with more details in *Annexes C (Agricultural Production & Aquaculture), and D (Agro-processing & Food Production).*

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 Guidelines⁹, as well as outlined in the Best Available Techniques to the EU Integrated Pollution Prevention Control Directive¹⁰, documents which could be consulted while conducting the EIA studies and preparing the Environmental Management Plans.

56. *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 12 below.

Table 12. Steps to be followed while performing the sub-projects EIA

Step 1	<p>a) The potential sub-borrower prepares an initial sub-project concept and submits it to PFIs.</p> <p>Notes:</p> <p>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;</p> <p>ii) At this time the sub-borrower may initiate preliminary discussions, if needed, with the respective environmental authorities to determine requirements for environmental review.</p>
Step 2	<p>a) If the project receives preliminary endorsement of PFIs, the sub-borrower completes <i>Part 1</i> of the Environmental Screening Checklist (<i>Annex A/Form 1</i>);</p> <p>b) PFIs, based on the Environmental Checklist, determines the environmental category, and makes a</p>

⁹ See: <http://www.ifc.org/ifcext/sustainability.nsf/Content/EnvironmentalGuidelines>

¹⁰ See: http://europa.eu/legislation_summaries/environment/waste_management/128045_en.htm

	conclusion what kind of EIA is to be conducted – an EIA and an EMP and/or partial EIA, or an EMP Checklist, including or not an environmental site assessment and informs sub-borrower.
Step 3	<p>a) PFI completes <i>Part 2</i> of the Environmental Screening Checklist (<i>Annex A/ Form 1</i>);</p> <p>b) In the case of a project which require an EIA and EMP and/or an environmental site assessment the PFI organizes a field site visit and completes the Field Site Visit Checklist (<i>Annex A/ Form 2</i>);</p> <p>c) after a field site visit, PFI completes a Final Environmental Assessment Checklist provided in <i>Annex A/Part 1/Form 3</i></p> <p>d) in the case of sub-projects on upgrading of existing facilities the sub-borrower, PFI and PIU complete the Environmental Screening Checklists for existing facilities (<i>Annex A/Form4/Part 1; Annex A/Form4/Part 2; Annex A/Form4/Part3</i>)</p>
Step 4	<p>a) If the applicant decides to follow further, she/he arranges preparation of Environmental Assessment of a required level and an Environment Management Plan.</p> <p>b) For that PFI provides the sub-borrower the type of EA documents (partial EIA, including site assessment and Environmental Management Plan for category B projects; Site Assessment and EMP checklists for small scale category B projects) to be prepared and suggest on what environmental issues is needed to focus.</p> <p>c) At sub-borrower's request, an authorized institution prepares the Environmental Impact Assessment and Environment Management Plan.</p> <p>Notes:</p> <p>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.</p> <p>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 <i>Annex A/ Form 3</i>;</p> <p>iii) Content and Description of the Environmental Management Plan are presented in <i>Annex B/ Form 1/ Parts 1 & 2</i>, respectively; Environmental Management Plan Format is presented in <i>Annex B/ Form 2</i>;</p> <p>iv) Measures to mitigate impacts which may be generated by sub-projects from Agricultural Production and Agro-processing sectors are provided in <i>Annexes C and D</i>, respectively.</p>
Step 5	<p>a) When the EIA is conducted, 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, and recommended activities to further address stakeholders' concerns.</p> <p>Note:</p> <p>In the case of small scale projects which require only an EMP Checklist the sub borrower organize its disclosure with a virtual public consultation.</p> <p>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;</p> <p>b) The PFI reviews the submitted documentation and completes <i>Part 3</i> of the Environmental Screening Checklist (<i>Annex A/ Form 1</i>).</p> <p>Notes:</p> <p>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).</p> <p>ii) PFI may return the EIA documents in case they didn't correspond to specified requirements.</p>
Step 6	<p>a) After the consultation and PFI's 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.</p>

	<p>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 Water Resources Energy , 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)</p>
Step 7	<p>a) Sub-borrower submits full set of environmental assessment documents to PFI for their consideration and further decision on funding. b) PFI shall inform the sub-borrower in writing regarding approval or rejection of loan.</p>

57. *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 13). In this case it is necessary to fill out the templates from Annex A form 4.

Table 13 - 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.

58. *WB EAs prior review.* While the main responsibilities in conducting the subprojects EIA lies with the PFIs and PIU, taking into account the lack of experience in this area of these institutions, the Bank will require the prior review from each PFI for at least three Category B subprojects (outside of those which would require only an EMP Checklist) in the beginning of the project implementation.

59. *Environmental Management Plan (EMP).* A 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 B). An EMP is a key element of an EA report for all Category B subprojects.

60. *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 A/Form 3). 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.

VIII Environmental Monitoring and Reporting

61. *Monitoring.* Environmental monitoring during the subprojects implementation, which is to be performed by the project beneficiaries and the PIU 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 B/ Form 3*.

62. *Supervision.* If approved, during the sub-project's operation phase, PFIs and PIU, 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.

63. *Reporting.* The status of compliance with agreed environmental mitigation measures is to be reported by the PFIs and the PIU in their regular (quarterly) reports on project implementation. In the case of non-compliance, the PFI officers (with Environmental Inspectorate and PIU 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 PIU 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.

IX. Sub-projects' Environmental Assessment Disclosure and Consultation

64. *EIA disclosure and consultation.* Disclosure of the EIA documents for category B projects is mandatory, and is to be done at a public place accessible to project-affected groups & local NGOs. 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 PIU 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.

X. Pest management and mineral fertilizers issues

65. *General remarks.* The pest management issues which can be potentially raised by the project 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 EMF 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.

66. *Principles of the Integrated Pest Management*¹¹. 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.

67. *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;

¹¹ This section is based on the World Bank Group in the Environmental, Health, and Safety Guidelines prepared in 2007.

- 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.

68. *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;
 - 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*.

69. *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 PIU 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.

72. *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.

73. *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.

74. *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.

75. *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.

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

The Table 14 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 14. 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.

	<p>Ensure all storage bays and bins are clearly labeled.</p> <p>Ensure all storage, loading and blending plant and equipment is cleaned from all residues when changing from one product to another.</p> <p>Do not store product in bags that are not correctly stamped.</p>
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	<p>Managers will develop, implement and monitor the effectiveness of hazard management procedures.</p> <p>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.</p> <p>Managers are to ensure that staff is made aware of any national and industry regulations which have to be observed.</p>
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.

77. *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 PIU 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.

XI. Institutional Arrangements for the EMF implementation

78. *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.

79. *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 PIU 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 PIU, IDA representatives and PFI auditors.

80. *PIU.* The main objectives of the PIU 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.

81. *PIU Environment Specialist.* The PIU 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 PIU 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 PIU 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 PIU 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.

82. *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).

XII. Capacity Building

83. *Training for the PIU Environmental Specialist.* In order to ensure successful implementation of the EMF requirements it is necessary to provide a series of capacity building activities. In particular, it is proposed the PIU environmental specialist should have training course on EA techniques and procedures. For that purpose he/she might visit a similar WB project in other countries in the region (Moldova, Armenia) and/or to hire an international consultant who might provide on the job training.

84. *PFI and IMU 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.

In this regard, a special training program would be designed involving representatives from the 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 environmental assessment; (b) screening and scoping procedures including 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 mitigation and 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.

85. *Training for sub-borrowers.* Next the most critical group to be exposed to the importance of the environment concerns includes entrepreneurs from agricultural and agro-processing 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 awareness and a practical exercise to observe and learn about sustainable agricultural practices and best available techniques in agro-processing activities.

XIII. Budget

87. *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 EMF implementation, a series of capacity building activities are necessary for which the project has to provide adequate funding. Estimate budget for proposed capacity building activities and trainings is presented in the Table 15 below.

Table 15. Estimate budget for proposed capacity building activities

Training Required and Target Group	Purpose	No of participants/ No of days for the workshop/ No of workshops	Total funds
Environmental issues, aspects of EIA, environmental guidelines and EMP			
1.Environmental awareness workshop for PIU staff, and PFIs loan officers	To ensure that PIU staff, IMU and PFI loan officers aware about importance of the environment and know how to recognize the impacts that various funded activities may have on the environment.	1 workshop,	2000 USD
2. PIU environment specialist	To provide PIU environmental consultant with knowledge on the screening of the projects, EIA process and EIA review/study tour	Study tour	3500 USD/month
3. PIU environmental specialist and PFIs	To provide PIU staff/ or PIU environmental consultant with knowledge on environmental monitoring techniques and procedures	1 workshop	1500 USD/month
4 PFI Loan officers from commercial banks	Familiarizing with environmental aspects of development projects and environmental analysis to enable them to recognize the potential negative environmental impacts and outline set of measures to mitigate impacts	1X2 days trainings	6000 USD
5. Sub borrowers/project beneficiaries	Environmental awareness and a practical exercise to observe and learn about sustainable agricultural practices and best available techniques and industry and agriculture	3X 2days trainings	15000 USD
6. PIU, PFIs and loan officers	Training on use of environmental guideline how to identify sub projects that may fall into one of the Bank's environmental categories, and in which case will require a full and/or a partial EIA, and, to identify activities that may affect the environment and in organizing the subprojects EIAs	3x2 trainings	15000 USD
On IPM			
Trainings			
8. Representatives of rayon agricultural departments; participating farmers (Sub-borrowers/project beneficiaries)	Pest characteristics	3 workshops	15000 USD
9. Representatives of rayon agricultural departments; participating farmers (Sub-borrowers/project beneficiaries)	Control measures, including IPM approaches, involving agricultural, physical, biological, and chemical control methods	3 workshops	15000 USD
9. Representatives of rayon agricultural departments; participating farmers, Local environmental inspectors (Sub-borrowers/project beneficiaries)	Safety issues (for pest handling, transportation, usage and storage)	3 workshops	15000 USD
Field demonstrations with improved pesticides usage and IPM technologies			
Representatives of rayon agricultural departments;	Field demonstrations on Pest problems diagnosed and related IPM opportunities, pest management practices, including agricultural, physical,	3 workshops	15000

participating farmers (Sub-borrowers/project beneficiaries)	biological and chemical control methods		
Preparing and disseminating information materials			
One comprehensive publication ad a series of small leaflets on Pest Management and IPM	Preparing and publishing a special publication on Pest Management and IPM		25000
TOTAL			158000 USD

XIV Environmental Management Framework's Disclosure and Consultation

88. *EMF Disclosure.* The Ministry of Agriculture on February, 18, 2014 has disseminated the draft summary EMF in its institutions and to other relevant ministries for review and comments, also posting it for wide public on the web-page of the Regional Environmental Centre for Central Asia (website – www.carecnet.org) - also by disseminating through local electronic networks.

89. *EMF Public consultation.* On February, 28, 2014, the PIU has conducted a public briefing and consultation on this document (see *Annex G* with the minutes of consultation). 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 PIU has presented a summary of a draft Environmental 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 be generated by agricultural production and agro-processing 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.

The meeting concluded that the draft EMF document covered practically all potential impacts and possible mitigation measures. The draft EMF was revised after the meeting taking into account inputs from the consultation. The final version of the EMF was officially submitted to the World Bank for disclosure in English in Infoshop; 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 A. Environmental Screening Checklist

Annex B. Content of the Environmental Management Plan

Annex C. Impacts, Causes, Consequences and Mitigation measures for subprojects in Agricultural Production Sector

Annex D. Impacts, Causes, Consequences and Mitigation measures for subprojects in Agro-processing Sector

Annex E. Recommended Structure of a Pest Management Plan

Annex F. Report on Consultation on the Draft Environmental Management with interested parties

ENVIRONMENTAL SCREENING CHECKLIST

Part 1

(to be completed by Sub-borrower)

1. Project Name:

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.

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	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?			
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?			
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?			

4. For the environmental components indicated above, and using the information provided in the table below describe the mitigation measures that will be included during the construction (C) or operational (O) phase of the project or both (B). Typical mitigation measures could be found in the point 5 and Annex C and D below.

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

5. **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?	<ol style="list-style-type: none"> 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 sowing (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.)	<ol style="list-style-type: none"> 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?	<ol style="list-style-type: none"> 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.

<p>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?</p>	<ol style="list-style-type: none"> 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 sown 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.
<p>Land degradation: Will the project involve land excavation?</p>	<ol style="list-style-type: none"> 1) Removal of topsoil to adjacent agricultural lands
<p>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</p>	<ol style="list-style-type: none"> 1) Separation of wastes, their usage and recycling 2) Disposal on authorized landfills 3) Full utilization of manure as organic fertilizers
<p>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.</p>	<ol style="list-style-type: none"> 1) Clearly marking toxic wastes on the project site as hazardous material and securely enclose them inside 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
<p>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?</p>	<ol style="list-style-type: none"> 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
<p>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?</p>	<ol style="list-style-type: none"> 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.
<p>Construction</p>	<ol style="list-style-type: none"> 1) Careful selection of location for and planning of the project 2) To minimize construction site's size and design

	<p>work to minimize land affected,</p> <p>3) Where possible, to execute construction works during dry season to avoid excessive contaminated runoff</p> <p>4) Properly arranged waste disposals</p> <p>5) Cleaning of construction site, replacing lost trees, boundary structures, re-vegetation of work area</p>
Air quality	
<p>Will the project provide pollutant emissions? Which types of pollutants (SO_x, NO_x, solid particles, dioxins, furans, etc)</p>	<p>1) Use of approved methods and techniques to prevent and control emissions (e.g. absorption)</p> <p>2) Where possible, enclosure of dust producing equipment, and use of local exhaust ventilation</p> <p>3) Arrange barriers for wind protection (if raw material is stored in open piles)</p> <p>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</p> <p>5) Where possible, installation of dedicated filtration systems, etc</p> <p>6) Selection of materials or processes with no or low demand for VOC-containing products</p> <p>7) Where possible, to install and modify equipment to reduce solvent use in manufacturing process</p> <p>8) To execute strict primary and secondary control of air emissions, etc.</p>
<p>Water Quantity: will the project involve water use? Which volumes and from which water source (centralized water supply system and/or from water reservoir)?</p>	<p>1) To ensure natural flow of water/ minimum disruption of natural streams flows</p> <p>2) To install water meters to control and minimize water use</p> <p>3) Avoid or minimize surface water abstraction in case of downstream the wetland is situated, etc.</p>
<p>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?</p>	<p>1) a. For small rural enterprises: to install local wastewater treatment facilities (e.g., septic tanks)</p> <p>b. For big enterprises: not to exceed established limits of pollutants in effluents</p> <p>2) To minimize water and mud collection</p> <p>3) Renovation of existing sewerage system/ connection to municipal sewerage system</p> <p>4) Properly arranged waste disposals</p> <p>5) Where possible, to plant at least bush vegetation down slope to reduce pollutants runoff into surface water bodies</p>
<p>Loss of Biodiversity: Will the project involve introduction of alien species (in case of aquaculture projects)?</p>	<p>1) Where possible, to avoid introduction of alien species</p> <p>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.</p>
<p>Loss of Biodiversity: Will the project located in vicinity of protected area or wetlands?</p>	<p>1) Not to exceed established limits of pollutants in effluents and emissions</p> <p>2) To avoid or minimize construction and operational activities during breeding and migration periods, etc.</p>
<p>Degradation of water ecosystems</p>	<p>1) Avoid application of pesticides in the strip with</p>

	<p>width of 300 m along the natural surface water bodies,</p> <p>2) Avoid cutting of trees and other natural vegetation along the water bodies</p> <p>3) Avoid coming of alien species into natural water bodies,</p> <p>4) Properly arranged waste disposals sites, etc.</p>
<p>Weeds, pests, diseases: will the project contribute to spreading of weeds, pests and animal and plant diseases?</p>	<p>1) Avoid cultivation of plant mono-culture on agricultural lands</p> <p>2) Appropriate pest management</p> <p>3) Giving the priority to the agro-technical and biological measures for the control of weeds, pests, and diseases,</p> <p>4) In cattle farms, to adhere carefully established rules to prevent or minimize animal diseases, etc.</p>
<p>Sedimentation of water bodies – will the project contribute to sedimentation of water bodies due to soil erosion ?</p>	<p>1) To avoid excessive soil erosion: see above</p> <p>2) Minimize soil processing</p> <p>3) Provide retention/ sedimentation ponds, as necessary</p> <p>4) To control reed harvesting (to avoid over-harvesting)</p>
<p>Socio-economic environment</p>	
<p>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.</p>	<p>Appropriate project design: location, methods of construction, use of safe technologies during operation period, work timing, careful decommissioning, etc.</p> <p>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.</p>
<p>Does the project per national legislation require public consultation to consider local people environmental concerns and inputs?</p>	<p>If yes, anticipated public concerns, e.g., project location, waste disposal sites, harmful emissions into environment, and aesthetic arrangement of constructed sites? etc.</p>
<p>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?</p>	<p>1) To ensure collective and individual protective measures (work clothes, masks, shoes), when needed.</p> <p>2) To adhere established occupational safety requirements as well as simple rules, e.g.:</p> <ul style="list-style-type: none"> a. water spaying twice a day during construction to avoid dust b. ventilation of internal areas during and post construction c) timing of work <p>3) To conduct regular instructing of employees on health and occupational safety requirements</p> <p>4) To restrict vehicle speeds and trough-traffic in residential areas, especially trucks, using signing and appropriate design</p> <p>5) Restrict trough-traffic in residential areas</p> <p>6) Work timing to minimize disturbance/ restrict</p>

	<p>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.</p>
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Part 2

(to be completed by the PFIs based on the findings of the environmental screening and scoping process)

5. Project Environmental Category (B or C) _____

6. Environmental Assessment required (yes or no) _____

7. Type of Environmental Assessment (for Category B projects - partial EIA and/or EMP checklist)

8. Types of EA documents (partial EIA, including site assessment and Environmental Management Plan for category B projects; Site Assessment and EMP checklists for small scale category B projects)

9. What environmental issues are raised by the sub-project?

Environmental Screener:

Date:

Part 3

Final Environmental Assessment Checklist

(to be completed by the PFIs (in consultation with PIU Environmental Specialist and/or State Committee for Environmental Protection and Forestry) based on review of the mitigation proposed and the environmental assessment (if required)).

Was an Environmental Assessment needed? (Y or N) ____ If yes, was it done? ____

Was an Environmental Management Plan prepared? (Y or N) _____

Are the mitigation measures to be included in project implementation adequate and appropriate? (Y or N) _____

Will the project comply with existing pollution control standards for emissions and wastes? (Y or N) ____ If no, will an exemption be sought? _____

Is an Environmental Monitoring Plan necessary? (Y or N) ____ If so, has it been prepared? (Y or N) __Approved by the PFIs? _____

What follow-up actions are required by the proponent, the PFIs or the PIU Environmental Specialist?

Were public consultations held concerning potential environmental impacts of the proposed sub-project? (Y or N) _____ Were minutes recorded? (Y or N) _____

Annex 1: minutes of consultation

Project Officer:

Date:

Environmental Screener:

Date:

FIELD SITE VISIT CHECKLIST¹²

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)

¹² 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.

Environmental Management Plan Checklist (for small scale construction/rehabilitation subprojects)

ENVIRONMENTAL /SOCIAL SCREENING			
Will the site activity include/involve any of the following:	Activity	Status	Additional references
	Building rehabilitation	<input type="checkbox"/> Yes <input type="checkbox"/> No	See Section B below
	New construction	<input type="checkbox"/> Yes <input type="checkbox"/> No	See Section B below
	Individual wastewater treatment system	<input type="checkbox"/> Yes <input type="checkbox"/> No	See Section C below
	Historic building(s) and districts	<input type="checkbox"/> Yes <input type="checkbox"/> No	See Section D below
	Acquisition of land or loss of assets ¹³	<input type="checkbox"/> Yes <input type="checkbox"/> No	See Section E below
	Hazardous or toxic materials ¹⁴	<input type="checkbox"/> Yes <input type="checkbox"/> No	See Section F below
	Impacts on forests and/or protected areas	<input type="checkbox"/> Yes <input type="checkbox"/> No	See Section G below
	Handling / management of medical waste	<input type="checkbox"/> Yes <input type="checkbox"/> No	See Section H below
	Traffic and Pedestrian Safety	<input type="checkbox"/> Yes <input type="checkbox"/> No	See Section I below
ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST	
A. General Conditions	Notification and Worker Safety	<p>The local construction and environment inspectorates and communities have been notified of upcoming activities</p> <p>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)</p> <p>All legally required permits have been acquired for construction and/or rehabilitation</p> <p>All work will be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment.</p> <p>Workers will comply with international good practice (always hardhats, as needed masks and safety glasses, harnesses and safety boots)</p> <p>Appropriate signposting of the sites will inform workers of key rules and regulations to follow.</p>	
B. General Rehabilitation and /or Construction Activities	Air Quality	<p>During interior demolition use debris-chutes above the first floor</p> <p>Keep demolition debris in controlled area and spray with water mist to reduce debris dust</p> <p>Suppress dust during pneumatic drilling/wall destruction by ongoing water spraying and/or installing dust screen enclosures at site</p> <p>Keep surrounding environment (side walks, roads) free of debris to minimize dust</p>	

¹³ 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.

¹⁴ Toxic / hazardous material includes and is not limited to asbestos, toxic paints, removal of lead paint, etc.

		<p>There will be no open burning of construction / waste material at the site</p> <p>There will be no excessive idling of construction vehicles at sites</p>
	Noise	<p>Construction noise will be limited to restricted times agreed to in the permit</p> <p>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</p>
	Water Quality	<p>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.</p>
	Waste management	<p>Waste collection and disposal pathways and sites will be identified for all major waste types expected from demolition and construction activities.</p> <p>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.</p> <p>Construction waste will be collected and disposed properly by licensed collectors</p> <p>The records of waste disposal will be maintained as proof for proper management as designed.</p> <p>Whenever feasible the contractor will reuse and recycle appropriate and viable materials (except asbestos)</p>
C. Individual wastewater treatment system	Water Quality	<p>The approach to handling sanitary wastes and wastewater from building sites (installation or reconstruction) must be approved by the local authorities</p> <p>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</p> <p>Monitoring of new wastewater systems (before/after) will be carried out</p>
D. Historic building(s)	Cultural Heritage	<p>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</p> <p>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.</p>
E. Acquisition of land or loss of assets	Activity will not eligible	<p>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.</p>
F. Toxic Materials	Asbestos management	<p>If asbestos is located on the project site, mark clearly as hazardous material</p> <p>When possible the asbestos will be appropriately contained and sealed to minimize</p>

		<p>exposure</p> <p>The asbestos prior to removal (if removal is necessary) will be treated with a wetting agent to minimize asbestos dust</p> <p>Asbestos will be handled and disposed by skilled & experienced professionals</p> <p>If asbestos material is be stored temporarily, the wastes should be securely enclosed inside closed containments and marked appropriately</p> <p>The removed asbestos will not be reused</p>
	Toxic / hazardous waste management	<p>Temporarily storage on site of all hazardous or toxic substances will be in safe containers labeled with details of composition, properties and handling information</p> <p>The containers of hazardous substances should be placed in an leak-proof container to prevent spillage and leaching</p> <p>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</p>
G. Affects forests and/or protected areas	Protection	<p>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.</p> <p>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</p> <p>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</p> <p>There will be no unlicensed borrow pits, quarries or waste dumps in adjacent areas, especially not in protected areas.</p>
H. Disposal of medical waste	Infrastructure for medical waste management	<p>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:</p> <p>Special facilities for segregated healthcare waste (including soiled instruments “sharps”, and human tissue or fluids) from other waste disposal; and</p> <p>Appropriate storage facilities for medical waste are in place; and</p> <p>If the activity includes facility-based treatment, appropriate disposal options are in place and operational</p>
I Traffic and Pedestrian Safety	Direct or indirect hazards to public traffic and pedestrians by construction activity	<p>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</p> <p>Signposting, warning signs, barriers and traffic diversions: site will be clearly visible and the public warned of all potential hazards</p> <p>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.</p>

		<p>Adjustment of working hours to local traffic patterns, e.g. avoiding major transport activities during rush hours or times of livestock movement</p> <p>Active traffic management by trained and visible staff at the site, if required for safe and convenient passage for the public.</p> <p>Ensuring safe and continuous access to office facilities, shops and residences during renovation activities, if the buildings stay open for the public.</p>
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ENVIRONMENTAL SCREENING CHECKLIST
For existing facilities

Part 1

(to be completed by Sub-borrower)

1. Subproject title

2. Brief Description of sub-project *(nature of the project, project cost, physical size, site area, location, facility history, operational/production activities, technological processes etc.)*

3. Inputs, output (products) and waste stream *(raw materials, natural resources (e.g. water) and energy used in operational/production activities, final products, effluents and technological wastes, secondary materials, waste disposal etc.)*

4. Key Environmental, Health and Safety aspects of the facility's operation *(potential impacts and risks caused by operational activities (e.g. industrial solid wastes, contaminated waste waters, air emissions, noise pollution), mitigation measures during operational/technological processes, preventive actions etc.)*

5. Regulatory Compliance Status *(per local environmental and sanitary inspection conclusions)*

6. Environmental authorizations, licenses and permits (as requested by the national legislation and relevant to proposed sub-project activities: check ✓ and specify if any)

- a. State Ecological Expertise
- b. Special water use and waste water discharge authorization
- c. Air emissions authorizations
- d. Waste disposal permit
- e. License for special type of activity (specify)
- f. License for mineral resources usage
- g. Permit for usage of wild fauna and flora
- h. Sanitary operational authorization
- i. Sanitary and veterinary operational authorization
- j. Other as per national legislation (specify)

7. Environmental expenditures (for Environmental management and Environmental pollution and/or for Natural resources usage; please fill a table)

Expenditure Item	Total Calculated per Year, MDL	Last payment, Date/MDL
1.		
2.		

Sub-borrower: _____ **Signature:** _____ **Date:** _____

ENVIRONMENTAL SCREENING CHECKLIST
For existing facilities

Part 2
(to be completed by the FI)

- 1. **Sub-project category (B or C)**
- 2. **Environmental compliance with environmental standards** *(yes / no)*
- 3. **Environmental Auditing** *(conducted or not)*
- 4. **Environmental authorizations, licenses and permits** *(check ✓ and specify if any)*

- a. State Ecological Expertise
- b. Special water use and waste water discharge authorization
- c. Air emissions authorizations
- d. Waste disposal permit
- e. License for special type of activity (specify)
- f. License for mineral resources usage
- g. Permit for usage of wild fauna and flora
- h. Sanitary operational authorization
- i. Sanitary and veterinary operational authorization
- j. Other as per national legislation (specify)

- 5. **Facility’s Environmental and Sanitary inspections** *(main conclusions regarding EHS compliance)*
- 6. **Payments for the environmental pollution** *(done or not)*

Project officer: _____

Signature: _____ **Date:** _____

ENVIRONMENTAL SCREENING CHECKLIST
For existing facilities

Part 3

(to be completed by the PIU Environmental Specialist)

- 1. Was an Environmental Auditing conducted? *(yes / no)* []
- 2. Was an Environmental Action Plan prepared? *(yes / no)* []
- 3. Will the project comply with existing pollution control standards for emissions and wastes?
(yes / no) []
If "no", will an exemption be sought? []
- 4. Is an Environmental Monitoring Plan necessary? *(yes / no)* []
If so, has it been prepared? *(yes or no)* []
Approved by the PIU Environmental Consultant? []
- 5. Are all relevant environmental authorizations, licenses and permits obtained? *(yes / no)* []
- 6. Is the facility in compliance with the environmental standards? *(yes / no)* []
- 7. What follow-up actions are required by the proponent, the PFI or the PIU?

8. Conclusions:

PIU Environmental Consultant: _____ *Signature:* _____ *Date:* _____

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 PIU 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.

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>

Environmental Management Plan Format

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

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 C¹⁵

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>

¹⁵ 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 Most of the animal waste is generated at housing, feeding, and watering locations		To maximize the efficiency of the operation and minimize wasted feed	
Animal Waste		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	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

Animal Carcasses	Mammalian meat processing		<p>in a covered or roofed area; - Check for storage systems leakage regularly (e.g. inspect tanks for corrosion of seams) -Conduct manure spread only as part of well planned strategy that considers potential risks to health</p> <p>-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</p>	<p>. Ensure that manure is applied to agricultural land only during periods that are appropriate for its use as plant nutrient (generally just before the start of the growing season)</p> <p>Animal carcasses should be properly managed and quickly disposed to prevent the spread of odors</p>
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	Effluents due to runoff from livestock housing, feeding, and watering, waste management facilities, and areas of land application of	To reduce discharges to surface water and groundwater from mammalian livestock operations: - Reuse water used for	Techniques for treating industrial process wastewater in this sector include: - Sedimentation for suspended solids reduction

	prior to final discharge	manure	<p>cleaning milking equipment to clean the milking parlor;</p> <ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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. from feed storage, loading, and unloading)	Ammonia gas has a sharp and pungent odor can act as an irritant when present in high enough concentrations.	<ul style="list-style-type: none"> - Consider the siting of new facilities taking into account distances to neighbors and the 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 	<p>The livestock account for 9% of anthropogenic CO₂ emissions (mostly from 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.</p> <p>Methane has 23 times the global warming potential (GWP) of CO₂, while</p>

Dust		Dust reduce visibility, cause respiratory problems, and facilitate the transport of odors and diseases	<p>favorable weather conditions (e.g. wind blowing away from inhabited areas);</p> <ul style="list-style-type: none"> - 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; - 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 	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
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	- Pesticides should be managed to avoid their migration into off-site land or water environments by establishing their use as part	Integrated Pest Management (IPM) <i>inter alia</i> include: - Maintain structures to keep out pests (e.g. plug

		<p>soil particles. Some are known to cause chronic or acute health hazards for humans as well as adverse ecological impacts</p>	<p>of an integrated pest management.</p> <ul style="list-style-type: none"> - 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. 	<p>holes, seal gaps around doors and windows);</p> <ul style="list-style-type: none"> - Use mechanical controls to kill, relocate, or repel pests; - Use predators to control pests
<p>Other impacts</p> <p>Environmental damage</p> <p>Overgrazing</p>	<p>Livestock access to creeks, rivers, and other natural water sources;</p> <p>Alteration of the vegetation composition and associated organisms</p>	<p>Contaminating the water with animal waste, destroying riparian habitat, eroding the stream banks</p> <p>Soil losses and a reduction in soil</p>	<ul style="list-style-type: none"> - Prevent animals' access to surface water bodies using fences, buffer strips or other physical barriers; - Prevent overgrazing of pastureland through use of: <ul style="list-style-type: none"> o Rotational grazing systems 	

<p>Soil erosion</p> <p>Loss of Biodiversity</p>	<p>in rangelands</p>	<p>productivity</p>	<p>based on seasonal and local ecosystem resilience (e.g. riparian zones);</p> <ul style="list-style-type: none"> 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 <p>-Prior or more intensive land use for livestock production, survey the area to identify natural and modified habitat types and ascertain their biodiversity value;</p> <ul style="list-style-type: none"> - 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 	
<p>Animal diseases</p>	<p>Animal diseases can enter</p>	<p>Some diseases can</p>	<p>- Control farm animals,</p>	

	a facility with new animals, on equipment, and on or people	weaken or kill large numbers of animals at an infected facility	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 Contamination of storm	- Protect feed from exposure to rain and wind during	

<p>Waste Feed</p>	<p>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, and heavy metals.</p>	<p>water runoff, primarily due to organic matter content</p>	<p>processing, storage, transport and feeding; - Maintain feed storage, transport and feeding systems in good working condition; fertilizer; - For waste feed which cannot be recycled due to potential biosecurity issues, alternative disposal methods should be secured in consultation with local health authorities</p>	
<p>Animal Waste</p>	<p>Manure contains ammonia, nitrogen, phosphorus, and other excreted substances such as hormones, antibiotics, and heavy metals, as well as bacteria and pathogens</p>	<p>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</p>	<p>- 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;</p>	<p>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</p>

Poultry Carcasses			<ul style="list-style-type: none"> - 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 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 	<p>chemical and biological constituents</p> <p>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)</p>
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	<ul style="list-style-type: none"> -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 	Possible techniques for wastewater treatment: <ul style="list-style-type: none"> - Sedimentation for suspended solids reduction - Biological treatment for reduction of soluble organic matter (BOD); - Chlorination of effluent when disinfection is

		operations typically have a high content of organic material, as well as nutrients and suspended solids	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	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 eutrophication. Release of ammonia gas also reduces the nitrogen content and, therefore, the fertilizer value of the manure	To minimize emissions - Consider the siting 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 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)	

Dust	Reduce visibility, cause respiratory problems, and facilitate transport of odors and diseases		<p>weekly to reduce conversion of nitrogen to ammonia</p> <ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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 	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)

			<p>allow water to enter the pile and maintain composting activity) to reduce fly populations;</p> <ul style="list-style-type: none"> - 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	<p>Animal diseases can enter a facility with new animals, or equipment, and on people.</p>	<p>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</p>	<p>To minimize the potential for the spread of poultry pathogens:</p> <ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - Select crops compatible with water availability in the area; - Maximize the use of available precipitation (“rain harvesting”), where feasible, by: <ul style="list-style-type: none"> 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 	Water management for annual crop production should aim to optimize crop yield, while conserving the quantity and quality of water resources

			<p>potential for soil salinization</p> <ul style="list-style-type: none"> o Maintain border vegetation in canals and drainage systems 	
Soil erosion and loss of productive capacity	Poor management especially due to excessive use of machinery and over-intensive farming practices	<p>Soil degradation</p> <p>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</p>	<p>Soil loss prevention practices:</p> <ul style="list-style-type: none"> - 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 	

			<p>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;</p> <ul style="list-style-type: none"> - Consider adding lime to soil maintain stable pH levels 	
<p>Soil, groundwater and surface water pollution/ Pesticides</p>	<p>Application</p>	<p>Contamination of soil, groundwater and surface water by pesticides/ impact on human health and biodiversity</p>	<p>The preference should be given to alternative pest management strategies, with the use of synthetic chemical pesticides as a last option.</p> <p><i>Pesticide Application</i></p> <p>If pesticide application is warranted, then the following measures are recommended:</p> <ul style="list-style-type: none"> -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 - Use only pesticides that are labeled in accordance with 	<p>Pesticides should be managed to avoid their migration into off-site land or water environments</p>

			<p>international standards and norms;</p> <ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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; 	

			<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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 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	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 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 from a single husbandry will not be significant but cumulatively, over many husbandries within the same

			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	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 consumers; increased health costs; lost work time; lost family income Damage to aquatic ecosystems Loss of biodiversity.	Use of approved pesticides and recommended application rates, scheduling and mode of application (for other pesticide-related measures refer to Table B-3)	International waterways may be affected. 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 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	Efficient engines	

		warming/ climate change.	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 D¹⁶

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>

¹⁶ 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	<p>Poultry: the carcass yield is, on average, 75% of the live bird weight</p> <p>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)</p>	<p>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</p>	
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	

<p>Livestock: bovine spongiform encephalopathy (BSE), etc.</p>			<p>other symptoms (</p> <ul style="list-style-type: none"> - 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. - The slaughterhouse should be cleaned and disinfected, and a minimum operational shutdown of 24 hours should be applied, etc. <p>Livestock: should be separated and transported to external facilities in separate containers for treatment and final disposal.</p> <ul style="list-style-type: none"> - Tissue of a livestock treated as Special Risk Material should be destroyed through incineration with a minimum gas temperature of 850°C; - Collecting animals not approved by veterinary inspection and segregating them from animal materials sent by the slaughterhouse for off-site rendering 	
<p>Soil and water pollution/ Sludge Treatment and Disposal</p>	<p>Poultry and meat processing operators</p>	<p>Surface water, groundwater and soil pollution</p>	<p>Poultry:</p> <ul style="list-style-type: none"> - Reuse of high-quality, low risk by-products; 	

			<ul style="list-style-type: none"> - 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	Poultry & Meet: Effluents with high content of organic matter, nitrogen, phosphorus, residues of chemicals, pathogens	Poultry: <ul style="list-style-type: none"> - 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 	

	<i>Meat</i> process activities		wastewater treatment processes and sludge quality for agricultural application Meat: - 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 & Meat 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	Poultry & meat processing		Poultry: - Maintenance of clean live bird handling areas by removing fecal matter and dead birds on a daily basis; - Reducing the inventory of	

<p>Dust</p>	<p>Meat: singeing, scalding, lair age, wastewater treatment and rendering</p>	<p>Meat: Odor may often be the most significant form of air pollution</p>	<p>raw carcasses, waste, and byproducts and minimizing any storage to short periods of time in a cold, closed, well-ventilated area.</p> <ul style="list-style-type: none"> - Dead birds, waste, and byproducts should not be stored in open spaces, where possible <p>Meat:</p> <ul style="list-style-type: none"> -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 <p>Meat:</p> <ul style="list-style-type: none"> -Clean and maintain a sufficient level of humidity in pens and livestock yards; Reduce fugitive dust by 	
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			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	<i>Poultry & Meet:</i> - 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	Dairy processing activities Dairy processing	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)	

Odor	facilities are related to on-site wastewater treatment facilities, in addition to fugitive odor emissions from filling/emptying milk tankers and storage silos		<ul style="list-style-type: none"> -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	<ul style="list-style-type: none"> -Reduce heat loss by : - Using continuous, instead of batch, pasteurizers; - Partially homogenizing milk to reduce the size of heat exchangers; - Improve cooling efficiency 	Approximately 80% of the energy requirements are for thermal uses to generate hot water and produce steam for 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 suspended solids, organic nitrogen, and oil and fat, and may		-Use emulsion breaking techniques to segregate high BOD and COD oils from wastewater; - Use grids to cover drains in the production area and to	

	contain pesticide residues from the treatment of the raw materials		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	Vegetable oil processing Dust: - from processing of raw materials, including cleaning, screening, and crushing	Combustion byproducts such as NO _x , SO _x , 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;	

<p>Volatile Organic Compounds (VOCs)</p> <p>Exhaust Gases</p>	<p>Use of oil-extraction solvents, normally hexane ..</p>		<p>- Reduce odor emissions with a caustic, alkaline, or ozone scrubber system To prevent and control VOCs: - - Ensure the efficient recovery 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.</p>	
<p>Water and energy consumption</p>	<p>Heating of water and producing steam for process applications (especially for soap splitting and deodorization) and cleaning processes Refrigeration and compressed air</p>	<p>Stress on water and other natural resources</p>	<p>To use energy and water save technologies and machinery</p>	
<p>Illness</p>	<p>Cold pressed oil contains high amounts of fatty acids and pesticide residues.</p>	<p>Severe diseases resulting in lower labor efficiency and income</p>	<p>Use alternative pressing process</p>	
<p>Injuries</p>	<p>Open machinery</p>	<p>Lost productivity, work days and income.</p>	<p>Safety instructions; safety clothing where appropriate (e.g. hard hats); protective guards on all machinery.</p>	
<p>Probable Residual Impact Assuming Full Mitigation: NONE</p>				

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 can seams	Lead (Pb), a carcinogen, is cumulative in humans	Use tin (Sn) for soldering or 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 E. List of registered and prohibited pesticides in Tajikistan

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 (betadihydroeptachlorine)	Dimilin (diflubenzuron)DNOK (Dinitroortokrezol) Zolon 35%, 30% (fozalon) Incegar 25% (phenoxy carb) Karate 5% (Iyambdacyhalothrin) 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) Arцерid 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% (complex of salts of ethilenbisdithiocarbamin + ethilenthuramdisulphate, 1:8)	Sumi-8 2% (diniconazol) TMTD 80% (thiram) Formalin 40% (formaldehyde) Fundazol 50% (benomil)
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% (galoxyphonetoxetyl)	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-methylbenzimidazol) 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)
Defoliant and desiccants			
Basta 14% (gluphosinate ammonium) Butylcaptax 80% (butylcaptax-2-n-butylbenzotianazol+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 E. Table 1. High toxicity pesticides prohibited to use in Tajikistan

Aldicarb - Алдикарб Brodifacoum -Бродифакоум Bromadiolone -Бромодиолон Bromethalin - Брометалин Calcium cyanide-цианид Калция Captafol- каптафол Chlorethroxyfos – 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 fluoroacetate фтороацетат натрия Sulfotep- сульфотеп Tebupirimfos -тебупиримфос
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Annex E. Table 2. Medium toxicity pesticides prohibited for use in Tajikistan

Acrolein	Demetonl-S-methyl	Isoxathion	Pindone
Allyl alcohol	Dichlorvos	Lead arsenate	Pirimiphos-ethyl
Azinphos-ethyl	Dicrotophos	Mecarbam	Propaphos
Azinphs-methyl	Dinoterb	Mercuric oxide	Propetamphos
Blasticidin-S	Edinofenphos	Methamidophos	Sodium arsenite
Butocarboxim	Ethiofencarb	Methidathion	Sodium cyanide
Butoxycarboxim	Famphur	Methiocarb	Strychnine
Cadusafos	Fenamiphos	Methomyl	Tefluthrin
Calcium arsenate	Flucythrinate	Monocrotophos	Thallium sulfate
Carbofuran	Fluoroacetamide	Nicotine	Thiofanox
Chlorfenvinphos	Formtanate	Omethoate	Thiometon
3-Chloro-1,2-propanediol	Furathiocarb	Oxamyl	Triazophos
Coumaphos	Heptenophos	Oxydemeton-methyl	Vamidothion
Coumatetralyl	Isazofos	Paris green {C}	Warfarin
Zeta-cypermethrin	Isufenphos	Pentachlorophenol	Zinc phosphide

Annex E. Table 3. Moderate toxicity pesticides prohibited for use in Tajikistan

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	Pyraclfos	Sodium fluoride
Butamifos	Esfenvalerate	Pyrazophos	Sodium hexafluorosilicate
Butylamine	Ethion	Pyrethrins	Spiroxamine
Carbaryl	Etrimfos	Fuberidazole	Sulprofos
Carbosulfan	Fenitrothion	Gamma-HCH	Terbumeton

<p>Cartap Chloralose Chlordane Chlorfenapyr Chlorphonium chloride Chlorpyrifos Clomazone Copper sulfate Cuprous oxide Cyanazine Cyanophos Cyflutlirin Beta-cyfluthrin</p>	<p>Fenobucarb Fenpropidin Fenpropathrin Fenthion Fentin acetate Fentin hydroxide Fenvalerate Fipronil Fluxofenim Formothion Paraquat Pebulate Permethrin</p>	<p>Guazatine Haloxypop Heptachlor Imazalil Imidacloprid Iminoctadine Ioxynil Ioxynil octanoate Isoprocarb Lambda-cyhalothrin Mercurous chloride Metaldehyde Metam-sodium Methacrifos</p>	<p>Tetraconazole Thiacloprid Thiobencarb Thiocyclam Thiodicarb Triazamate Trichlorfon Tricyclazole Tridemorph Vemolate Xylcarb</p>
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Annex F.

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 PIU 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 do 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 PIU 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 PIU 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.

The PFI Loan Officer and/or PIU 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.

Report on Consultation on the Draft Environmental Management with interested parties

Date: February 28 2014

Venue: Ministry of Agriculture, Dushanbe (Rudaky Avenue, 44)

Location / venue	Objective	Invitees	Participants	Summary, conclusions and comments
Ministry of Agriculture Conference room;	To describe the project objectives and activities, including EMF and Environmental Guidelines and solicit feedback	The invitation, as well as a hard copy of the EMF Executive Summary was sent to interested institutions and persons. Additionally the full EMF document was posted on the website of MoA and is available to all interested parties	Nabiev M. - Chief agriculture specialist of MoA, Zoirov N. – Representative of MoA, Miraliev A. – Representative of MoA, Bekov Behrus – Specialist of Information centre MoA, Asenova Z. - Specialist of International relations Department of MoA, Jalilov Dilshod – Coordinator of NGO “Centre for innovation development”, Blagoveshenskaya Svetlana – NGO “Kuhiston”, Rahmatillaeva G. – representative of National association of small and medium business, Shukurov I.Sh. – Representative of the Committee for environment Protection under the Government of Tajikistan, Burhoniddiniva T.Sh. – Specialist of the Ministry of energy and water resources, Sokiev Khomid – Specialist of the Ministry of justice, Rahmatillaev Rakhmonkul – professor, Tajik Agrarian University Nazarova Salomat – Consultant of the “Environmentally friendly land use Project (CEP), Ergashev Murod – Chief researcher, Institute of soil sciences, Tajik Academy of agricultural sciences Gaforov Bahrom. – Deputy Chairman of the Agency of	On the meeting, there were made presentations on: Environmental Management Framework. All participants concluded the EMF is well prepared, takes into account all aspects of potential environmental impacts of various types of sub projects to be supported by the new credit line, and proposes relevant mitigation measures and its implementation will have mostly positive impacts on the country agricultural sector.

			<p>land reclamation and irrigation, Komilzoda D. – Tajik Academy of agricultural sciences, Sharipov Aizbek – Chairman of the National Association of farmers, Saidov Ibragim – Head of department of the Institute of energy, environment and water problems, Academy of sciences, Alihanova Tatiana - expert on sustainable development, Burhanova Muazamma -Director of NGO “Support fund for Civil society initiatives”, Shoev Shohin – Representative of the State Committee for land management and geodesy, Bedoriev S. - Head of department, Agency of land reclamation and irrigation, Juraev D. – Specialist of the MoA, Khudoiberdiev Kh. – General Director of the TTU, Babadjanova Malika – Environmental Specialist, Kamilova Larisa NGO « Kuhiston »</p> <p>Yusupjanov Farruh – NGO « Tajik Ecological Fund»</p> <p>Dadobaev Dilshod – Director of NGO « Kuhiston », Maskaeva N. – NGO « Kuhiston », Nazrieva R. – social and resettlement issues expert</p>	
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Photo report on EMF public consultation



Opening of consultations and presentation of EMF document



Participants of consultations



Discussions, comments during the consultations