

REPUBLIC OF UZBEKISTAN

Horticulture Development Additional Financing Project (HDP AF)

Environment and Social Management Framework

October 31, 2017

TABLE OF CONTENTS

TABLE OF CONTENTS	2
ABBREVIATIONS AND ACRONYMS	3
EXECUTIVE SUMMARY	4
I. INTRODUCTION.....	8
II. POLICY CONTEXT	15
<i>Uzbekistan National Environmental Legislation and Procedures</i>	15
<i>The World Bank Safeguards Policy and Environmental Assessment Requirements</i>	20
<i>The Comparison of National and World Bank Environment Assessment Requirements</i>	26
III. ASSESSMENT OF Potential ENVIRONMENTAL IMPACTS.....	28
IV. ENVIRONMENTAL MANAGEMENT GUIDELINES.....	35
V. ENVIRONMENTAL REVIEW PROCEDURES AND GUIDELINES FOR ACCESS TO CREDIT COMPONENT.....	38
VI. INSTITUTIONAL ISSUES AND IMPLEMENTATION ARRANGEMENTS	43
VII. PEST MANAGEMENT	48
ANNEX 1 Environmental Categories	81
ANNEX 2 Environmental Screening Checklist Forms (Access to Credit Component).....	83
ANNEX 3 Environmental Mitigationand Best Practice (Access to Credit Component).....	92
ANNEX 4 Accept/Reject Decision Making (Access to Credit Component)	97
ANNEX 5 Public Consultations for Mid-Size Credits (Access to Credit Component).....	99
ANNEX 6 Terms of Reference for Environmental Assessment	100
ANNEX 7 Environmental Management Plan Checklist	101
ANNEX 8 Terms of Reference for RRA Environmental Specialist.....	106
ANNEX 9 ESMF and PMP Budget.....	110
ANNEX 10 Summary of Stakeholder Meeting on the draft ESMF	110
ANNEX 11 List of Pesticides registered in Uzbekistan	113
ANNEX 12 List of Forbidden and Limited Application Chemicals	137
ANNEX 13 Summary of Project outcomes of RESP-II	139

ABBREVIATIONS AND ACRONYMS

CALCIM	Central Asian Countries Initiative for Land Management
CIS	Commonwealth of Independent States
EA	Environmental Assessment
EE	Energy efficiency/efficient
EIA	Environmental Impact Assessment
ESMF	Environment and Social Management Framework
EMP	Environmental Management Plan
EMS	Environmental Monitoring Specialist
ER	Environmental Review
FAO	Food and Agriculture Organization
FMR	Financial Management Report
HDP	Horticulture Development Project
IPM	Integrated Pest Management
MAL	Maximum Allowable Limit
MAWR	Ministry of Agriculture and Water Resources
MIS	Management Information System
MOM	Management, Operation and Maintenance
NGO	Non-governmental Organization
O&M	Operation and Maintenance
OP	Operation Policy (of the World Bank)
PFI	Participating Financial Institution
PHH	Post-harvest Handling
PIU	Project Implementation Unit
PMP	Pest Management Plan
PMF	Pest Management Framework
PSEA	Project Specific Environmental Assessment
RE	Renewable energy
RESP I	Rural Enterprise Support Project Phase I
RESP II	Rural Enterprise Support Project Phase II
RRA	Rural Restructuring Agency
RUz	Republic of Uzbekistan
SA	Social Assessment
SCC	State Chemical Commission of RUz
SEE	State Environmental Expertise
TOR	Terms of Reference
USD	United States Dollar
UZS	Uzbekistan Sum
WB	World Bank
WHO	World Health Organization
WUA	Water Users' Association

EXECUTIVE SUMMARY

1. *Project objective.* The Horticulture Development Additional Financing Project (HDP AF) is aimed at assisting the Government of Uzbekistan to improve the productivity, profitability and competitiveness of the horticulture sector. The objectives of the project are to be achieved through (i) provision of agriculture support services to bridge the knowledge and experience gap related to new production, storage, post-harvest handling, and marketing knowledge and experience in the country; (ii) enhance access to financial services for agribusinesses operating in the horticulture sector, in particular towards enhanced competitiveness of the sector, improved quality and food safety standards, and establishment of market linkages; and (iii) strengthening the Ministry of Agriculture and Water Resources (MAWR) and Rural Restructuring Agency (RRA) capacity for project management, monitoring and evaluation. The proposed additional financing (AF) is aimed at scaling up the activities under the initial Horticulture Development Project will contribute to diversifying agriculture toward higher-value, more job-intensive, and less water-intensive productions; strengthen private sector access to finance and financial services; and increase private investment and job creation in agribusiness. No changes in the project design are proposed.

2. *Project Location.* The sub-projects to be supported by the Credit Line will be based on demand for proposed activities and implemented in Republic of Karakalpakstan and 12 provinces of the country (to 9 previously included in the parent project provinces have been added last 4 ones).

3. *Project category.* In accordance with the Bank's safeguard policies and procedures, including OP/BP/GP 4.01 *Environmental Assessment*, the project AF remains under same Category B and no new safeguards policies are triggered. As before Appraisal it is not possible to identify which subproject will be financed the appropriate EA instrument is the Environment and Social Management Framework (ESMF) which would specify all rules and procedures for the subprojects Environmental Assessment (EA).

4. *Purpose of Environment and Social Management Framework.* The purpose of the Environment and Social Management Framework was to provide the World Bank's and Government of Uzbekistan's 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 plan) to prevent, eliminate or minimize any anticipated adverse impacts on environment. The ESMF report that was prepared by the Rural Restructuring Agency (RRA) of the Ministry of Agriculture and Water Resources (MAWR) was updated, reflecting the proposed scaling up activities and new EA institutional implementing arrangements. .

5. *EA Institutional capacities to perform environmental safeguards.* The RRA Environmental Assessment (EA) capacity and of the participating Financial Intermediaries (PFIs) are adequate, - based on the Bank supervision missions in 2016-2017, all subprojects have been subject to environmental screening and assessment and for Category B subprojects have been prepared Environmental Management Plans (EMPs), which overall are being implemented in satisfactory manner and there no outstanding environmental issues been identified. Further

capacity building is required only with regard to several particular for horticulture sector development issues, identified during the initial project implementation which are related to Integrated Pest Management, soil and water conservation, including field demonstrations. New training on EA is also required for PFIs which should strengthen the ability of their representatives to identify potential environmental and social impacts as well as their knowledge on the EA rules and procedures. The revised ESMF proposes necessary activities in this regard. As the project is scaling up its activities, there is a need to have in place three additional Environmental Safeguards Specialists, which will deal with the subprojects EA, and, more importantly, will ensure their environmental supervision and monitoring. The project AF will support in this regard their EA capacity building.

6. *Potential environmental impacts.* The project AF will continue supporting various types of agricultural production and agro-processing subprojects. 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 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, storage facilities; 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 subprojects will not have environmental impacts and will fall under the Category C in accordance with OP/BP 4.01 (especially those related to purchasing of new agricultural machinery). Furthermore, it is expected the selected subprojects will not be located in protected areas, critical habitats or culturally or socially sensitive areas, - this will be ensured during the subprojects screening and EA.

7. *The potential adverse environmental impacts* of proposed types of subprojects might be summarized as follows: (a) *agricultural production*: soil erosion, loss of soil productive capacity, soil compaction, soil pollution, surface and underground water pollution, loss of biodiversity; (b) *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 best implementation practices.

8. *Potential social impacts.* Issues related to the risks of child and forced labor in the cotton harvest have been a challenge in the agricultural sector in Uzbekistan and efforts to eliminate these practices have received high level support within Government. Production in the horticultural sector is significantly more labor intense than in cotton and wheat, the peaks of seasonal labor demands are more dispersed across various crops, and the profits are higher. To mitigate any residual risks of child and forced labor, and to ensure that the project contributes to improved labor relations and practices in the agricultural sector of the country, the project envisions continued close collaboration with the International Labor Organization (ILO). Starting from 2018, research activities to monitor labor relations in the horticultural sector and to provide recommendation for creating decent working conditions would be implemented jointly with the ILO.

To boost employment of women, and encourage access of female entrepreneurs to loans, the project will closely collaborate with the Women's Committee of Uzbekistan and the Association

of Business Women of Uzbekistan for policy level activities for mainstreaming gender in the sector, publicizing information about female role models, as well as providing targeted capacity building to female entrepreneurs to enable them to access funding through the project.

The project will have explicit focus on targeting more vulnerable farmers, both directly and indirectly. To achieve indirect effects, eligibility criteria for sub-loans would also consider the social impact of the project, including direct job creation, the multiplier effects of supporting suppliers down the value chain, as well as contributions towards improving community infrastructure. Trainings for the PFIs on social responsibility of business and labor rights would be conducted, to ensure better screening. Through Additional Financing, a share of the project resources would also be ring-fenced to target smaller farmers and entrepreneurs directly.

The ESMF is informed by a social assessment, prepared in 2014, which has been updated to cover the new regions, as well as provide a summary of more up to date analysis of the key issues.

As all proposed activities are likely to be implemented within the existing agricultural land and settlement boundaries, the proposed project will likely not have an impact on wildlife and natural habitats and thus, OP/BP 4.04 (Natural habitats) is not triggered. It is also expected there will be no impact on physical cultural resources, which are generally not placed in the vicinity of agricultural land. Therefore OP/BP 4.11 "Physical Cultural Resources" is not triggered.

9. *Environment and Social Management Framework (ESMF)*. The updated document outlines environmental assessment procedures and mitigation requirements in line with both national and World Bank policies for the 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. Lastly, the ESMF includes a Pest Management Plan that outlines the procedures for ensuring the safe handling, storage and use of pesticides and promotion of integrated pest management as an alternative option for the use of pesticides.

10. *ESMF disclosure and consultation*. For the initial project the RRA has disclosed and consulted the ESMF with all interested stakeholders. The draft summary of the ESMF was submitted to the Ministry of Agriculture and Water Resources and other relevant ministries for their review and comments. Also, the Executive Summary of the document in Russian was posted on websites of MAWR for its access to wide public on January 17th, 2014. On February 13, 2014, the RRA organized a consultation on Draft document. After the consultation, draft ESMF was revised to consider inputs from consulted parties. The final ESMF was posted on the website of the Ministry of Agriculture on February 14, 2014 and submitted to the World Bank Infoshop on March 10, 2014. For the HDP AF the updated ESMF was posted by RRA on its website on September 27, 2017, for further virtual public consultation in provinces included in the parent project and for , “face to face” consultations in the new areas. Additionally the RRA has provided hard copies of the document to key stakeholders: involved regional state agencies, environmental and health authorities, environmental NGOs, scientific and/or design companies related to environmental protection on the participating oblasts. The public consultations have

been organized in Navoi, Bukhara, Sirdarya and Shurkhandarya cities on October 25-26, 2017, where the RRA representatives, presented the main findings of the ESMF with a focus on potential impacts, proposed mitigation and monitoring measures and implementing arrangements. One more important issue discussed at the meeting was the grievance mechanism in the case of environmental and social non-compliance. The document largely was accepted by the participants.

I. INTRODUCTION

1. **Project Background:** The Horticulture Development AF Project (HDP AF) will focus on crops other than cotton, as well as analytical and advisory activities to develop a horticulture strategy. The Project Development Objective is to enhance the productivity, profitability and competitiveness of the horticulture sector in Uzbekistan. The project would comprise the following three components:

2. **Component 1 – Agricultural Support Services.** The objective of the component is to bridge the knowledge and experience gap related to new production, storage, post-harvest handling (PHH), and marketing knowledge and experience in Uzbekistan. The component would support activities that would lead to improved farm economics, better quality of investment and marketing decisions, higher quality of produce, and subsequently would boost exports and rural employment.

3. *Sub-component 1.1 - Strengthening research institutes* – The project will strengthen research institutions through laboratory establishment and up-gradation, equipment, technical support and training to ensure assured improved planting materials, disease and pest identification and soils analyzing and creating optimal soil conditions, demonstration and dissemination of information on mechanical and biological on-farm technologies, including information about varieties, irrigation, greenhouses and post-harvest equipment. Based on these technologies modular training programs for farmers and traders for all areas, including storage, post-harvest handling, packing and marketing, and food hazard controls will be developed and disseminated to help farmers manage the business-side of farming, including basic information on record keeping, marketing, and business plans. This component will also support opportunities for stakeholders and policy makers to learn from countries with advanced horticultural subsectors about successful policies through study tours that might also include leading farmers.

4. *Sub-component 1.2 - Strengthen the public-private institutions that facilitate agricultural input and output markets* – The project will support the building of capacity of voluntary associations along the value chain with the goal of drawing up quality standards, codes of conduct, and organizing marketing campaigns, drawing on the successful experiences of other countries; improving market information, including price information gathering and reporting about domestic and regional destination markets; undertaking market studies of potentially interesting fruit and vegetable markets to help farmers improve profitability; undertake market-channel studies identifying bottlenecks and opportunities for new private sector investments (e.g. collection points for processors, new packaging, new crops; provide technical support in marketing, including packaging, volume, quality and food safety requirements along various marketing channels; participation in national and international trade fairs to promote investments and exports and improve quality of production, marketing and investment decisions and opportunities for policy makers to learn about advanced horticulture policies and practice in other countries.

5. *Sub-component 1.3 - Upgrade industry standards* – the component will help protect local consumers from unsafe products and improve their access to higher quality products by assisting in development of good production and handling practices and other internationally food safety

systems; translate various international fruit and vegetable quality requirements into Uzbek language; develop manuals of quality and packaging requirements for various products in countries where Uzbek products are exported; and work with private-public voluntary associations to gather and disseminate information about private-public standards in domestic and destination markets.

6. **Component 2 – Access to Credit.** The objective of the Access to Credit component is to enhance access to financial services for agribusinesses operating in Uzbekistan's horticulture sector, in particular towards enhanced competitiveness of the sector, improved quality and food safety standards, and establishment of market linkages. The component would finance such investments as new cultivars, seeds/seedlings, water-saving irrigation facilities rehabilitation (such as conversion to drip irrigation systems), alternative technologies for fertilizer application, agrochemicals, cold storage and other cold chain facilities, and value added handling/processing equipment and facilities. The component will build on the experience gained during RESP II which has achieved sizeable results with provision of financial services to Uzbekistan's agricultural enterprises. The component would further expand access to investment financing through additional lending resources for use by banks and leasing companies for on-lending to agribusiness. The project would also support introduction of new financial products to support development of productive linkages in the sector.

7. *Sub-component 2.1: Line of Credit for Banks and Leasing Companies (AF tentatively US\$500 million).* This sub-component will finance investment and working capital loans for enterprises operating in the horticultural sector. The current needs of agribusinesses for financing far exceed the long-term funds available to commercial banks, as shown by the high demand for investment funds under RESP II. Particularly, attention will be focused on investments supporting the enhanced competitiveness of the sector, access to new technologies, value addition in the sector, and improved market access through establishment of market linkages. In addition, the project would introduce a range of innovative structured finance products, to support development of market linkages and value chains. These products are expected to take the focus of the financial sector off the traditional forms of collateral, help agribusinesses borrow to deliver under signed contracts, and develop relationships between farmers, agro-processors, wholesalers, retailers, etc.

8. *Sub-component 2.2: Technical Assistance to PFIs.* Given the novelty of the non-traditional financial products to support value chain development, the project will implement a capacity building program for the financial institutions involved in the project. The training program will build on the Investment Lending and Leasing in Agriculture training carried out under the RESP II. The training program will cover: (i) value chain financing products; and (ii) tree-crop financing methodologies. The PFIs will receive training on applicability of the new financial products in lending to horticulture-related activities, assessing the suitability and effectiveness of these new financial products, and on mitigation of the related risks. The training will be about 5 days long, and will be targeting loan officers and branch managers of PFIs. An international bank training company will be hired under the project, to do the initial training, as well as transfer this specific knowledge to a local bank training company, which will take over the training activities at the later stages of the project. For the PFIs trying to test value chain financing products, a longer-term (resident) TA will be provided, to ensure the PFIs can appropriately structure the deal and manage the risks. In addition, all PFIs will have to undergo Environmental Training.

9. **Component 3 – Project Management.** The component will be focused on strengthening the MAWR's and RRA's capacity for project management, monitoring and evaluation through the provision of goods, consultant services, training and financing of incremental operating costs. This component will (i) support operation of RRA, and finance overall project management, as well as contract administration, procurement, and financial management; and (iii) establish a robust performance based Management Information System (MIS) and arrange for data collection and reporting on key performance output and impact indicators, through baseline surveys, participatory assessments, mid-term review and final evaluation.

10. *Project Location:* The HDP Access to Credit component will concentrate on all regions of the country:

Project Provinces	Geographical Information
Andijan	Andijan Province is a large agrarian-industrial region of the Republic of Uzbekistan. The province consists of 14 administrative districts. Total area of the Province is 4.3 thousand sq. km. The climate of the region is a typically continental climate with extreme differences between summer and winter temperatures. Due to the fact that mountain chains are preventing cold air masses from entering the region, the winter weather is comparatively moderate. The vegetation period is 217 days, average annual precipitation is 200-250 mm. As with other regions of Uzbekistan, it is famous for its very sweet melons and watermelons, but cultivation of crops can be accomplished exclusively on irrigated lands. Main agriculture includes cotton, cereal, viticulture, cattle raising and vegetable gardening. Industry includes metal processing, chemical industry, light industry, food processing.
Bukhara	Bukhara province is located in the south-western part of Uzbekistan, most of its territory is occupied by the Kyzylkum desert. It borders with Turkmenistan, Navoi and Kashkadarya regions, as well as with the Republic of Karakalpakstan. The regional center is the city of Bukhara. Territory area - 40.32 thousand sq. km. The territory of the province is a desert plain with separate hills, more than 90% of the area is occupied by the sands of Kyzylkum, only in the south, in the lower reaches of Zaravshan there are small, irrigated oases - Gijduvan, Bukhara and Karakul. The climate is desert, sharply continental. Winter is very severe, summer is hot and dry. Water resources are limited. The main rivers are the Zarafshan and the Amudarya. Amu-Bukhara, Amu-Karakul machine canals were taken from the Amudarya to irrigated oases.
Jizzakh	Jizzakh (Djizak) province is located in the central part of the Republic of Uzbekistan, between the rivers Syrdarya and Zarafshan, in the south-east with the Republic of Tajikistan. The province consists of 12 administrative districts. The province's territory is 21.2 thousand sq. km. The territory of the province is characterized by a variety of natural landscapes, unique exotic elements of relief and climate. This peculiarity is firstly due to the mountain necklace of Turkestan range, at the foot of which lie more than 3 thousand square kilometers of virgin land. According to its natural and climatic conditions the province belongs to the zone of extreme continental climate, featuring hot and dry summers, relatively mild winter. The average annual precipitation is 400-500 mm of rainfall, and vegetation period lasts 240-260 days.
Ferghana	Fergana province is located in a southern part of Fergana valley. The province consists of 15 administrative districts. The total territory of province is 6.8 thousand sq. km. 79% of the province area are plains, the other 21% are mountains and foothill regions. The climate is continental with mild winters and hot summers. The vegetation period is 210-220 days, average annual precipitation in east part of province is 170 mm. In the foothills annual precipitation reaches 270 mm.
Kashkadarya	Kashkadarya province is located in the Southern part of Uzbekistan, in the basin of the Kashkadarya river on the western mountainside Pamir-Alai. The province consists of 13 administrative districts. Total area of the province amounts to 28.6 thousand sq. km. The climate is continental, dry, somewhere is subtropical, favorable for land cultivation and cattle breeding. The average annual temperature is +15°C. The average annual

	precipitation is 187-285 mm, in mountainous and submountain areas – 500 mm.
Republic of Karakalpakstan	Karakalpakstan is located on the Turan Lowland. From the southwest to it the desert of Karakum is closely adjoined, in the northwest there is a plateau Ustyurt, and in the north-east desert Kyzylkum. The Republic of Karakalpakstan is a sovereign state within the Republic of Uzbekistan. It is located in the north-west of Uzbekistan, in the lower reaches of the Amudarya and the southern coast of the Aral Sea. There are 15 districts in the republic. The territory of Karakalpakstan also includes the southern half of the Aral Sea, on the dried bottom of which the new salt marsh desert Aralkum is now being formed, and the lower reaches of the Amudarya river are drying up. In Karakalpakstan, the desert occupies more than 13.67 million hectares (more than 80% of the territory). The Aral Sea region for a long time slowly sank and was the arena of accumulation of the sediments of the Mesozoic-Cenozoic seas and the alluvial strata carried down from the mountains. This contributed to the formation of extensive reservoir and alluvial plains. Cretaceous, tertiary and quaternary deposits take part in their structure. Cretaceous rocks are composed of marine and continental formations in the form of sand and clay in the peninsulas Tokmakata, Kulanda, Cape Aktumsyk, Beltau, Kuskanatau, Sultanuizdag, etc., are composed of Paleozoic and Mesozoic strata and outcrops of crystalline rocks. A peculiar form of the desert is barchan sands. Karakalpakstan is a zone of ecological disaster in connection with the drying out of the Aral Sea.
Namangan	Namangan province is located in northeast part of Fergana valley. The province consists of 11 administrative districts. The total territory of province is 7.44 thousand sq. km. The climate in province is continental, characterized by hot dry summer and moderate damp winter. In summer the temperature rises sharply, it becomes dry and hot, in mountains and foothills as usual cool and damp. The climatic conditions of eastern and western parts of the province vary considerably. Surrounded by mountain ranges, the eastern part has mild climate, rainfall of 600 mm, which creates favorable conditions for development of rainfed agriculture. In the western part rainfall is much less, there are few rivers, and hilly and mountainous land with sparse vegetation is unsuitable for agriculture.
Navoiy	Navoiy province is located in the central north/northwest of the country. It borders with Kazakhstan, Djizak, Samarkand and Bukhara regions, as well as with the Republic of Karakalpakstan. The area of the region is 110.8 thousand sq. km. The northwestern part of the region is occupied by the Kyzylkum plateau, in the east stretches the Nurata mountain ranges, the south of the area is bordered by the Zerafshan River. The climate is sharply continental, deserted, arid. The main river is Zeravshan. The northwestern part of the region is occupied by the Kyzylkum plateau, in the east stretches the Nurata mountain ranges, the south is bordered by the Zeravshan River. The climate is sharply continental, deserted. The main river is Zeravshan. In the depths of the field there are tungsten, phosphorites, quartz sands, cement raw materials, limestones. Of great importance is the presence of gold-bearing areas, on the basis of which the gold mining industry arose.
Samarqand	Samarqand province is located in central part of Republic of Uzbekistan. The Province is divided into 14 administrative districts. The total territory of the province is 16.8 thousand sq. km. The climate is a typically arid continental climate. Winter on the plains is mild and summer temperatures are between 32-38°C. The average annual precipitation in the west is 100-200 mm, in the mountains more than 800 mm.
Syrdarya	Syrdarya province is located in the central part of Uzbekistan, on the left side of the Syr Darya river. In the north it borders on the Maktaaral and Saryagash districts of the South Kazakhstan region of Kazakhstan, in the south with the Istaravshan and Zafarabad districts of the Sogd region of Tajikistan, in the west from the Djizak region, in the east with the Tashkent region. The total area is 5.1 thousand sq. km, the climate is typically continental and arid. The hungry steppe occupies an essential part of the region. The amount of precipitation varies from 130-360 mm per year on plains up to 440-620 mm in the foothills. In the south-east of the region in the summer, for several days, dry winds and dust storms are blowing, damaging crops. The warm period is 247 days, the annual sum of positive temperatures is -5000-5900 ° C.

Surkhandarya	Surkhandarya province - an area of 20.8 thousand sq. km. The central and southern parts of the region are flat. In the north, there is the Gissar range, in the west and north-west are its spurs - the mountains Baysuntau (4425 m) and Kugitangtau (3139 m), in the east the Babatag ridge (up to 2290 m), in the south - the Amudarya river valley. In the south it borders with the province of Balkh of Afghanistan, in the southwest with the Lebap province of Turkmenistan, in the northwest from the Kashkadarya region, in the east with Nosiri-Khusravsky and Shaartuz districts of the Khatlon region of Tajikistan, in the northeast with Tursunzadevsky, Rudakinsky and Shahrinavsky RRS of Tajikistan, in the north with Ayninsky and Pendzhikent districts of Sughd region of Tajikistan. The region is divided into one city of regional subordination and 13 administrative districts. The climate is from the dry desert in the south, to the subtropical in the north (Uzun). The average January temperature is +3 ° C, July +30 ° C. On the plains, the amount of precipitation varies from 130 mm to 360 mm per year, in the foothills - from 440 mm to 620 mm.
Tashkent	Tashkent province is located in the northeast of the Republic of Uzbekistan. Toshkent Province is divided into 15 administrative districts. The total territory of province is 15.3 thousand sq. km. There are three large water reservoirs located in the province: Charvak, Tashkent, and Ahangaran. Main rivers are – Syrdarya (its length is equal to 125 km in the Tashkent province) and its inflows: Chirchik (together with Pskem) and Angren. The climate of Tashkent province is sharply continental, characteristic features are dryness, an abundance of heat, light. Annual precipitation is about 300 mm per year. The vegetation period on plain consist of 210 days in a year.
Khorezm	Khorezm province is located in the western part of Uzbekistan. The region includes 10 districts. It borders on the republic of Uzbekistan - Karakalpakstan, from the south of Turkmenistan, from the extreme southeast, east and northeast - from the north-western and northern sides to the Bukhara region. The total area of the territory of the region is 6.3 thousand km ² (1.5% of the total territory of Uzbekistan) and with this indicator is on 11 place (out of 14) in area among the subjects of the first order in the administrative-territorial division of Uzbekistan. Almost the entire territory of the region is occupied by plains and small elevations. The climate of the area is sharply continental, with hot and dry summers with a fairly cold winter. On average, 78-79 mm of rain falls on the territory of the region (the main part of precipitation falls on spring and autumn), the vegetation period lasts 200-210 days and these indicators are among the lowest among the regions of Uzbekistan

11. *Environment and Social Management Framework:* The purpose of the Environment and Social Management Framework (ESMF) for the HDP is to ensure that the project proposed for World Bank financing is environmentally sound and sustainable and that the project interventions are in compliance with the requirements of the legislation of the Republic of Uzbekistan and that of the World Bank.

12. *Project Environment Category:* HDP has been rated in the environmental screening category "B" and has been subject to an environmental review by the preparation team. The Project involves investment in Agriculture support services and Rural Finance in a set of provinces of Uzbekistan. It is a requirement of the Bank and Uzbekistan legislation that for a B category project, all project components should be verified that they are in compliance with the Uzbekistan environmental laws and regulations and are consistent with World Bank policy (OP 4.01) and procedures on environmental assessment. As in the case of economic, financial, institutional and engineering analysis, Environmental Assessment is a part of project preparation. The ESMF provides a framework for identifying and addressing environmental impacts of activities financed under the HDP. It also provides means for screening and mitigating potential environmental impacts of the credit line investments.

13. *Project Environmental Aspects:* The project will benefit from the institutional capacity developed under the World Bank Rural Enterprise Support Project (RESP) Phase I and the

ongoing RESP Phase II project which stressed awareness of safeguard policies. The project's information and advisory service activities will continue to promote the adoption of improved and environmentally sound technologies, and provide training and advice on management of environmental impacts and mitigation measures. A large number of trainings were provided during RESP I and II to all project beneficiaries including borrowers from the line of credit under Rural Finance. It is planned to continue this practice under HDP.

14. The Rural Finance activities related to Participating Financial Institutions (PFIs) will deal with medium-to-small loans which are expected to be used for agricultural inputs and implements, storage and cooling facilities, equipment and trading activities with some environmental impact. Members of PFIs involved in lending will also be provided with training on the potential environmental impact of sub-projects, pest management and on mitigation measures. The most common end-uses of loans under RESP-I and II have been for provision of farming services such as farm mechanization, storage and distribution facilities, financing of agricultural inputs (including pesticides) and investments in tree-crops. These activities are closely linked to Rural Advisory Service activities and borrowers will therefore receive some guidance on their usage.

15. The participating financial institutions (PFIs) for HDP are the commercial banks and leasing companies for the mid-size credit line and leasing services.

16. *General Agriculture related Environmental Issues:* Uzbekistan has a number of environmental issues that should be addressed and many of these are either directly or indirectly related to agriculture and as such are relevant to this Project. A number of environmental problems are as a result of past and current agricultural activities and as such the Project must take care to not exacerbate the situation, but also to promote activities that will be environmentally enhancing, to overcome some of these past mistakes.

17. Over 60% of the irrigated area of 4 million hectares in the country is classed as salt affected, while some 30% is classed as having moderately or highly saline land. Soil salinization is worsening because main drainage systems are poorly maintained and an increasing percentage of the on-farm drainage systems is out of operation and difficult to rehabilitate. The rapid increase in river salinization which was observed before 1990 has come to a halt because drainage systems are becoming increasingly less effective in removing salts from the irrigated areas.

18. Agricultural and rural enterprises can also indirectly result in negative environmental effects. The issues are listed below, with causes, in no particular order of importance:

- Groundwater pollution – chemicals including agricultural
- Surface water pollution – chemicals including agricultural
- Water losses – irrigation systems
- Soil salinization and alkalination – irrigation systems
- Water logging – irrigation systems (drainage)
- Biodiversity losses (including pressure on relatives of domestic crops, fruit trees and medicinal plants) – grazing and deforestation
- Soil erosion – overgrazing and irrigation systems
- Soil fertility losses – cultivation practices
- Land contamination – chemicals including agricultural, industrial wastes

- Environmental health and hazards – food contamination and exposure to pollutants

19. In addition to these issues there are others related to agro-processing and other agribusiness enterprises, major concerns relate to effluent discharges and their impact on water quality, water use, disturbance of biodiversity, and general health and safety issues. A specific concern is the introduction of alien species and their effect on biodiversity, especially endemic species.

20. Environmental and safeguard issues are foreseen mainly with respect to investment in small and medium agro-processing enterprises likely to be financed under the project through credit lines from PFIs. Agro-processors would have potential environmental impacts from solid and liquid waste emissions, smoke, airborne particles and gaseous discharges, transport and machinery noise. These would need to be mitigated to National Standards and ESMF guidelines by incorporating the necessary controls and treatment systems in the design and, during procurement, by specifying equipment and processes that meet these standards. Processors would also need to incorporate National safety measures for personnel in the vicinity of operating machinery. Monitoring to ensure that these measures are being implemented successfully would be necessary.

21. *Responsibility for Environmental Management:* During the implementation of some project activities it is anticipated that there would be some impacts to the soil, water, flora and fauna, earth structure and social environment through discharge of solid and liquid type wastes to environment, emissions of harmful gases to atmosphere and other effects. These impacts should be mitigated on the basis of existing standards of Uzbekistan as described in the ESMF. This process besides common requirements also includes additional ecological requirements to sub-projects to be formulated before funding of projects and envisages on the basis of relevant standards, control of purchase of some equipment, application of technologies and process of fulfillment of the project.

22. The project implementing agency will require that every loan application submitted under the Access to Credit Component include a completed Environmental Screening Checklist related to the program proposed. Guidelines for such assessments will be in conformity with Bank requirements, as described in Chapter 5 and 6 and Annex 2 of this ESMF. Based on the review of the screening checklist and assessment made by the PFI loan officer (in consultation with the RRA Environmental Specialist, as necessary), the final package containing the list of requirements for loan applications would include specific requirements for management of environmental aspects of the sub-project. Based on the assessment, the environmental requirements would be one of the following: (a) simple Environmental Management Plan and/or EMP Checklists (for small scale construction and reconstruction projects); (b) simple EA and EMP for Category B projects; and (c) regular EA and EMP, - for more complex projects.

23. Sub-projects financed through project credit lines must be in compliance with the environmental laws and regulations of Uzbekistan and with World Bank safeguard policies. Buildings, equipment and processes; production, storage and marketing technologies; production and processing materials; construction sites and factories, and working environments must all comply with the relevant environmental laws. Environmental risk management of sub-loans will be a part of sub-loan appraisal by the project's participating financial institutions. Loan officers should verify that sub-loan and micro-loan applications are in compliance with Uzbekistan laws

and regulations and will not cause enduring harm to the Uzbekistan natural environment. The RRA environmental specialist will be able to provide guidance in case of complex projects.

24. The ESMF environmental guidelines require financial intermediaries to undertake environmental screening of the sub-project:

- a) To screen for potential environmental problems against a checklist, and to categorize and quantify the risk against pre-determined charts.
- b) To call for an environmental impact assessment for any proposal that indicates more than minimal levels of risk.
- c) To screen credit applications for potential impacts on physical cultural resources.

25. The PFI loan officer will make decisions on environmental and safeguard compliance, providing that there are no significant environmental issues involved in the proposal. In the case of significant environmental issues that are beyond the experience of the loan officer, the PFI will request assistance from the RRA FIs on the screening category and scope of the environmental mitigation plan for the application to the PFI. In any case of doubt, the PFI should consult with the RRA.

II. POLICY CONTEXT

Uzbekistan National Environmental Legislation and Procedures

26. *National Environmental Policies:* The main priority for the Republic of Uzbekistan during the on-going economic reforms is to ensure reliable social guarantees and measures for social security and environmental protection¹. Nature protection policy and the implementing measures in the areas of rational use of the natural resources and environment protection are based on the following main principles:

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

27. *Environmental Legislation and Policy:* Since independence Uzbekistan has established more than 100 laws, revisions of old legislation and resource management policies designed to address environmental problems and manage environmental resources. Relevant environmental laws and regulations in the framework of the present Project include:

- “*On Environmental Protection*” (1992), establishing a legal, economic and organizational framework for environment protection, ensuring sustainable development and defining principles including State Ecological Expertise (SEE);

¹Karimov Islam. 1999. “Uzbekistan: Towards 21-st Century”, Report on the 14-th Session of Parliament (Oliy Majlis).

- *“On Water and Water Use”* (1993), ensuring rational water use, protection of water resources, prevention and mitigation of negative impacts and compliance with national legislation;
- *“On Plant Quarantine”* (1995) regulates activities concerning outside and inside quarantine of plants, aimed at protecting the territory of the Republic from the penetration of quarantine and other dangerous pests, plant diseases and weeds from foreign countries, which can cause significant economic damage to the national economy;
- *“On Land Code”* (1998) provides basic norms and rules for land use and stipulates the land rights;
- *“On the Concept of National Security”* (1997), a principle framework for achieving national ecological security, etc.;
- *“On the Protection and Use of Flora (plants)”* (1997) regulates relations in the field of protection and use of flora (plants) growing in natural conditions, as well as wild plants kept under crop conditions for their reproduction and genetic conservation;
- *“On the Protection of Agricultural Plants from Pests, Diseases and Weeds”* (2000) regulates activities on the protection of agricultural plants from pests, diseases and weeds, and the prevention of the harmful influence of plant protective substances on human health and on the natural environment;
- *“On Ecological Expertise”* (2001) provides for mandatory expert assessment of impacts on the environment and human health, as well as a legal basis for conducting expert assessments;
- *“On Ecological control”* (2013) regulates relations in the field of environmental control. The main objectives of environmental control are prevention, detection and suppression of violations of environmental regulations; monitoring of environmental situations that may lead to environmental pollution, unsustainable use of natural resources, endangering the life and health of citizens.

28. *Legislation Related to Water Resources, Nature Protection and Pest Management.* Many important aspects of state management, use and protection of water resources, nature and agricultural plants are regulated by Decrees of the Cabinet of Ministers, such as:

- “On regulation of ecologically dangerous product and waste shipments to and from the territory of the Republic of Uzbekistan” (No 151, 19.04.2001);
- “On approval of the Regulation of the State Environmental Expertise” (No 491, 31.12.2001);
- “On approval of the Provision for procedures for the cadastral division of territory of the RUz and formation of cadastral numbers for land plots, buildings and structures” (No 492, 31.12.2001);
- “On approval of Provision on the State Environment Monitoring” (No 49, 3.04.2002);
- “On rendering status of the specially protected natural territories of the republican importance to the fresh water aquifer formation zones” (No 302, 26.08.2002);
- “On improvement of the Hydro-Meteorological Service” (No 183, 14.04.2004);
- “On the Issues of the Activity of the State Commission on Chemicals and Plant Protection (GOSKHIMKOMISSIYA)” (No 1, 04.01.2005);
- “On Measures to Improve the Control System for Delivery and Effective Use of Chemicals for the Protection of Plants” (No 31, 24.02.2006);

- “On approval of the Program of the state environmental monitoring in the Republic of Uzbekistan for 2011-2015” (No 292, 31.10.2011);
- “On the Action Program for the Protection of Environment in the Republic of Uzbekistan for 2013-2017” (No 142, 27.05.2013);
- “On approval of the Regulations for issuing permits for special use or consumption of water” (No 171, 14.06.2013)

29. *Nature Protection Normative Documents.* Relevant nature protection normative documents issued by government include:

- “Procedure for elaboration and execution of draft standards on maximum permissible emission of contaminants discharged to water bodies including drainage water” (RD 118.0027719.5-91);
- “Procedure for granting permission for special water use” (RD 118.0027714.6-92);
- “Instruction for determining of damage caused to the national economy by underground water contamination” (RD 118.0027714.47-95);
- “Temporary recommendation on control of underground water protection of the Republic of Uzbekistan”. State Nature Committee and *Uzbekgidrogeologiya* of the Republic of Uzbekistan, Tashkent, 1991;
- “Procedure for elaboration and principal requirements of recommendations to use waste water for crop irrigation” (RD 118.0027714.41-94);
- “Regulation on the disposal procedure of pesticides and other toxic substances, as well as the protection and maintenance of special polygons” (registered by the Ministry of Justice, #2438 dated 20.03.2013).

30. *International Cooperation and Global and Regional Agreements:* In the context of the global environment, the Republic of Uzbekistan is a Party to three Rio Conventions: the Convention on Climate Change, Convention on Biological Diversity, and Convention to Combat Desertification, together with a number of other international Conventions, Protocols, Agreements, and Memoranda of Understanding in the areas of environmental conservation and sustainable development. Other global agreements to which Uzbekistan is party include:

- Convention on Prohibition of Military or Any Aggressive Destructive Actions to the Environment (26.05.1993);
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (22.12.1995);
- Convention on Protection of the World Cultural and Natural Heritage (22.12.1995);
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (01.07.1997);
- Bonn Convention on Conservation of Migrating Species of Wild Animals (01.05.1998);
- Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat (30.08.2001).

31. *State Organizations Responsible for Environmental Assessment and Management:* The State Committee for Nature Protection (*Goskompriroda*)² is the primary environmental

² In English translations also called ‘State Committee for Nature Conservation’, ‘State Committee for Natural Resources’, ‘Committee of Nature Control’, etc.

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

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

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

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

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

According to the article 3 of the abovementioned law Ecological expertise is carried out in order to determine:

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

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

- Category I –Corresponds to World Bank category A;
- Category II –Corresponds to World Bank category B;
- Category III –Corresponds to World Bank category Bor C;
- Category IV - Corresponds to World Bank category C.

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

a) Draft statement on environmental impacts (DSEI):

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

b) Statement on environmental impact (SEI):

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

c) Statement on Environmental Consequences (SEC):

- correction of the design decisions and other taken measures on the consideration of the DSEI by the bodies of Goskompriroda, as well as on the proposals made at the public hearings;
- environmental regulations governing the activities of the expertising object;
- requirements for the organization of work and the implementation of measures for environmental guiding of the operation of the object;
- main conclusions about the possibility of business activities.

37. *Public Involvement:* The Sub-borrower is also responsible for conducting at least one public consultation(s) for category I and II. These responsibilities include: (a) public notification, (b) conducting the consultation and (c) recording the significant findings, conclusions, recommendations and next steps. The purpose of public consultation(s) is (are) to solicit views of groups or individuals who may be affected by the Sub-project regarding their environmental concerns. Affected groups or people should identify the environmental issues they believe to be

significant. *Any significant issues, established during the public consultation, should be incorporated into the EMP.* Public disclosure provides affected groups or individuals the opportunity to examine the draft EMP document before it is finalized so that they can review and provide comments on the mitigating measures agreed upon and the responsibilities for implementing them. Since Uzbek and World Bank consultation and disclosure requirements may differ somewhat, World Bank requirements presented below are the primary ones and have to be followed.

The World Bank Safeguards Policy and Environmental Assessment Requirements

38. *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.

39. *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 Competitiveness Enhancement Project's New Credit Line Component are indicated in the Table 1 below.

Table 1. World Bank's Safeguard Policies and their relevance to sub-project

Safeguard Policies	Relevance
<i>Environmental Assessment (OP/BP 4.01)</i> This Policy aims to ensure that projects proposed for Bank financing are environmentally and socially sound and sustainable; to inform decision makers of the nature of environmental and social risks; To increase transparency and participation of stakeholders in the decision-making process	Yes.
<i>Natural Habitats (OP/BP 4.04)</i> 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	No. The ESMF provides screening criteria to be applied to exclude any projects that could impact on natural habitats.
<i>Forestry (OP/BP 4.36)</i> 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	No. The ESMF provides screening criteria for exclusion of any projects that could impact on forests, rights of forest communities or traditional uses of forests.

<p><i>Pest Management (OP 4.09).</i> 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>Yes (as in the case of agricultural production or agro-processing sub-projects there might be needed pest management activities). The ESMF has a special section specifying provisions for preparation of simple pest/pesticide management plans as part of the application process) and supporting IPM.</p>
<p><i>Physical Cultural Resources (OP/BP 4.11)</i> 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. The ESMF provides screening criteria for exclusion of any projects that could impact on physical cultural resources.</p>
<p><i>Indigenous Peoples (OP/BP 4.10)</i> 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 in Uzbekistan).</p>
<p><i>Involuntary Resettlement (OP/BP 4.12)</i> 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. (the project will support construction of new buildings and processing and cold storage facilities only in the case when land acquisition is not necessary and when people have not been displaced prior to the application for purposes of the proposed subproject and there are no resettlement issues. For such cases the investor should have the landownership title as well as has to prove the land at the moment of subprojects application is not occupied or used even illegally).</p>
<p><i>Safety of Dams (OP/BP 4.37)</i> 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 (However, if any activity is dependent on an existing dam (e.g. irrigation works), then the PFI/RRA would verify that the particular dam meets the safety requirements of the World Bank OP 4.37</p>
<p><i>Projects on International Waterways (OP/BP 7.50)</i> 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. Any credit investments would be limited to rehabilitation or modification of existing minor schemes in ways which would not increase the amount of water abstracted or have any other impact on the water source or local hydrological regime (e.g. replacing conventional irrigation with drip irrigation in an existing irrigation scheme would be still eligible. Creating a new scheme which will lead to increasing water abstraction from the rivers will not be financed under the project. This determination would be made in the screening process.</p>
<p><i>Disputed Areas (OP/BP 7.60)</i> 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>

<i>Disclosure Policy (BP 17.50)</i> 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 ESMF will be disclosed and consulted in the country before appraisal and will be also disclosed in the WB Infoshop)
---	---

40. *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 impacts³. These four Categories are A, B, C, and FI.

41. *Category A projects* are 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).

42. *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.

43. *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

³ See: Environmental Assessment Update Sourcebook, Environmental Department April 1993. The World Bank

have negligible, insignificant, or minimal environmental impacts. Beyond screening, no further EA action is required.

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

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

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

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

Category A Projects (projects/project components which may have diverse and significant impacts – normally require a full EIA)	Category B Projects (projects/project components which may have diverse and significant impacts – more limited environmental assessment is appropriate)	Category C Projects (projects which are unlikely to have direct adverse impacts – no EIA is required)
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

47. *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.

48. 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 may be more useful than an impact assessment in fulfilling the EA needs for such projects.

49. 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).

50. 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.

51. *World Bank Public Consultation and Disclosure requirements.* For all Category A and B projects proposed for WB financing, during the EA process, the borrower consults all involved parties, including project-affected groups and local nongovernmental organizations (NGOs) about the 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.

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

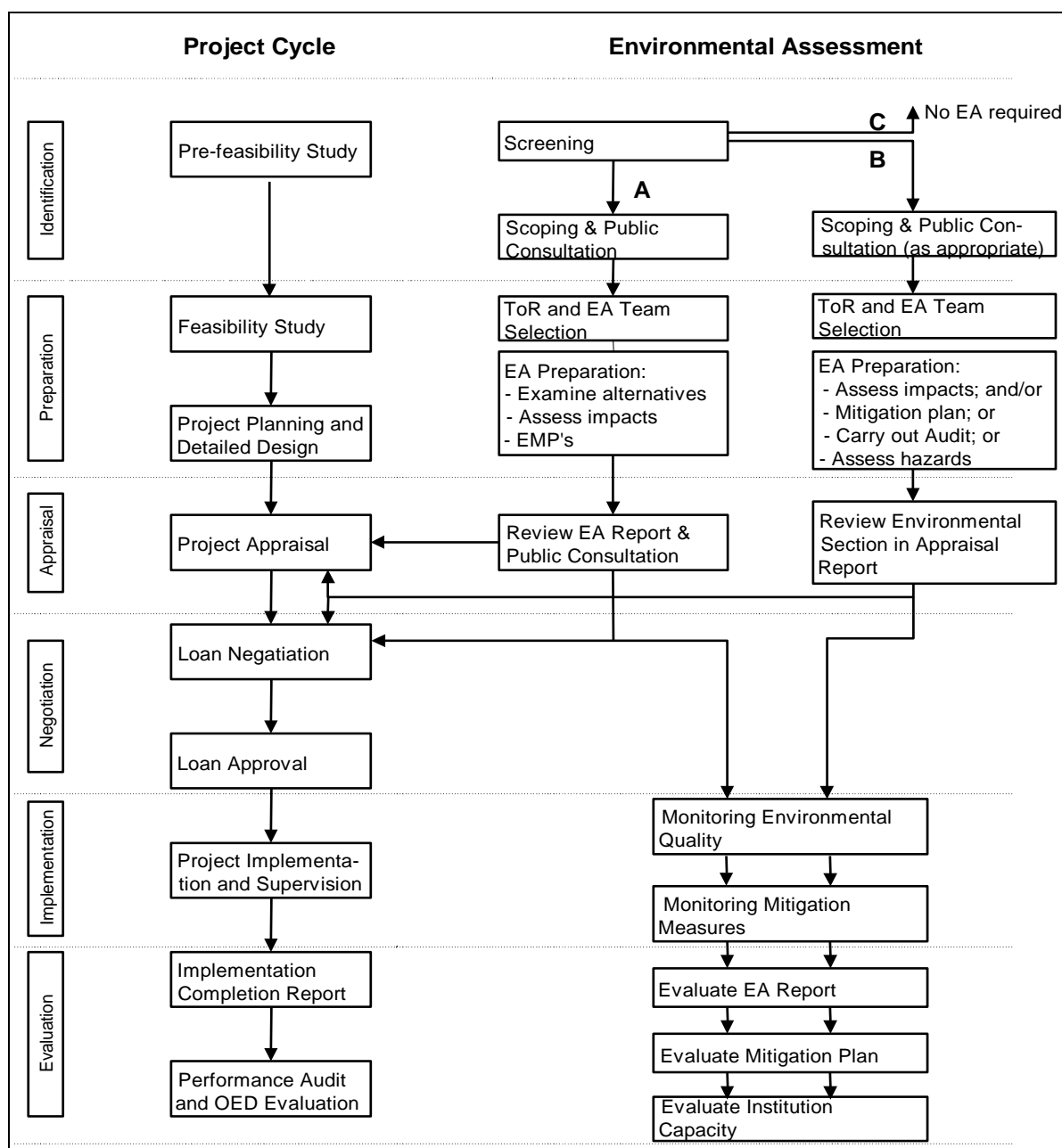


Figure 1. Environmental Assessment and the World Bank project cycle

The Comparison of National and World Bank Environment Assessment Requirements

53. *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.

54. *Differences in screening categories.* In Uzbekistan the EIA systems are based on the SEE developed in Soviet times. SEE is regulated by Law (No 73-II.25.05.2000) on Ecological Expertise and by Decree of the Cabinet of Ministers (No 491.31.12.2001) on approval of the Regulation of the State Environmental Expertise. The Regulation stipulates 4 categories for

development: Category I (High Risk), Category II (Middle Risk), Category III (Low Risk), and Category IV (Local Impact). 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.

55. *Differences concerning EMP.* While the national legislation requires for all projects with potential environmental impacts relevant mitigation measures, it doesn't require a special EMP which should specify, along with the proposed mitigation activities a monitoring plan and reporting requirements, institutional arrangements for EMPs implementation as well as doesn't require needed capacity building activities and necessary expenses in this regard. However, for sub-projects that are financed under the Credit component, EMPs will be required to be prepared by the borrower to comply with World Bank requirements. The ESMF includes finances for training PFIs and credit borrowers on preparation of EMPs.

56. *Differences concerning reviewing and approval of EA studies.* As mentioned above, the national EA reviewing process relates to the SEE, while according the World Bank requirements is a part of the whole EA process. The SEE seeks to examine the compliance of proposed activities and projects with the requirements of environmental legislation. The mentioned laws stipulate the mandatory cross-sectoral nature of SEE, which shall be scientifically justified, comprehensive, and objective and which shall lead to conclusions in accordance with the law. SEE precedes decision-making about activities that may have a negative impact on the environment. Financing of programs and projects is allowed only after a positive SEE finding, or conclusion, has been issued. In compliance with World Bank policy, all EAs for sub-project financed under the Access to Credit component will go through the more stringent review and approval process of the World Bank, as outlined in Annex 2.

57. *Differences with regard to disclosure and public consultation.* Conducted analysis shows there is no harmonization between World Bank and national requirements in this regard. According to national legislation, the EA disclosure and public consultation is mandatory only for category I and II. At the same time, according to the SEE law the public environmental review can be carried out on the initiative of NGOs and citizens in any field and for all types of project categories, which needs to be environmentally justified. Public environmental review can be carried out regardless of the state ecological expertise. Conclusion of public environmental review has recommendatory nature. 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 RRA will review any documentation of the public consultation conducted in the preparation of any Uzbek EA documentation to determine if it is consistent with the World Bank requirements. If the Uzbek public consultation is satisfactory, there would be no further consultation requirement. However, if no public consultation was conducted or the RRA determines that the Uzbek 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 RRA as part of the Sub-project file. Uzbek language and/or local language versions of the EMP and the record of the public consultation should be placed at a public location near the project site and 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 RRA website.

58. Applicable Environmental Standards: Sub-projects requiring an EMP will include mitigating actions to assure compliance with environmental standards of performance. If both Uzbek and World Bank standards exist for a particular mitigating measure, the stricter of the two standards will apply. For example, if the environmental issue of concern is —noise and the World Bank noise standard is stricter than the Uzbek one, the mitigating measure selected should meet the stricter World Bank standard⁴.

III. ASSESSMENT OF POTENTIAL ENVIRONMENTAL IMPACTS

59. General Impacts: The sub-projects to be implemented under the Credit Line will generate a great number of both direct and indirect positive social and environmental 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 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. The social assessment report will be disclosed upon completion. The project will also participate in the Third Party Monitoring (TPM) and Grievance Redress Mechanism (GRM) set up by the World Bank for the agricultural portfolio in the country to focus on issues of child and forced adult labor. The TPM/ GRM will be funded by a separate TF. The potential negative environmental impacts of the proposed project are expected to derive from the Access to Credit component, and are expected to be small as was the case in RESP-I and II. The proposed works do not include any investment in new infrastructure that would allow increased water abstraction from main sources and/or discharges of waste waters.

60. It is realistic to expect that the effects of some project components will strengthen the sustainability of agriculture which combines technologies, policies, and activities aimed at integrating socioeconomic principles with environmental concerns so as to maintain or enhance horticulture production, reduce the risk of diminishing productivity, protect natural resources, develop the capacity to map pests and diseases and improve quality and food safety standards, all with a view to be economically viable, socially acceptable and technically feasible. Hence it could be safely concluded that in implementing this project, no significant negative impacts are expected. Below table summarizes the expected main benefits of the Project.

⁴World Bank Group environmental standards are found in the Environmental, Health and Safety Guidelines, updated in April 2007.

Table 3: Expected main beneficial impacts of the Project

Project intervention	Impact	Value
1. Agricultural Support Services		
Strengthening capacities of two research institutes	Improved planting materials, disease and pest identification and soils tests as well as facilitated labs	Positive
Mapping of pests and diseases	Identificated pests and diseases	Positive
Creating demonstration plots	Improved knowledge about new technologies of production of horticulture products	Positive
Strengthening the public-private institutions that facilitate agricultural input and output markets	Improved market information, learned successful policies from countries with advanced horticultural subsectors	Positive
Designing of guidelines and requirements of safety hazards and protecting consumers	Translated into Uzbek various international fruit and vegetable quality requirements and developed manuals of quality and packaging requirements for various products as well as developed good production, handling , and pesticide residue management practices	Positive
2. Access to Credit		
Finance such investments as new cultivar, seeds/seedlings, water-saving irrigation facilities (such as drip irrigation), cold storage and other cold chain facilities, and value added handling/processing equipment and facilities	Development of horticulture sector in Uzbekistan	Various impacts (see Table 4 and 5 below)
Capacity building program for Financial Institutions	Improved qualification on applicability of the new financial products in lending to agriculture, assessing the suitability and effectiveness of these new financial products, and on mitigation of the related risks	Positive
3. Project management and monitoring		
Design and supervision of construction, institutional strengthening, monitoring of Project impact	Increased sustainability of Project outputs	Positive

61. *Potential Benefits and Impacts – Agriculture support services:* The objective of this component is to bridge the knowledge and experience gap related to new production, storage, post-harvest handling (PHH), and marketing knowledge and experience in Uzbekistan. The component would support activities that would lead to improved farm economics, better quality of investment and marketing decisions, higher quality of produce, and subsequently would boost exports and rural employment. The component will comprise the following sub-components: (i) Strengthening capacities of research institutes, (ii) Strengthening the public-private institutions that facilitate agricultural input and output markets, (iii) Safety hazards and protecting consumers. The objective of this component is to bridge the knowledge and experience gap related to new production, storage, post-harvest handling (PHH), and marketing knowledge and experience in Uzbekistan. Taking into consideration abovementioned the proposed project activities would provide many environmental and social benefits such as improved farmer skills in land conservation and IPM practices.

62. *Potential Benefits and Impacts – Access to Credit:* The objective of this component is to enhance access to financial services for agribusinesses operating in Uzbekistan's horticulture sector, in particular towards enhanced competitiveness of the sector, improved quality and food safety standards, and establishment of market linkages. While generally the project will provide many environmental and social benefits, it may also cause some negative impacts. Expansion of

areas under horticulture and intensified horticulture practices could result in increased water use and use of inputs, including pesticides and chemical fertilizers. The project may also support import of alien varieties of fruits, nuts and vegetables, which could result in loss of native species biodiversity and introduction of new pests and diseases, which could be aggravated by climate change effects already being seen in Uzbekistan. Sub-projects anticipated for financing under the credit line if not adequately implemented, may cause some environmental impacts related to: (a) increased pollution of ground and surface waters due to soil erosion, use of fertilizers and pesticide, as well as the processing of agricultural products; (b) threats to human health and wildlife due to poor handling of fertilizers and pesticides; (c) increased siltation of water bodies due to soil erosion; (c) solid wastes during processing of agricultural products.

63. *Potential Benefits and Impacts: Agricultural Enterprises.* Potential benefits and impacts for several major enterprise groups presented in Tables 4 and 5 below. A rating for the potential impact, the residual impact and the risk is also provided. Good practice mitigation measures are described in the environmental management section below.

64. The major potential impacts associated with the agricultural enterprise categories include water and air quality deterioration, loss of biodiversity and impacts on biophysical resources, including vegetation cover losses and soil erosion. Most of the benefits presented in the table are socioeconomic. However, it is the biophysical resource base that supports much of the rural economic activity (e.g. soil, water, forests, and mineral resources).

Table 4. Potential Benefits and Impacts: Agricultural Enterprises

Broad Category	Benefits	Potential Impacts	Level of Significance of Impact
Horticulture/Agro-processing	Provision of secondary production to local farmers, thus providing a guaranteed market for farm produce and providing them with a steady income. Opportunities for export markets. Provision of jobs.	Water and soil pollution, safety and health, biophysical and cultural losses through location	Moderate
Construction of cold storage and other facilities	Improved storage and quality of products and better market opportunities	Soil erosion and pollution, land degradation, air pollution, noise pollution	Low to Moderate
Other agribusiness	Improvement of supply chain, resulting in stabilized markets and farm income. Improved production and stabilized incomes. Provision of jobs.		Low

65. As the rural economy grows, the onus will be on the Government of Uzbekistan to ensure that relevant environmental regulations are in place, maintained and enforced. The economic development of the rural areas must be sustainable, and the natural resources that provide the basis for this development must be protected and managed.

66. *Potential Benefits and Impacts: Farm Inputs:* These impacts apply to both small and medium scale farms. A summary of the benefits, potential impacts and their level of significance is given in Table 5.

Table 5. Summary of Benefits and Potential Environmental Impacts – Farm Inputs

Input	Benefits	Potential Impacts	Level of Significance of Impact
Seed	Production; increased farm income; improvement of rural economy; contribution towards national security	Water and soil contamination through chemical inputs	Low-moderate
Pedigree seed	Increased production; increased farm income; rural economy improved; contribution towards national food security	Biodiversity loss; chemical inputs	Moderate-high
Fertilizer and pesticides	Increased production; increased farm income; rural economy improved; contribution towards national food security	Water pollution, air pollution, human and animal health risks, and ecological disruption due to impacts on non-target organisms,	Moderate-high
Land preparation (tractor and machinery hire)	Increased production; increased farm income; rural economy improved; contribution towards national food security	Soil erosion	Moderate-high
Tractors	Reduces labor burden on farm family; improves farm efficiency; improves profits and rural economy	Soil compaction and erosion	Moderate-high
Other farm implements	Reduces labor burden on farm family; improves farm efficiency; improves profits and rural economy	None	None
Small equipment	Reduces labor burden on farm family	None	None
Primary processing equipment	Value added stays in rural areas leading to improved local economy through provision of jobs; improved farm income; reduction in transportation costs and fossil fuel consumption	Water pollution	Moderate

67. The major potential impacts associated with the potential agricultural inputs relate to water and soil quality, soil erosion, salinization and resource loss. Tractors and land preparation can promote erosion, particularly if tractors are too heavy and cause soil compaction, and if fields are ploughed (with or without the contour) and left for long periods before sowing. Where land is under some other use such as wetland, or forest cover on steep slopes, conversion to agricultural use poses a potential loss of biodiversity, habitat and species. As well, erosion risks may be increased, particularly on steep sites.

68. *Potential Benefits and Impacts: Pesticides:* Increasing pesticide applications can lead to pesticide residue (including heavy metals) build up in the soil. Pesticides and fertilizers can migrate to both surface waters and groundwater resulting in contamination of these two sources and leading to damaged aquatic ecosystems and threatened health to downstream users and the . possible development of pests resistant to pesticides and/or destruction of natural enemies of crop pests, both of which can lead to even greater use of pesticides. In assisting borrowers to manage pests that affect agriculture, the Bank supports a strategy that promotes the use of biological or environmental control methods and reduces reliance on synthetic chemical

pesticides. In Bank-financed projects, the borrower addresses pest management issues in the context of the project's environmental assessment.

69. Use of pesticides is a common practice in Uzbekistan, and hence it may occur under the HDP components that provide credits to small and medium size agribusinesses, whether it is financed by the project or not. However, the application of pesticides in the project areas is not expected to be significant, given the small size of the individual farmer land holdings and experiences drawn from the RESP I and II projects.

70. Current system of pest control and overall Governments policy in handling dangerous pesticides is reasonable, but its implementation is not sufficiently strong. After independence, there were still practices for using dangerous pesticides countrywide that were widely used during Soviet Union. However, Government has taken initiative to reduce application of hazardous agricultural chemicals and pesticides and develop sound environment to improve pest management in late 1990's.

71. *Potential Cumulative Impacts(Access to Credit Component)*: Assuming that all mitigation is carried out on all sub-projects for which financing is provided, there will still be residual effects, that when considered in total, could have an overall significant effect on the environment. The major environmental concerns, as described in sections above, are water pollution and soil erosion, and the consequences and secondary effects that erosion will cause.

72. Considering the small size of most sub-projects, it would be easy to dismiss the negative effects that each sub-project might have on the environment. For instance, it is anticipated that small farmers will request modest loans for the purchase of basic farm inputs of seed, fertilizers, fuel. Such a loan to a single farmer would present little environmental concern and a large number of such small loans spread throughout the total project area would have a relatively negligible effect. However, if by chance a large number of requests for loans originated from the same area, and more importantly from the same watershed, the cumulative effect of all of the small (negligible) effects could be significant.

73. Cumulative effect is important in spatial terms, as indicated above, and also over time. For instance, a loan for seed purchase in itself has no negative impact, and in fact, has much the opposite with an increased production and return to the farmer. However, the same loan provided for more than two years in a row could promote poor crop and land management and disrupt a relatively current good agricultural management system characterized by long rotations. By avoiding a crop rotation program the farmer can deplete the fertility and organic content of his soil and further promote soil erosion. Over time there would be a cumulative effect.

74. Farmers should not be denied loans on the basis of their location, but if patterns appear to show concentrations of loans (e.g. fertilizers) in one watershed, the RRA environmental specialist should alert the PFIs and local environmental authorities and the PIU office for special monitoring of the situation. If the cumulative effects have the potential to become severe, lending for the activity should be suspended.

75. Another example applied to small and medium enterprises is the application of loans for rehabilitation or for the start-up of new businesses. With agroprocessing and other agribusinesses, the environmental concerns usually focus on air emissions and effluent discharge. In the case of air emissions, there are usually standards in place that guide the

concentration of various emissions at the stack. Although each industrial activity may have emission controls within well established national standards, cumulatively, all of the enterprises in one region (e.g. in a small closed valley with poor air circulation) could significantly contribute to the deterioration of overall air quality, resulting in an impact on human health. Similarly for water quality, a number of enterprises releasing effluents into a water body could cumulatively affect the quality of the water in a significant manner even though each enterprise may be releasing very small amounts of effluent that meet set standards.

76. The other aspect of cumulative effects of the overall project is the accumulation of a large number of very small impacts over the full range of project-funded activities. That is, the cumulative impact of all of the small impacts as a result of a number of loans for agricultural machinery purchase, added to the cumulative impact of all of the small impacts from the non-farm enterprises. The overall cumulative impact could be significant. Since many of these activities can have an effect on water quality, the overall effect on water quality could be significant.

77. In a comprehensive examination of cumulative effects, an analysis would be made of all the various other activities taking place that have impacts, for instance, other programs that could be providing agricultural lines of credit; forestry programs that could be contributing to soil erosion; and in the same vein, road construction activities and other general construction that could add to the soil erosion problem. Although the HDP cannot be concerned about the effects of other projects, it is important to place the Project and the effects that it does have on the environment within the context of the overall development picture.

78. In order to prevent the risk of adverse cumulative environmental effects, a brief environmental analysis will be made of the portfolio every year by the RRA environmental specialist and reported to the relevant authorities in the Goskompiroda and the World Bank.

79. *Mitigation of Environmental Impacts:* For agricultural activities under Access to Credit component mitigation should not necessarily entail expensive inputs and much can be achieved towards the minimizing of residual impacts through applying efficient and safe farming techniques. The Rural Advisory Services sub-component of the Project will be in a position to advise farmers on the proper handling and application of pesticides and fertilizers, including application rates and timely application. As well, it can advise on effective cultivation techniques (including the size of tractors and the type of equipment to be engaged) that will reduce the threat of soil erosion and compacting. Irrigation schemes can be well planned in order to avoid the loss of productive land through salinization and waterlogging.

80. Adherence to water and air quality standards (Maximum Allowable Emissions) that are calculated for each enterprise will be monitored by local environmental agencies to ensure that water and air quality are protected.

81. Recommended mitigation measures for farm inputs and some categories of agrobusinesses are addressed in the following section on environmental management guidelines. Guidance and best practice for preparation of mitigation plans is attached at Annex 3.

82. To further ensure that environmental concerns are given proper consideration, the RRA environmental specialist will advise on environmental aspects of Access to Credit Component, as well as conduct overall project environmental monitoring. Similarly the RRA environmental

specialist will provide advice and monitoring to PFIs regarding environmental screening of small and medium credit applications.

83. *Environmental Risk:* Overall, the environmental risk is low to moderate, with due attention to the possibility of cumulative impacts. The project will benefit from the institutional capacity developed under RESP I and II which stressed awareness of safeguard policies. The project's information and advisory service activities will continue to promote the adoption of improved and environmentally sound technologies, provide training and advice on integrated pest management techniques as well as on improved use and handling of fertilizer and agro-chemicals.

84. The rural finance activities related to PFIs will deal with fairly small loans which are expected to be used for agricultural inputs and implements, equipment and trading activities with a minimal environmental impact. Members of PFIs involved in lending will also be provided with training on the potential environmental impact of sub-projects and on mitigation measures. Mid-size credits for agro-processors and other agribusinesses through qualifying PFIs will be required to include mitigating measures, if appropriate.

85. Compliance with the ESMF guidelines will be monitored by the RRA environmental specialist.

IV. ENVIRONMENTAL MANAGEMENT GUIDELINES

86. *General:* This ESMF includes specific management activities that will be followed for ensuring that any Category B type sub-project financed by HDP receives an appropriate environmental assessment (Category A subprojects will be not supported under the HDP). The responsibility for recognizing the environmental category of loan applications under Access to Credit component rests with the loan officers of the various lending institutions.

87. *Management:* The RRA will be responsible for overall Project implementation. It will hire a consultant with an environmental background to ensure implementation of the Project in compliance with the ESMF. The individual must be able to recognize an activity for which a sub-project or loan is being sought that may fall into Category A, B or C of the World Bank and ensure that the ESMF guidelines are followed. The same consultant will maintain a working relationship with the relevant officers in the Goskompriroda and the relevant environmental inspectorates. As well, this individual will have a working relationship with the PFIs and will provide assistance in cases where determining the category of a particular activity that has been proposed for financing may be in question.

88. *Mitigation:* Mitigation of any environmental effects from Rural Finance activities will be the responsibility of the activity proponent. However, it will also be the responsibility of the PFIs and the RRA to ensure that mitigation is carried out successfully for sub-projects of Category B and some sub-projects of Category C as it might be required. This responsibility will be reflected in an effective established monitoring system. Annex 3 (Tables 3.1, 3.2 and 3.3) provide suggestions for agricultural and non-agricultural rural activity good practices, which, if followed, will prevent many of the potential impacts from occurring.

89. Most mitigation for the various activities that have been suggested as likely candidates for financial support can be conducted through the application of sound practices. Often it is a choice of how an activity is conducted – between the right way and wrong way with little, if any, additional cost to the activity's proponent. However, often the proponent will not be aware of an approach that will minimize the environmental effects. The Agricultural Support Services component of the Project will have an important role to play in directing farmers and agribusinesses towards best practices in order to eliminate or reduce environmental impacts as these are related to the various farm inputs that would be sought through the credit program. For example, if a borrower has purchased a tractor, cultivating with the contour as opposed to against the contour will significantly reduce erosion.

90. A format for a mitigation plan is attached in Annex 2 (Form 1; Number 5)

91. *Monitoring:* Monitoring of all activities within the Access to Credit component of the Project will be the responsibility of the RRA. The environmental specialist of the RRA will follow an effective monitoring procedure.

92. With the potential of hundreds of small and medium loans it will not be feasible to monitor all of them on regular basis. The RRA environmental specialist will select a sampling of individual activities within categories of activities for regular monitoring purposes. A number of activities will be environmentally benign and as such will not require monitoring on a regular basis. Nevertheless, they should be examined on occasion to ensure that this EA did not

overlook any potential impacts. Rural enterprise activities should be monitored regularly on a random sample basis.

93. The RRA environmental specialist will develop a monitoring procedure and schedule. It will be important that for each category of activity that indicators upon which to base monitoring are identified. However, in reality it will be impossible to collect base line information for all Access to Credit component sub-loans, particularly since the Project is not site specific and investment applications can come from anywhere in the project territory. Indicators may be quantifiably measurable or they may be measured subjectively. Some indicators will require precise measurement, for instance in the case of the water quality indicator to measure the effects of effluent discharge from an agro-processing facility.

94. Once baselines have been established subsequent monitoring missions will measure against this baseline and provide an analysis of changes, if any.

95. From an environmental viewpoint, those groups of projects which have the potential for creating the most serious environmental problems should be given highest priority for sampling. A monitoring report will be prepared indicating monitoring results and a recommendation for actions to be taken, if necessary, to minimize, if not eliminate, any adverse environmental effects.

96. *Monitoring plan:* The following activities are required for Environmental Monitoring of Access to Credit component implementation:

- The RRA environmental specialist will review the quarterly activity reports submitted by the PFIs, and will conduct random sampling review of 10% of small and medium credit applications every 6 months to verify compliance with the EMP. Review of the credits selected for the random sampling will be based on the environmental screening sheet provided by the PFIs on each loan. The review should include a visit to the activity site, an interview with the applicant, and a consultation with the regional environmental authorities. In sub-projects selected for environmental monitoring, an environmental monitoring plan would be prepared by the RRA environmental specialist.
- Based on the credit activity reports, site visits, and information from local environmental authorities, the RRA environmental specialist will analyze environmental situation by province to determine whether purchases under HDP credit lines has increased, potentially creating cumulative impact. If this occurs, HDP may suspend lending.
- The RRA environmental specialist will review plans for training and advisory services to ensure that sustainable agricultural practices for farmers and agro-business personnel are included, and that environmental due diligence for PFI staff is addressed.

97. If monitoring is to be effective, the recommendations of the monitoring report must be acted upon by the RRA and the PFIs. This could include the removal of the category of activities from future loan considerations. The RRA environmental specialist will work in cooperation with the project M&E specialist to integrate monitoring of EMP implementation into the overall project M&E design.

98. *Environmental monitoring of long term issues:* The Goskompriroda and its local agents has the responsibility to monitor the long-term effects of activities that could have negative environmental impacts, including those of the project. This may include monitoring by its staff, or by specialists contracted to undertake specific monitoring duties. Typically this may include:

- Monitoring effluents from production units and factories, and monitoring the water body into which effluents discharge, to ensure no negative impacts;
- Monitoring air quality in and around mills to ensure compliance with air quality standards;
- Monitoring soil/water conditions in and around chemical and fuel storage depots and chemical mixing plants to ensure no negative impacts;
- Monitoring forestry and large scale farming operations to ensure the ecology is being maintained (run-off and erosion);
- Monitoring wet-lands or areas of scientific, natural or historic interest where they may be affected by the project.

99. Special environmental studies may also be called for in the event of sudden environmental change near to a sub-project activity. The frequency of monitoring and type of samples analyzed would be dependent on the nature of the pollutant.

V. ENVIRONMENTAL REVIEW PROCEDURES AND GUIDELINES FOR ACCESS TO CREDIT COMPONENT

100. *Overview:* The purpose of the project Environmental Guidelines is to assist the PFI loan officers, RRA staff, sub-borrowers as well as environmental specialists in determining the potential environmental impacts of 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, RRA and loan officers will use the sets of forms presented in the Annex 2 and the best practice examples presented in Annex 3, 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 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. agricultural extension staff, research officers, etc.) for more specific information and advices.

101. *Rules and Procedures for Credit Sub-projects Environmental Screening and Review:* Each sub-loan/lease proposal will undergo an environmental review procedure, as follows:

- Credit applicants: complete the form (Annex 2; Form 1) to identify possible environmental impacts of proposed activities, identify and agree to undertake mitigation measures if appropriate. The credit applicants are also 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. In all cases where an environmental assessment report or environmental monitoring plan are required, these are to be prepared by the credit applicants and, where relevant, submitted to the Goskompriroda (or its Agents), and the EIA report and monitoring plans are to be provided with the credit/grant application.
- PFIs: screening of applications including for environmental impacts, ensuring required permits have been obtained. Request RRA to carry out field site visits for on site environmental screening (specifically, for sub-projects classified as category B) to verify the environmental data provided by applicants, assist in identification of mitigation measures, and confirm that the environmental category is appropriate and that the EMP is adequate:
- RRA: monitor compliance with EMP; provide advice on specific issues that may arise including EA/EMP preparation assistance to category B projects through site visits; monitor for cumulative impacts; provide training on environmental due diligence to PFIs; provide training and information on sustainable agricultural practices via advisory services component

102. *Environmental screening for small and medium credit applications:* The Environmental Screening Checklist will be used for for small (upto US100,000 equivalent) and medium-size

credits (greater than US\$100,000 equivalent)⁵. Sample Environmental Screening Checklist form (Annex 2; Form 1) should be included in the credit application form. The loan officer of the PFI screens applications against the environmental checklist and assigns the environmental category (Annex 2; Form 2). Most small credits will likely fall under Category C, requiring no further action beyond screening. In case of questions regarding environmental impact or appropriate category, the PFI contacts the environmental specialist of the RRA for advice and assistance. If mitigation measures are needed, these are agreed with the applicant and reflected in the credit application. The results of the environmental screening are recorded on the application and maintained with the credit file.

103. It is expected that the majority of mid-size credit sub-projects will fall into category B. The PFI will screen each sub-project against the environmental checklist (Annex 1) to define the environmental category of the sub-project, review the proposed mitigation measures, and ascertain that all required permits have been obtained and are valid. For sub-projects classified as Environmental Category B, the PFI staff will visit the applicant and project site to ensure that all national requirements are met and conduct a simple EA and identify mitigation measures. If the PFI Loan Officer determines that further assessment or documentation is required to meet World Bank requirements, the RRA environmental specialist would be requested to conduct a field visit to the project site and advise on appropriate actions. The RRA specialist will complete the field visit checklist (Annex 2; Form 4). The applicant will reflect the checklist findings and recommended mitigation measures in the application package. When the RRA visit or initial screening reveals high or significant risks, the applicant will hire a consultant to prepare a full EIA and management plan. The cost of the EIA can be included in the credit amount retroactively, if the credit has already been approved. A final approval of the EA will be issued by the RRA (Annex 2; Form 3).

104. In cases when possible significant adverse impacts are discovered during the Field Site Visit, the Environmental Screening and Field Site Visit Checklists are submitted to the Goskompriroda, which issues a preliminary environmental statement listing potential environmental concerns and mitigation measures and determines whether state ecological expertise is required. If permits from the Goskompriroda are needed, these are to be obtained by the borrower and submitted to the PFI with the sub-project proposal. The credit application package must include guidelines and instructions to the borrower. The Goskompriroda shall issue environmental permits, if required. Only after the RRA receives official approval from Uzbek environmental authorities will the sub-project be considered eligible for an loan from the PFIs.

105. During the project implementation, the PFI should ensure that the environmental mitigation measures are implemented. In the case of non-compliance, the PFI (with assistance of RRA environmental specialist as needed) will investigate the nature and reason(s) for noncompliance, and a decision is taken about what is needed to bring a sub-project into compliance, or whether financing should be suspended.

106. *Sub-project Categories:* The following environmental categorization for potential types of sub-projects are presented as follows:

⁵ Based on experience with the on-going RESP II project, the average size of cold storage and agro-processing credits are USD150,000 and USD120,000 respectively, both activities of which are likely to be the main focus of the credit component of the HDP. For this reason, the threshold between small and medium size credits is tagged at USD100,000 for environmental screening and categorization purposes.

107. *Sub-projects assessed as Category A (high environmental risks).* The project will not finance any Category-A sub-projects.

108. 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 significant 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 significant 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.

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

110. *Sub-projects assessed as Category B, (moderate environmental risks)* may require Secondary Screening during appraisal, and are expected to require a basic EA and mitigation and monitoring arrangements. Annex 1 provides examples of Category A, B and C sub-projects. Based on the results of the screening, the environmental requirements would be one of the following: (a) simple Environmental Management Plan for projects with minor impacts that are typical for different agricultural and/or food processing activities; EMP Checklists - for small scale construction and reconstruction projects; (b) simple EA and EMP for Category B projects which are located in areas new natural habitats; and (c) regular EA and EMP, - for more complex projects. 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 6). The first two category B subprojects for each PFIs will be subject to prior review and then – post review by the World Bank.

Table 6 - Environmental Eligibility Checklist for the Existing Enterprise and Screening Criteria for the Proposed Project

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 Uzbek 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.

111. *Sub-projects assessed as Category C (sub-projects having no significant environmental issues) require no Secondary Screening.*

112. *Secondary Screening:* In the cases of more complex Category B subprojects, a Secondary Screening may be conducted to establish the veracity of the environmental data provided by the sub-project proponent. Secondary Screenings will be done at the request of the PFI as part of sub-project appraisal. The completed Secondary Screening form (Annex 2; Form 4 – Field Site Visit Checklist) will be entered in the project files. Secondary Screening during site inspection can be done by PFIs representatives and includes updating and physical verification of all data provided in the credit application:

- Confirm actions taken since submittal of the credit application;
- Environmental data provided by the applicant is correct;
- No potential environmental issues have been ignored;
- The environmental category classification is appropriate;
- Environmental management and monitoring plan is adequate;
- EIA report has been completed (where required);
- Statutory environmental permits have been received and are adequate;
- Stakeholder consultations are complete (Annex 5);
- Confirm that no land acquisition is to be financed, nor resettlement triggered.

113. In cases where Secondary Screening substantially modifies any of the above, the Environmental Screening Category and the Environmental Management Plan may need to be revised. The sub-project must not be financed by the PFI until the revisions have been accepted and checked by the RRA.

114. For Category B project the subborrower shall prepare an EMP. The TORs for the EIA and EMP is presented in Annex 6. For small scale construction and reconstruction activities the borrower may prepare an EMP Checklist, provided in the Annex 7.

115. *Rejection of sub-project:* If the sub-project is rejected on environmental grounds after an unsatisfactory site visit, an improved environmental proposal may be submitted by the proponent, and re-appraised as above. Re-appraisal should be restricted to one improved proposal, and the proponent should not expect to make multiple applications on the basis of continuous marginal improvements to the scheme. Re-appraisal should be at the discretion of the PFI, and consulted with the RRA. More detailed information is given in Annex 4.

116. *Environmental Monitoring:* If the credit application is accepted for funding, environmental monitoring will be required for Category B projects in compliance with the environmental management plan (EMP) agreed in the screening procedure. The extent of project monitoring will be dependent on the nature, scale and potential impact of the sub-project. Monitoring may require the services of environmental specialists or a company with laboratory and analytical facilities (for complex environmental problems) or inspection by the local government environmental officer. Environmental monitoring is the responsibility of the RRA.

117. *Reporting by the PFIs and the RRA:* Credit line PFIs are required to submit quarterly reports to the RRA on the credits financed using WB funds in accordance with uniform reporting formats as prescribed by the Project and agreed by the World Bank. That report would have a section on environment. The RRA will address in physical progress report section of the regular quarterly Financial Management Reports (FMRs) that are to be provided to the Bank.

118. The RRA will address environmental aspects of the financed sub-projects and the related documents (i.e., environmental management plans and mitigation measures) in its routine reporting to the World Bank and during the periodic supervision missions.

VI. INSTITUTIONAL ISSUES AND IMPLEMENTATION ARRANGEMENTS

119. The HDP AF will be managed and implemented by the Rural Restructuring Agency (RRA) which has already established office premises in the country's capital, with trained and professional staff that have experience implementing agriculture and rural development projects, including implementing environmental safeguards. The RRA has adequate capacity and sound track record under the previously implemented and on-going WB projects that ensures sufficient experience and capacity to effectively implement the HDP. It has hired an Environmental Specialist with the main goal of ensuring adequate implementation of ESMF requirements. The main responsibilities on implementing ESMF for all involved parties are briefly presented below.

120. *RRA Environmental Specialist (ES)*: The RRA will be in charge of overall implementation of HDP AF in compliance with the requirements of Environment and Social Management Framework. Respectively, the RRA Environmental Specialist will be responsible for coordination and reporting on the ESMF, advising project participants on potential environmental questions, coordination the overall environmental monitoring at project level, and integration of environmental safeguards issues in the curricular for the agricultural extension programme. The RRA ES will also be responsible in identifying training needs of the PFIs, ensuring that the PFIs are integrating environmental requirements into bidding documents. Similarly he will be responsible for organizing capacity building for regional PIUs ESs to be hired, providing them on the job training. He will be responsible for analyzing information on changes and impact of the project activities. The RRA ES will be in charge of overall coordination and reporting on the ESMF, compiling presented by PIUs ESs reports presented quarterly to the RRA. He also will undertake periodical field visits to the subproject sites, ensuring the PIUs ESs are qualitatively fulfilling their duties on environmental supervision and monitoring and on overall environmental compliance. Detailed TORs for the RRA ES are presented in Annex 8.

121. *Regional PIUs Environmental Specialists*. Considering the scaling up activities within the HDP, the RRA will hire additional Environmental Specialists in all participating oblasts, where regional PIUs will be established for all WB and other IFIs RRA will be implementing (including for Livestock Development Project which was recently approved by the Board). They will be responsible for assisting the PFIs in implementation of the Credit component of the project, including reviewing environmental EIA studies and/or environmental management plans, monitoring their implementation, advising and guiding PFIs on specific environmental issues and management options and ensuring that potential cumulative impacts are addressed. One of major area of their responsibility will be inspection of environmental compliance at worksites, ensuring the EMP provisions are fully implemented. The PIUs ESs will advise PFIs in terms of integrating environmental requirements into bidding documents, and analyzing contracts and their implementation in terms of environmental management and mitigation issues. ES will be responsible also for analyzing the environmental condition of the subprojects' area and identify main environmental parameters. On quarterly basis PIUs ESs will prepare short reports on implementing ESMF and site specific EMPs for supported sub-projects. They will also will identify the status of environmental compliance of subprojects implementation, and, when needed will undertake relevant measures and agree with the subproject beneficiaries on corrective measures and/or proposing to the PFIs and RRA canceling subproject financing. Detailed TORs for Regional PIUs ESs are presented in the Annex 9.

122. *Participating Financial Intermediaries.* The ESMF and subprojects EMPs implementation will remain under the direct responsibility of the PFIs and of sub borrowers, including responsibilities for supervision and monitoring of proposed activities and selected subprojects. Compliance with the ESMF and EMPs and monitoring of the impact during the construction phase will be undertaken by the PFIs and periodically by RRA and Regional PIUs Environmental Specialists as part of his contract supervisory duties. The PFIs will also play the major role in implementing ESMF 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. They will evaluate 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.

123. *Credit Line Investment Guidelines (Credit Manual) EA provisions.* This prepared for the initial project will be applied also for the AF and is providing not only the criteria for the selection of recipients of sub-loans, and for the eligible investments, terms and conditions of the sub-loan and other modalities and agreements of the Credit Line, but also the rules and procedures for subprojects EA that are in details provided in the ESMF. The subproject EMPs will be also integrated into the contracts for approved activities, both into specifications and bills of quantities and the Contractors will be required to include the cost in their financial bids and grant proposals.

124. *EA Institutional Capacities.* The RRA Environmental Assessment (EA) capacity and of the participating Financial Intermediaries (PFIs) are adequate, - based on the Bank supervision missions in 2016-2017, all subprojects have been subject to environmental screening and assessment and for Category B subprojects have been prepared Environmental Management Plans (EMPs), which overall are being implemented in satisfactory manner and there no outstanding environmental issues been identified. At the same time, further capacity building is required with regard to strengthening project environmental management and of capacity for subprojects environmental assessment as well as with regard to several particular for horticulture sector development issues, identified during the initial project implementation which are related to Integrated Pest Management, soil and water conservation, including filed demonstrations.

125. *Environmental management training programme:* A training program targeting the Regional PIUs/PFIs, farmers and other stakeholders will be implemented in the framework of the Project's institutional component. In particular, it is proposed the RRA ES and PIUs ESs should have training course on EA techniques and procedures. For that purpose it will be necessary to hire a consultant who might provide such training. In terms of the PFIs, who will be responsible for assisting the sub-borrowers in preparing environmental screening form and identifying potential sub-projects environmental issues, in approving EA reports and ensuring their implementation, each participating PFI will designate an officer responsible for environmental aspects, review and approvals, who will be trained on environmental issues to designated further environmental assessment responsibilities.

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.

123. *Training for local consultants working on developing subproject EA documents.* Considering the the existing discrepancies between of National EA legal framework and of the EA safeguards Policies, as well as identified deficiencies of the presented already within the initial HDP project EA studies, the project proposes a training course for them, targeted at harmonizing the national and WB rules and procedures, as well as on presenting the main requirements of the IFC Environmental, Health and Safety Guidelines, that should be applied while conducting subprojects EIAs and preparing the EMPs. This also will require hiring a Consulting Company which would implement these activities.

124. *Familiarization workshop on National and WB EA requirements for representatives from State Ecological Expertise.* As specified above there are still a series of discrepancies between National and WB EA rules and procedures and due to that during the initial project implementation was identified the consultants working on EIA studies have some difficulties in complying with them. Secondly, the National EA requirements are lacking few important aspects of the WB and, generally, of best international practices, especially in terms of EMP implementing arrangements, environmental supervision, monitoring and reporting. In this regard the project will support a consultant who will conduct a detailed comparative analysis and propose relevant measures to improve National EA regulatory framework and also will present his/her results at a workshop for State Ecological Expertise representatives.

125. *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 loan, 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. Among most important area for sub-borrowers training is Integrated Pest Management, as well as soil and water conservation. These topics will be included in the training program, providing also field applications in this regard.

126. *Sustainable Agricultural Extension:* Analysis shows that the current agricultural extension, within Project area is weak and needs strengthening particularly in terms of horticulture improvements. The project will include in the Project an agriculture extension component to be financed under the EU grant, which will enable farmers to gain the full benefit from the Project, i.e. dissemination of improved technologies, effective participation of local stakeholders during the design and construction works, improved skills and empowerment for decision making in integrated water management and environmental protection and

enhancement. In this regard the RRA Specialist will prepare necessary TORs and will make relevant proposals for integrating environmental safeguards issues in the Curricular for TA activities.

127. *Requested Budget for ESMF Implementation.* For the Credit component preparation stage, the funds to be spent for preparing sub projects Environmental Impact Assessments, obtaining of necessary permits and other relevant activities are the responsibilities of sub-borrowers. They will depend on the nature of project proposal, its complexity, scale, etc. At the construction and operation stages, the funds to be spent for installations and other activities to ensure mitigation measures against the environmental impacts from proposed activities is also the responsibility of sub-borrowers. These funds will depend on particular techniques and technologies used for implementing mitigation measures as well as on their scale, number, variety and other factors. At the same time, in order to ensure successful ESMF implementation, a series of capacity building activities are necessary for which the project has to provide adequate funding. Estimate budget for proposed capacity building activities and trainings is presented in the Table 7 below.

Table 7. Estimate budget for capacity building activities

Target Group	Purpose of Training	Number of Workshops/Activities	Costs of Workshop/Activity in USD	Remarks
A. Environment Management				
1. RRA staff, Regional PIU managers and credit lines officers and PFIs loan officers	To ensure that RRA and PFI loan officers are aware about safeguards issues and know how to recognize the impacts that various funded activities may have.	1 workshops (YR1)	10,000/workshop	
2. RRA Environmental Specialist and Regional PIU Credit Officers	To provide knowledge on the screening of the projects, EIA process and EIA review and basic knowledge on the national and safeguards regulatory framework	1 week training course (YR 1)	15,000/training course	
3. Representatives from State Ecological Expertise	National and WB EA requirements for ESIA and ESMP	1 day training course (YR 1) and one month local consultant	7,000	
4. Local EA Consultants	ESIA&ESMP Requirements per ESMF	2 days training course	10,000	
5. Sub-borrowers/project beneficiaries	Environmental awareness and a practical exercise to observe and learn about sustainable agricultural practices and best available techniques for main groups of subprojects (orchards; greenhouses; fridges; etc.)	3 workshops (YR1, YR2 and YR3)	5,000/workshop/15,000	
6. Sub-borrowers/farmers	To provide farmers with knowledge on water and soil conservation technologies	4/2 two-day regional workshops	5,000/workshop/20,000	

7. Loan Officers of PFIs	Training on use of environmental guidelines, how to identify sub projects that may fall into one of the Bank's environmental categories, and in which case will require a full and/or a partial EIA, and, to identify activities that may affect the environment and in organizing the subprojects EIAs	2 Training workshops (YR1 and YR3)	6,000/workshop/12,000	The first workshop will be done within the GEF Project
B. Pest Management				
8. RRA staff and PFI loan officers	To ensure that RRA, Regional PIUs credit officers and PFI loan officers are aware about environmental and health related concerns of pesticide, on promoting integrated pest management (IPM) and on EA requirements for subprojects involving IPM	2 Training workshops (YR1 and YR2)	14,000/workshop/28,000	
9. Sub-borrowers/project beneficiaries	Awareness and a practical exercise to observe and learn about integrated pest management practices and best available techniques for horticulture and safe use of pesticides as well as on EA rules and procedures for subprojects involving IPM	3 regional training workshops (YR1, YR2 and YR3)	6,000/workshop/18,000	
10. Farmers/farmer groups	Awareness of safe pesticide usage, storage, handling and transport procedures and environmental and health concerns which pesticides pose	6 regional two-day awareness workshops (YR1 and YR2)	5,000/workshop/30,000	
11. International consultant	Review and identification of integrated pest management best practice and approaches for key horticulture crops in Uzbekistan; moderation of the training and awareness workshops specified under line 9 and 10 above	6 workshops/trainings + 1 month fee (YR1 and YR2)	30,000/60,000	
Total			203,000	

VII. PEST MANAGEMENT

128. *Introduction.* This section of the ESMF deals with pest management and mineral fertilizer use under the project. 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 pest management framework in this regard is to encourage adoption of IPM approach and increase beneficiaries' awareness of pesticide-related hazards and good practices for safe pesticides use, handling and storage, as well as options for use of alternative non-chemical pest management approaches.

129. *Review of existing usage of pesticide and pest management practices in the country*⁶Traditionally in Uzbekistan, during last two decades and until recently, only small amounts of pesticides have been used on most crops including orchards, vineyards and vegetable field crops, due to a lack of financial resources and absence of a well-developed in-country pesticide system. Pesticide use was relatively high only for cotton and wheat. However, the last few years has seen increased pesticide use also for other crops. A few shops in the Fergana, Samarkand and Tashkent area now offer pesticides products along with Tashkent-based trading companies licensed to import pesticides.

130. There are between 20-30 different pesticide products generally available in stock in shops, including several highly toxic pesticides. Package size is usually 1 to 10 L or 1 to 10 kg. Smaller amounts (100 ml or 0.5 kg or less) are packed in unlabeled, or inappropriately labeled, flasks and plastic bags, respectively. For dosage and crop use, farmers rely on pesticide seller recommendations and very rarely the label information. The most recent pesticide registration brochure was from 2009 but was not readily available to salesmen and farmers. However, crop wise listings of pesticides, toxicity classification for bees, beneficial insects, and groundwater, as well as an active ingredient index, pesticide law and regulations, safety provisions, mixture calculations and first aid procedures are missing in the pesticide registration brochures.

131. For most field and greenhouse vegetable crops, spraying is done by plastic hand-pump backpack sprayers. Applicators use minimal or no safety equipment, although safety equipment may be available. For orchards, the use of motorized backpack sprayers to propel the spray covering the entire tree is rare. Old tractor-pulled spray booms are used, but the exact calibration of pesticide dosage is not possible due to the lack of good nozzles and good quality replacement parts. Many plastic hand-pump backpack sprayers, even after two or three years, begin to leak at several points at and on the tank, boom and pump handle. Motorized backpack sprayers and tractor driven spray booms have similar leak problems. Despite using more pesticides than required, the leak poses a higher risk for the applicator as clothes are contaminated. Moreover, if clothes exposed to pesticides are not washed after spraying they constitute a permanent source of contamination. Therefore, appropriate personal protection equipment, as well as regular maintenance and proactive repair, are of utmost importance.

132. In terms of pest problems, farmers have difficulty understanding many pest problems, do not efficiently utilize common crop production techniques, and demonstrate deficiencies in recognizing and dealing with pests. They often choose the wrong application times and methods

⁶ The information in this section draws mainly from the USAID (2009) Pesticide Evaluation Report and Safer Use Action Plan (PERSUAP)

and are unfamiliar with threshold concepts. In all areas visited, spraying is timed by calendar and not by threshold determinations, favorable infection conditions and pest population development stages.

133. Overall knowledge about IPM is very limited throughout Uzbekistan with the exception of a few, high ranking staff in the crop protection institute, crop protection services and on some farms. Understanding of IPM rational is generally absent, not applied or lost at training, educational, management and farm levels. However, during the Soviet era there was wide use of beneficial insects produced by bio-laboratories for pest control which Uzbekistan maintained, mainly for cotton and wheat, and this bio-laboratory system could be widened. Orchard farmers occasionally try introducing beneficial insects for their crops, but most use insecticide sprays afterwards, killing any previously introduced pest predators or parasites. A history of massive use of highly toxic pesticides resulted in extensive damage to beneficial insects, again most seriously in major cotton and wheat growing areas. Numerous pest problems occurring in Uzbekistan are due to poor crop management practices. Therefore, addressing the interaction between crop and pest management is critical in making IPM relevant for farmers. A deeper understanding of farmers' management strategies is required to frame meaningful specific IPM recommendations.

134. Attachment 1 provides examples of IPM techniques used in the USA and Europe for the same or similar plant-pest systems that can be tried and integrated to current production systems in Uzbekistan, as well as expand pest control tactics beyond the current dominant role of pesticides. IPM measures are more efficient, if the general good agriculture practice is applied, but this is certainly not presently the case for many crops in Uzbekistan.

135. There is an overall lack of knowledge amongst farmers on the wise application of pesticides, the health and environmental problems associated with haphazard handling, storage and use of pesticides, and the benefits of IPM, training is critical for improving pest management in the country. Specific training should include: pesticide hazards for applicators, consumers, children, farm animals, and wildlife; importance of protective clothing and equipment, drift avoidance, and waiting periods; prohibition to re-use plastic pesticide bottles and other storage and transport packages that might be employed for human or animal consumption, and correct disposal of empty pesticide containers. Extension and dissemination of distribution of knowledge, practical skills and safety precautions is also a urgent need.

136. *Policy and Regulations on Pest Management:* Current system of pest control and overall Governments policy in handling dangerous pesticides is reasonable, but its implementation is not sufficiently strong. After independence, there were still practices for using dangerous pesticides countrywide that were widely used during Soviet Union. However, Government has taken initiative to reduce application of hazardous agricultural chemicals and pesticides and develop sound environment to improve pest management in late 1990's.

137. Cotton sub-sector project funded by World Bank was one of the initiators to start addressing this matter in Uzbekistan with involvement of international consultants and organizations, through the Integrated Pest Management Component of the Project. This component intent was to support an applied research program to develop the technology for strengthening and expanding the use of IPM techniques, which integrate biological, chemical and cultural practices for the horticulture sector. This included the proposed development of equipment for improved production and dispersal of beneficial insects and improved application of chemical pesticides. Additionally, the project provided production of training materials in IPM that was commonly used over the years among the agricultural producers and supported in

drafting of a Pesticide Law. However, the IPM/biocontrol related activities within the project were poorly implemented. A law was approved on August 31, 2000 (116-II) “About protection of agricultural plants from pests, disease and weed”, that clearly defines about regulation on pest management in the country, which took the grass root from a recommendations of an international consultant and was essentially an enabling law, which formed the framework for laws on pesticide use and plant protection in Uzbekistan.

138. In 1999 Government set up special commission for controlling use of pesticides and chemicals – named State Chemical Commission of RUz (Amendment was made to the structure of the organization in 2005) whose main role is to control through registration and banning chemicals and pesticides used in Uzbekistan. Commission comprises from various ministries and agencies, including State Committee for Nature Protection (responsible for assessing the effects of pesticides to the environmental, particularly soil, air and water), Republican Center for Epidemiology (responsible for assessing the effects of pesticides to the human and animal health), and number of research institutes under MAWR and scientific institutions (responsible for testing, screening and identifying the methods for use of pesticides and developing hand outs and manuals) and others.

139. On March 2004, in accordance with Presidential Decree (#148) Republican Center for plant protection and agrochemicals was established under Ministry of Agriculture and Water Resources of RUz, to enhance the quality of the services rendered for beneficiaries and improve safety use of agricultural pesticides. Currently this organization has branches in all the districts; however their activities are not well established due to the lack of material resources and generally weakness of the capacity of the organization.

140. Generally control on type of pesticides and chemicals are regulated by the above special commission, and Republican Center for Epidemiology produces various handbooks on safe use of pesticides and chemicals. Number of handbooks under Sanitary Rules and Normative (SanRAN) tag were developed;

Hygienic pesticides in surrounding area objects and consumption goods normative (SanRAN - 2001);

Sanitary rules and hygienic norms during application, storage and transportation of pesticides in agriculture of Uzbekistan (SanRAN – 2001);

Hygienic requirements’ for safety of agrochemicals (SanRAN - 2001);

141. Besides above handbooks and manuals, State Chemical Commission of RUz develop special, simple manuals for application and handling every registered pesticides that are distributed, and in most of the time it is seller (producer, importer) responsibility to produce such manuals.

142. The State Chemical Commission of RUz, annually produces book on pesticides registered in Uzbekistan and for which directions (types of plants and norms) should be applied is indicated. Any unregistered pesticides are forbidden to use and SCC is not responsible for misuse of registered pesticides. Besides this since the establishment of SCC there has been a list of banned for use pesticides and chemicals approved that are highly hazardous and prohibited for use by any individual or organization in the Country. Mainly SCC tries to follow international practices and requirements. Through Ministry of Health RUz, working group of SCC receives latest updates on hazardous technical grade active ingredients in pesticides (categorized into four

groups) released by World Health Organization; State Committee for Nature Protection assists the SCC to get updated on relevant international environmental treaties and agreements pesticides such as by Rotterdam and Stockholm conventions. Uzbekistan is not a member of these conventions yet but it is planned to become a member in near future. Necessary documentations have been prepared and are currently under review by highest level of the Government. Currently, SCC follows the regulations of the conventions.

143. Hazardous products include pesticides listed in Class I(a) and I(b) of the World Health Organization (WHO) *Classification of Pesticides by Hazard and Guidelines to Classification* (Geneva: WHO, 1994-95); materials listed in the UN *Consolidated List of Products Whose Consumption and/or Sale have been Banned, Withdrawn, Severely Restricted, or not Approved by Governments* (New York: UN, 1994); and other materials that are banned or severely restricted in the borrower country because of environmental or health hazards. A copy of the national pesticide registration list is appended below at Annex 11. List of banned and severely restricted pesticides is appended below at Annex 12.

144. *Principles of the Integrated Pest Management*⁷. 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 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. It provides a coordinated use of pest and environmental information to design and implement pest control methods that are economically, environmentally and socially sound. IPM promotes prevention over remediation and advocates integration of at least two or more strategies to achieve long-term solutions.

145. The World Bank refers to IPM as a mix of farmer-driven, ecologically based pest control practices that seek to reduce reliance on synthetic chemical pesticides. It involves (a) managing pests (keeping them below economically damaging levels) rather than seeking to eradicate them; (b) relying, to the extent possible, on non-chemical measures to keep pest populations low; and (c) selecting and applying pesticides, when they have to be used, in a way that minimizes adverse effects on beneficial organisms, humans, and the environment. In general, IPM combines the following measures: pest monitoring (eg., pest detection, pest population build-up monitoring to apply economic thresholds for pesticide application) and prediction based models (eg., degree-day calculations, software solutions), cultural methods (eg., resistant varieties, crop rotation, cultivation of alternate hosts, selection of planting sites, crop specific traps, adjusting the timing of planting or harvest, crop residue destruction or incorporation, pruning), mechanical methods (collection, hand weeding, barrier exclusion, trapping), physical methods (eg., heat, cold, humidity, traps, sound), and biological methods (eg., introduction of imported natural enemies and protection of indigenous natural pest enemies, dissemination and establishment of microbial control agents). IPM can also include the use of natural chemical methods (eg., attractants, repellents, sterilants and growth inhibitors), plant extracts (eg., neem oil extracts, pyrethrum

⁷ This section is based on the World Bank Group in the Environmental, Health, and Safety Guidelines prepared in 2007.

extracts from Chrysanthemum flowers), genetic methods (eg., release of sterile or genetically incompatible pests that disrupt natural mating), and regulatory means (eg., plant and animal quarantines, suppression and eradication programs). These measures must allow the safe integration of pesticides as the last control resort within farmers' traditional cropping and pest management systems. Pesticide resistance management strategies include minimizing pesticide use, shunning tank mixes, avoiding persistent chemicals, and using long-term rotations of pesticides. These should involve alternating among pesticide classes with different modes of action to delay or mitigate onset of the existing resistance by pests.

146. *Alternatives to Pesticide Application.* Where feasible, an effective IPM strategy will attempt to use alternatives to pesticides. This might include a range of biological, mechanical and physical, and cultural alternatives or approaches. It might also involve a more rational use of chemicals, when it is appropriate or as a last resort. Some possible considerations of alternatives to pesticide use are provided in Attachment 3

147. A more detailed list of potential pests and diseases of horticulture crops and currently available IPM approaches of control are provided in Attachment 1.

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

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

- Habitats required by many pollinators are being lost through ***changing land-use patterns*** such as increasing agricultural intensification. Pollinators require a range of resources from their environment for foraging, nesting, reproduction and shelter. The loss of any one of these requirements can cause pollinators to become locally extinct.
- Excessive use or inappropriate application of ***pesticides*** and other agro-chemicals is known to have negative impacts on a range of pollinators.
- ***Climate change*** may potentially be one of the most severe threats to pollinator biodiversity. Substantial distribution changes are predicted for groups such as butterflies.
- ***Invasive species*** are globally recognised to have major negative impacts across a wide range of taxa.

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

farming systems is very scarce, and the project will support improved knowledge networks that can promote the exchange of such information across regions and crops.

151. *Pesticide Application.* In the event the use of pesticides is warranted, as a last resort option, users are recommended to take the specific actions to ensure a more safe and sound application of pesticides, a more rational use of chemicals, as well as to reduce and control any potential negative impacts on health and safety, and damage to the environment. Examples of possible precautionary actions to ensure safe and sound application of pesticides are provided in Attachment 4.

152. *Pesticide Handling and Storage.* Contamination of soils, groundwater, or surface water resources, due to accidental spills during transfer, mixing, and storage of pesticides could be prevented by following the hazardous materials storage and handling recommendations (refer Attachment 4 for examples of best practice in handling and storage of pesticides).

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

154. Pesticide containers also pose an environment problem if they are not carefully disposed or cleaned. Some recommendations for disposal of pesticides and pesticide containers are provided in Attachment 4.

155. *Health and Safety.* By definition, pesticides are poisons, but the toxicity and hazards of different pesticide compounds vary greatly and might be different from organism to organism. Pesticide hazard depends not only on the toxicity, but also on the chance of exposure to toxic amounts of the pesticide. Pesticides can enter the body through oral ingestion, through skin, or through inhalation. There are a number of safety precautions that should be taken when manufacturing, transport, application, storage and handling of pesticides (refer Attachment 4).

156. *Typical hazards associated with chemical fertilizer use and remedial measures:* Similarly as in the case of the usage of pesticides, fertilizer usage may provide important benefits to horticulture development, but they also pose certain risks associated with accidental exposure of environment and of farmers during their inappropriate handling and usage. To ensure minimization of hazards associated with inappropriate handling, storage and usage of mineral fertilizers, a number of measures can be employed. The Table 8 provides information about typical hazard scenarios 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 8. Fertilizer Control Strategy

Likely Hazard Scenario	Recommended Control Strategy
Spillage	Ensure all storage areas and/or facilities are secure and appropriate. Ensure all fertilizer products can be contained within the storage area and/or facility selected Provide appropriate equipment and materials to clean up a spillage
Transportation and	Cover any loads of fertilizer products whilst in transit

delivery of goods	<p>Ensure that deliveries of fertilizer products are made at appropriate times</p> <p>Do not accept any containers of fertilizer products that are damaged and/or leaking.</p> <p>Ensure that any spillages that occur during delivery are cleaned up appropriately.</p>
Drift of dust from storage areas and/or facilities	<p>Keep fertilizer products covered and/or sealed</p> <p>Clean up spillages promptly</p> <p>Keep “in use” stocks to the minimum required</p> <p>Staff responsible for storage areas and/or facilities to will ensure that the drift of dust beyond the perimeter is kept to a minimum.</p>
Storage areas - Floors	<p>Keep floor surfaces swept clean of fertilizer to prevent tracking by people and/or vehicles beyond the perimeter.</p> <p>Sweep up and dispose of spillages in a timely and appropriate manner</p>
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	<p>Maintain an accurate storage manifest/register.</p> <p>Keep products and blends are segregated at all times.</p> <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 eg training records, risk assessments, maintenance schedules, recipes for fertilizer blends, MSDS's etc.

157. *Use of fertilizers and safety issues relating to its usage and handling:* 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.

158. *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.

159. Special provisions with regard to fertilizers storage is provided in Attachment 5.

160. Special provisions with regard to fertilizers field usage is provided in Attachment 5 as examples to reduce the environmental and health hazards on improper usage.

161. *Pest Management Plan (PMP).* A PMP should be prepared in all cases of significant direct purchasing and usage of pesticides or if significant pest management issues are anticipated in individual subprojects that are to be financed under the Access to Credit component of the project. Credit applicants will be required to complete a pest management screening checklist (Annex 2, Form 1 Section 3.1) along with the credit application. This screening checklist will require information on the (i) significance of the pest management issues to be addressed (ii) type, amount and anticipated extent of usage of pesticides; (iii) proposed storage, disposal and usage practices to be employed; and (iv) potential environmental impacts. Based on a scoring scheme that is defined in this document, a determination would be made if a full blown PMP would be needed. The content of the PMP 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 PMP 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. The PMP 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.

162. The PMP shall typically 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 PMP is presented in the Attachment 2.

163. *Reviewing and approving PMP.* As handling and usage of pesticides and other chemicals might cause harm to the environment and to the farmers' health, in the case of such types of subprojects the beneficiaries have to prepare a PMP that is attached to the subproject proposal, including the following information: (a) types of pesticides and fertilizers 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 the PMP will be reviewed by the PFIs and by the RRA Environment Specialist who will provide his approval. These documents are also subject to World Bank prior review for the first two such types of subprojects from the each PFI. Based on experience of the RESP II, it is anticipated that the use

of pesticides and pest management in terms of individual credits would not be significant and could be addressed through training, extension and technical support to improve farmer awareness on the safe application, storage and disposal of pesticides and the pest management through extension, training and demonstration in IPM approaches.

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

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

Table 9. Pest Management Operational Plan

Impact issue/pest and pesticide threat and risk	Desirable Mitigation Measures	Implementation tool	Expected result	Monitoring indicators	Responsibility/ Key implementing actors
Pollution of water resources and aquatic life	Control, manage and supervise pesticide use by farmers	Awareness of proper application and disposal of pesticides and oversight	Farmers trained in sound application and disposal methods	Number of farmers trained, Training records	RRA, Farmers Groups and Farmers
	Proper disposal of pesticide containers by resellers/farmers	Pesticide container collection and disposal plan/arrangements in place by farmers	Pesticide container disposal plan being implemented by farmer	Number of farmers/ resellers aware of pesticide container disposal needs	RRA, Farmers Groups and Farmers
Improper use of pesticides by farmers and farm workers	Educate farmers and farm workers on proper use of pesticides and	Pesticide hazards and use guide leaflet for the project (include simple pictorial	Proper use of pesticides by farmers and farm workers	Number of cases of pesticide poisoning occurring	RRA, Farmers Groups and Farmers

	pesticide use hazards	presentations)		under the project	
	Control and supervision of pesticide use on farms by farmers	Awareness of proper application and disposal of pesticides and oversight	Farmers trained in application and disposal of pesticides	Number of farmers trained, Training records	RRA, Farmers Groups and Farmers
Poisoning from improper disposal of pesticide containers	Educate farmers, farm workers and local communities on health hazards associated with use of pesticide containers	Pesticide hazards and use guide leaflet for the project	Farmers, farm workers, local communities educated on pesticide use	Number of cases of pesticide poisoning through use of pesticide containers; Number of farmers returning empty pesticide containers at collection points;	RRA, Farmers Groups and Farmers
	Properly dispose pesticide containers	Pesticide container disposal procedures known by farmers	Pesticide container cleaning and disposal being properly implemented	Number of farmers, resellers trained in proper cleaning of pesticide containers	RRA, Farmers Groups and Farmers
Impact on post harvest losses due to pests	Farmers have adequate and proper storage facilities	Post-harvest loss reduction based on IPM techniques under implementation	Post- harvest losses avoided or minimized Applied pesticides registered in conformity with IPM principles	Number of farmers trained in IPM techniques for post-harvest storage; Number and condition of storage facilities in use	RRA, Farmers Groups and Farmers
	Farmers monitor incidence of post- harvest pests	Post-harvest loss reduction plan based on IPM techniques in place		Number of cases of post-harvest pests	RRA, Farmers Groups and Farmers
	Confirm status and integrity of pesticides at storage gate	Inspection of pesticides at farm/storage gate prior to use on		Records of pesticides applied kept by farmers	RRA, Farmers Groups and Farmers

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

				hazard and use guide flyers;	
	Train farmers to properly dispose obsolete and unused pesticides	Obsolete and unused pesticide disposal arrangements made by farmer,	obsolete and unused pesticide disposal arrangements implemented	Relationship between pesticide supply and usage	RRA, Farmers Groups and Farmers
	Educate farmers to obtain or purchase quantities of pesticides required at a given time and to avoid long term storage of pesticides	Pesticide use farmer plan	Only pesticides needed are purchased; long term storage of pesticides by farmers avoided	Relationship between pesticide supply and usage	RRA, Farmers Groups and Farmers
	Farmers trained and aware of emergency response to pesticide accidents and poisoning	Framer emergency response plan in place	Pesticide accidents and emergencies managed under the project	Number of pesticide accidents and emergencies	RRA, Farmers Groups and Farmers

Potential IPM Options for Common Horticulture Species in Uzbekistan⁸

Horticulture Crop	Pest and Disease	IPM Options
Apricot, Peach, Plum and Cherry	<i>Quadraspidiotus (Diaspidiotus) perniciosus</i> (San Jose scale)	<ul style="list-style-type: none"> • Removing infested parts of plant • Cleaning bark of infestation • Biological controls using <i>Encarsia perniciosi</i> • Annual sprays of oil during dormant period • Application of insecticides with oil spray during dormant period
	<i>Parthenoiecanium corni</i> (European fruit scale)	<ul style="list-style-type: none"> • Parasitic wasps like <i>Coccophagus</i>, <i>Encyrtus</i> and <i>Mataphycus</i> spp. • Lady beetles and lacewing predators • Application of oil during dormant periods
	<i>Sphaerolecanium prunastri</i> (Plum scale)	<ul style="list-style-type: none"> • Lady beetles feed on scales • Tiny parasite wasps on soft scales • Insecticide soaps and oils fairly effective against crawlers • True dormant oils applied during dormancy
	<i>Pterochloroides persicae</i> (Brown peach aphid)	<ul style="list-style-type: none"> • Good sanitation, such as removing discarded infected plant materials • Eliminating weeds around plants as they serve as reservoirs for migrating or aat carried aphids • Physical control methods such as screens or barriers • Ladybird beetles, lacewings, flower flies and predator midgits and braconid wasps are biological agents to control aphids
	<i>Hyalopterus arundinis</i> (Mealy plum aphid)	<ul style="list-style-type: none"> • Biological predators such as ladybird beetles (especially multicolor Asiatic variety), green and brown lacewings, syrphid flies and soldier beetles • Biological controls combined with neem oil for organically grown apricots
	<i>Clasterosporium carpophilum</i> , <i>Stigmata carpophila</i> and <i>Wilssonmces carpophilus</i> (Shot hole disease)	<ul style="list-style-type: none"> • Good sanitation by removing infected tissue, infected buds and lesioned twigs • Reasonable water management where incidence of disease is low • Protection of buds during dormant period by a fungicide application before commencement of winter rains • Fungicide application in spring when infections are heavy
Apricot, Peach and Plum	<i>Carpocarpisa (Cydia) pomonella</i> (Codling moth, walnut worm)	<ul style="list-style-type: none"> • Remove infested host trees, props, picking bins and fruit piles from orchard • Hand thinning to remove infested fruit • Proper pruning and spray calibration to improve spray coverage • Cultural control in conjunction with mating disruption and sprays of approved oils and

⁸This list is based on knowledge of control measures used in USA and Europe and based on disease and pests found in Uzbekistan (USAID)

		insecticide spray
	<i>Laspeyresia (Grapholita) funebrana</i> (Plum moth, red plum maggot)	<ul style="list-style-type: none"> • Remove infected debris and fruits • Use pheromone traps during late spring and through summer • Use of selective insecticides such as insect growth regulators (e.g. on <i>Bacillusthuringiensis</i>)
Apricot	<i>Rhychites auratus ssp Ferghanensis</i> (Apricot weevil)	<ul style="list-style-type: none"> • Sound agricultural practices, such as fertilizing at right time and right dose, soil management and irrigation • Application of sticky material on trunk of young trees to trap crawling adults in May when the first adult feeding is observed • Apply stickem or tanglefoot over a special tape or painted areas of the trunk of young trees to prevent bark damage
	<i>Monilinia spp.</i> (Spur cranker, Brown rot)	<ul style="list-style-type: none"> • Removal and destruction of diseased plants • Provide good ventilation by pruning • Use furrow irrigation or low angle sprinklers to avoid wetting blossoms, foliage and fruit • Manuring and application of potassium • Control insects that serve as vectors and provide wounds for infection to occur
Peach	<i>Taphrine (Exoascus) deformans</i> (Peach leaf curl)	<ul style="list-style-type: none"> • Prune in fall prior to application of fungicides • Application of copper compounds in fall after leaf fall
Plum	<i>Exoascus (Taphrine) pruni</i> (Plum pockets)	<ul style="list-style-type: none"> • Removal of affected branches or affected trees • Fungicide sprays at leaf fall and before bud break in spring
	<i>Podosphaera tridactylia</i> (Powdery mildew)	<ul style="list-style-type: none"> • Widely space trees in open, sunny areas • Prune overlapping branches to improve sunlight penetration and air circulation • Prune affected shoots, remove infected young fruits • Limit irrigation and avoid over fertilization • Remove roses near orchard which can be source of inoculation • Preventive fungicide spraying at end of flowering and fruit set
Cherry	<i>Myzus cerasi</i> (Black cherry aphid)	<ul style="list-style-type: none"> • Banding tree bases with glue prevents ants that attend the aphids from climbing up trees • Limiting nitrogen fertilization and pruning twigs in spring • Application of insecticide sprays as soon as infestations occur. Insecticides applied to only 10% of leaves, shoots or fruits infested • Applying narrow range oils during dormant period
	<i>Rhynchites auratus</i> (Cherry weevil)	<ul style="list-style-type: none"> • Sound agricultural practices such as fertilizing at right time with right doses, soil management and irrigation • Application of 3 to 4 inch band of sticky

		materials on trunk of young trees
	<i>Mycosphaerella ceraselia</i> <i>aderhold</i> (Shot whole disease of sweet cherry)	<ul style="list-style-type: none"> • Destroy infected twigs, blossoms and fruit • Application of protectant fungicides • Apply copper based products after leaf fall
Grape	<i>Eriophyes (Colomerus) vitis</i> (Grape gall mite)	<ul style="list-style-type: none"> • Predatory mites and beetles as biological controls • Between rows maintain resident vegetation or ground cover • Use dormant season oils and insecticides as well as sulfur applications during disease season
	<i>Polychrosis (Lobesia)botrana</i> (Grape berry moth) AND <i>Clysia (Eupoecilia) ambiguella</i> (Grapevine moth))	<ul style="list-style-type: none"> • Use pheromone traps to detect lifecycle onset for potential chemical control • Keep phytosanitary conditions and remove potential refuge of old wood or non-proficient vine stocks • Cultural methods like pruning, leaf stripping, irrigation, earthing-up, weeding and especially harvesting date
	<i>Pseudococcus (planococcus)</i> <i>maritimus</i> (Grape mealy bugs)	<ul style="list-style-type: none"> • Cleaning equipment before use as mealy bugs are transported by equipment • Detecting and marking mealy bug infestations during harvest to monitor populations • Parasites and predators can keep the population down • Do not leave untreated areas in vineyard • Predators are parasite wasps and lady bird species • Tillage is helpful and spraying chlorpyrifos is helpful
	Aphid spp.	<ul style="list-style-type: none"> • Good production practices • Predators like ladybird beetle adults and larvae
	<i>Uncinula (Erysiphe) necator</i> (Powdery mildew)	<ul style="list-style-type: none"> • Canopy management and row orientation to increase direct sunlight and air flow • Prompt Fungicide treatment and early season controls and spraying through the season if inoculum is around • Basal leaf removal can improve coverage and efficacy of powdery mildew fungicides
	<i>Plasmopara viticola</i> (Downy mildew)	<ul style="list-style-type: none"> • Effective soil drainage and reduction of sources of over-wintering inoculum • Techniques to promote air circulation and minimize surface wetness • Pruning and trellising methods to reduce canopy density • Ploughing to bury oospores in leaf litter and avoidance of irrigating soil for long periods • Preventive fungicides application before infection period with spreader/sticker agent to prevent washing off with rain • Earlier copper spray application in fields with history of the disease
	<i>Glosoporum ampelophagum</i> (<i>Elsinose amphelina</i>) Grape	<ul style="list-style-type: none"> • Removal of primary sources of potential inoculum and protection of foliage during

	anthracnose	<p>active growth phase</p> <ul style="list-style-type: none"> • Removal of mummified fruits, clusters, tendrils and canes carrying canker • Use of nitrate of soda, lime or potash fertilizers about 3 weeks before bud burst promotes heavily vine development • Removal of diseased wood and shoots • Ploughing of vineyard in spring to turn all diseased bearing leaves and mummified fruits • Managed spraying of pesticides, with one dormant bud spray early in spring before bud burst • A combination of alternate application of effective fungicides for better management of disease
	<i>Botrytis cinerea</i> (Botrytis bunch rot)	<ul style="list-style-type: none"> • Using a combination of cultural methods, resistant varieties and appropriate chemical control can control the disease • Canopy management and leaf removal • When disease is severe, remove basal leaves or basal lateral shoots immediately after berry set
	<i>Aspegillus</i> and <i>Penicillium</i> spp. (Mycotoxins)	<p>Reduction of source of mycotoxins contamination which are produced by these fungi which occur via soil contamination, injuries and warm and humid conditions, as well as during drying and storage. The following are measures to control mycotoxin contamination;</p> <ul style="list-style-type: none"> • Avoid soils of too fertile regions, with high crops and tight bunches and big berries that increase risk of breaking of skin of grape • Favor grape establishment in fences in well aerated areas • Draw up plots of land with adequate plant disposition and trellising to facilitate planting operations and ensure good pest and disease control • Choose clones or biotypes within a variety that is better adapted to climatic and soil conditions in specific cultivation area • Lay out heterogeneous plots of land (Varieties, clones) to facilitate growing operations and obtain uniform ripening of grape • Excessive leaf removal to increase exposure of clusters • Avoid injuries on berries • Ensure hygiene of containers used for berry harvest or drying of grapes • Place drying grapes in one layer and avoid stacking • Favor uniform drying of all parts of grape bunch
Pomegranate	<i>Euzophera punicaeella</i> (Pomegranate moth)	<ul style="list-style-type: none"> • In case of first generation, weed control to eliminate eggs that are laid amongst weeds

		<ul style="list-style-type: none"> • Using <i>Bacillus thuringiensis</i> insecticide for second generation control • Simple traps to monitor onset of second generation
	Aphids	<ul style="list-style-type: none"> • Biological control effective with parasites (<i>Aphidiidae</i>) and lady beetles (<i>Coccinellidae</i>) to control spring, lady beetles and lacewings (<i>Chrysopidae</i>) mid to late season. Flies (<i>Syrphidae</i>, <i>Cecidomyiidae</i>) and other predators also contribute to control • Use of fungal pathogens of Aphids • Ensuring crops are vigorous
	Spider mites	<ul style="list-style-type: none"> • Adequate irrigation to reduce water stress • Avoid broad spectrum insecticides as they cause mite outbreaks • Sprays of water, insecticide oils or soaps are useful • Monitor before treatments
	<i>Pseudococcus comstocki</i> (Comstock mealybug)	<ul style="list-style-type: none"> • Management by conserving their natural enemies and reducing ant populations and dust problems • Conservation of native beneficial predators such as <i>Pseudaphycus malinus</i>, <i>Allotropa burrelli</i>, <i>A. convexifrons</i> and <i>Zarhopalus corvinus</i>.
	<i>Dialeurodes citri</i> (White flies)	<ul style="list-style-type: none"> • Biocontrols are usually very effective such as <i>Encarsia</i> spp. and <i>Eretmocerus</i> spp. • Avoid nonselective insecticides for other pest and by controlling sugar-feeding ants
	<i>Sphaceloma punicae</i> (Pomegranate spot anthracnose)	<ul style="list-style-type: none"> • Good cultural practices and propose pre-harvest and postharvest fruit handling • Prune dead limbs and twigs where fungi sporulate • Prune low limbs to at least 60 cms off the ground to reduce humidity and improve air circulation within canopies • Dispose of dead wood and old fruit away from the trees before bloom • Prune and harvest only during dry conditions to minimize fruit contamination and injury • Keep fruits dry and cool after harvest • Avoid storage temperatures below 5°C to avoid chilling injuries to fruits •
Cucurbits (Water Melon Sweet melon and Cucumber)	<i>Epilachna chrysomelina</i> (<i>Henosepilachna elaterii</i>) (Melon ladybird beetle)	<ul style="list-style-type: none"> • Destroy crop residues after harvest to reduce over-wintering sites by tilling • Collect larvae and adults in small parcels as they are light colored and highly visible • Use wood ash and neem extract applications
	<i>Carpomya</i> (<i>Myiopardalis</i>) <i>pardalina</i> (Baluchistan melon fly)	<ul style="list-style-type: none"> • Larval predators of pest that are effective in controlling the fly are <i>Cataglyphis bicolor</i>, <i>C. megalocola</i> and <i>Pheidole pallidula</i> • Some cultural practices might reduce pest

		<p>disease (<i>C. paradalina</i> hide in shadowy places, down the side of leaves and at base of plant in hottest part of day) such as keep fruits exposed to sunshine and wind</p> <ul style="list-style-type: none"> • Keep fields open to wind and weed free • Bury fruit and fruit remains containing larvae and pupae up to depth of 1 meter and covered with lime before beginning of each following growing season
	<i>Aphis gossypii</i> (Aphids)	<ul style="list-style-type: none"> • Beneficial insects can control aphids • Spray leaves with soapy water, and then rinse with clear water • Spraying with insecticidal soaps, planting in aluminum foil covered beds and filling yellow pans with water to trap the aphids can sometimes be effective • Remove and bury the few severely infected plants as they appear in spring • Row covers applied at planting and removal at first bloom exclude the melon aphid • Silver reflective plastic mulches applied at planting can repel aphids • Preserve habitat for beneficial predators around field and keep dust down to encourage parasitism and predation • Do not over-fertilize with nitrogen as it encourages aphid infestations • Fields infested with melon aphids should be disked or plowed under as soon as harvest is over
	Cucurbits Whiteflies	<ul style="list-style-type: none"> • Natural biological controls or predators or parasitoids provide best long-term solution • Several wasps such as <i>Encarsia</i> and <i>Eretmocerus</i> genera effective in controlling whiteflies. • Whitefly nymphs preyed upon by bigeyed bugs, lacewing larvae and lady beetles. • Host-free periods, row covers, silver reflective mulches, non-infested transplants and good field sanitation are good control methods • Planting delays reduce the build up probability of whitefly populations on melons • Plant cucurbits at least one-half mile upwind from other key whitefly hosts like cotton. • Maintain good sanitation in winter/spring host plants and weeds • Remove weeds in and adjacent to crop field as well as crop residues • Proper management of irrigation and nitrogen can help
	<i>Sphaerotheca fuliginea</i> (Powdery mildew)	<ul style="list-style-type: none"> • Use plant resistant varieties • Follow good sanitation practices (crop rotation, removal of infected plant materials and alternative hosts, increased light

		<p>intensity, and application of water sprays in greenhouse) and control weeds.</p> <ul style="list-style-type: none"> • Monitor fields even those of resistant species • If multiple fungicide applications are needed to control powdery mildew, alternate materials with different modes of action
	<i>Fusarium oxysporum f.sp. cucumerinum</i> (Fusarium wilt of cucumber)	<ul style="list-style-type: none"> • Use of resistant cultivars • Planting fungicide treated seeds • Disinfecting all equipment used in cultivation and production • Destroying plants with early symptoms as well as prunings • Remove and burn crop residues after cultivation season • Raising the PH of soil to 7.5-8.2 reduces wilt • Applying fertilizers low in N and containing CaO • Chicken manure and mushroom compost reduce disease symptoms • Using fungal and bacterial antagonists might help control disease
	<i>Pseudomonas syringae pv. lachrymans</i> (Cucurbit angular leaf spot, bacterial leaf spot)	<ul style="list-style-type: none"> • Use of resistant cucurbit cultivars • Production of seed in arid areas under furrow irrigation helps minimize pathogen population in the seed • Best if grown in fields that have no cucurbits for at least 2 years • Cultivation of soil when dry reduces bacterial survival • Control night time humidity in greenhouses • Limit use of overhead irrigation • Pick fruits when vines are dry to prevent spread in the field • Biological control Pentapage (larvae of strain <i>P. syringae pv. syringae</i>) successfully used against <i>P. syringae pv. lachrymans</i> on cucumbers in the field.
	<i>Pseudoperonospora cubensis</i> (Cucumber downy mildew)	<ul style="list-style-type: none"> • Use of host-plant resistant, cultural practices to minimize leaf wetness and timely application of fungicides • Avoid overhead irrigation • Thin to reduce plant density and increase air movement • Time irrigation that they do not elongate dew periods • Altering plant dates to avoid periods of high disease pressure • Reduce relative humidity in green houses and provide adequate air movement • Apply chemical treatment when disease symptoms first occur and repeat if symptoms re-appear

	<i>Colletotrichum arbutum</i> (<i>lagonarium</i>) (Cucurbits anthracnose)	<ul style="list-style-type: none"> • Crop rotation, use of clean seed and inspection of transplants • Avoid sprinkler irrigation and keep tops of bed dry • Use fungicides (Chlorothalonil, Mancozeb) might be used on seedless watermelons or first sign of disease
	Cucumber mosaic virus	<ul style="list-style-type: none"> • Silver reflective plastic might be effective against aphids that carry the virus
Tomato	<i>Aculops lycopersici</i> (Tomato russet mite)	<ul style="list-style-type: none"> • Sulfur and Avermeetin treatment when damage symptoms begin to spread • Biological controls involving predatory phytoseid, stigmacid and tydeid mites
	<i>Trialeurodes vaporariorum</i> (Tomato whiteflies)	Same as for Cucurbits whiteflies
	<i>Heliothrips haemorrhoidalis</i> (Tomato fruit worm)	<p>Treatment will begin when eggs and small larvae are observed. Once inside the fruit spraying is not effective</p> <ul style="list-style-type: none"> • Biocontrol with <i>Trichogramma</i> spp. and other natural enemies effective in destroying eggs, so important to know the antagonistic potential within nursery or field • Deep ploughing, disking and other mechanical destruction methods, manipulation of sowing dates and use of trap crops can be used to kill pest • Host plant resistance another possible option • Sprays of <i>Bacillus thuringiensis</i> and Entrust formulation of spinosad used to control pest
	<i>Agrotis segetum</i> (Cutworms)	<ul style="list-style-type: none"> • Destroy plant residues before planting, especially when tomato follows good host crop like alfalfa, beans and other leguminous cover crops • Control host plant material by herbicides • Reseeding affected area of field rather than treating the whole field more economical • Avoid planting in fields with a known history of cutworm problems • Use shallow tillage to keep down late autumn and early spring vegetation where possible • Use cutworm bait traps and follow by rescue treatments when cutworm populations exceed economic thresholds
	<i>Aphis gossypii</i> (Aphids)	Same of cucurbits aphids
	<i>Frankliniella occidentalis</i> and other species (Thrips)	<ul style="list-style-type: none"> • Disking weeds before they flower can lessen attraction of the field to thrips • Do not disk after weeds have flowered as thrips will move to crop plantings • Monitor populations by using yellow or blue sticky traps from sowing to flowering • Consider treatments only if population is causing serious damage to shoot tips, flowers or fruits as unnecessary treatment can cause spider mite buildup • Good weed management also reduces thrip

		<ul style="list-style-type: none"> population buildup Sprays of Entrust formulation of spinosad are used if treatment is needed
	<i>Meloidogyne spp.</i> (root knot nematodes)	<ul style="list-style-type: none"> Provide basic phytosanitary treatment such as cleansing plants with hot water treatment Application of nematicides in the field and frequent rotation with cereals or other graminaceous non-host crops Steam or fumigate glasshouse soils to eradicate pest Try to use resistant tomato varieties and rotation with resistant varieties and non-host crops Soil solarization
	<i>Clavibacter (Corynebacterium) michiganensis</i> (Bacterial canker)	<ul style="list-style-type: none"> Use of healthy seeds, seed treatment, appropriate cultural methods, hygiene and sanitation (disease primarily affects seeds) Deep ploughing to bury infected crop residue after harvest and crop rotation away from solanaceous crops for at least 2 years Production of tomato transplants in greenhouses planted in soilless medium in plastic trays Chemical spray with copper containing compounds under conditions of frequent rainfall and prolonged wet periods reduces foliar blight and fruit spotting Strict hygiene measures such as early detection, isolation and eradication of infected plants, destruction of crop residues, rinsing hands and gloves and pruning tool disinfection after working each row and disinfection of structures and equipment
	<i>Fulvia (Cladosporium) fulvum</i> (Tomato leaf mold)	<ul style="list-style-type: none"> Sanitation and seed treatment After harvest, carefully remove and burn all plant debris Soil sterilization by solar heating by polyethylene mulching, followed by covering soil again with plastic and planting seedlings through holes in the covers Avoid wetting of foliage when watering Adequate plant and row spacing to avoid excessive shading Good hygiene to remove affected foliage soon as seen and dispose of all affected plants at end of each season Leaf mold resistant varieties, but fungus mutates readily, so this is a temporary measure Fungicide sprays secondary to environmental control measures Once disease has spread spray with mancozeb Copper fungicides can be used, but hardens the foliage

	<i>Phytophthora infestans</i> (Late blight)	<ul style="list-style-type: none"> • Resistant varieties grown in late blight disease areas • Remove nearby volunteer tomato, potato plants and other night shades • Fungicides (Cymoxanil, Mancozeb) are generally needed only if the disease appears during time of year when rain likely • Disk tomato and potato fields in fall to eliminate a winter reservoir of the fungus • Use clean and certified seed • Initial protection against infection is crucial, hence use protectant fungicide before the disease appears • Remove sources of inoculum such as piles of unmarketable tomatoes or unharvested tomatoes
	<i>Verticillium spp</i> (Verticillium wilt)	<ul style="list-style-type: none"> • Use resistant cultivars • Sanitation, especially washing equipment to prevent movement of infected soil • Rotation with non-susceptible crops, such as small grains and corn • Treatment of soil and seed with preparation of <i>Trichoderma spp</i> and green manuring
	<i>Cyperus rotundus, Amaranthus retroflexus, Solanum nigrum, Xanthium strumarium, Abutilon theophrastii, Hibiscus trionum, Portulaca oleracea, Sorghum halepense, Convolvulus arvensis, Plantago major</i> (Weeds)	<ul style="list-style-type: none"> • Effective weed management including crop rotation, proper field preparation, sanitation and proper selection of herbicides • As irrigation water can be source of weeds, keep canals banks free of weeds • Avoid moving weed seeds into fields • Soil solarization can control soilborne diseases, nematodes and weed pests • Soil cap (10cm) over the seedline at planting can reduce first flush of weeds competing with crop seedlings. • Maintain deep furrows to keep the bed tops drier, less weeds are likely to germinate • Hand weeding is efficient method of weed control
Onion	<i>Agrotis segetum</i> (Cutworm, turnip moth)	Same as cutworms on tomatoes
	<i>Delia antiqua</i> (Onion fly or maggot)	<ul style="list-style-type: none"> • Avoid planting in soils that are high in undecomposed organic matter, such as fields just coming out of pasture or very weedy situations • Avoid planting successive rotations of onion crops • If serious infestations are expected, delay planting until the soil warms up in spring • When planting use a chain drag behind the drill to cover the seed row • Predatory flies and parasitic wasps act against the onion fly • Rotation with non host crops • Removal of all harvest remains and autumn plowing is beneficial • Use yellow sticky tape traps

		<ul style="list-style-type: none"> • Treatment for onion maggot is preventive and should be considered for fields that are high in organic matter or undecomposed matter • Insecticides used are Diazinon and Chlorpyrifos • Remove volunteer onions in spring and minimize cultivation damage to onions
	<i>Thrips tabaci</i> (Onion Thrips)	<ul style="list-style-type: none"> • Natural predators like predaceous mites, minute pirate bugs and lacewings feed on thrips. However, these natural predators are susceptible to insecticides • Do not plant onions near grain fields as thrip numbers build up in cereals in spring • Rainfall can suppress of thrip populations, but treatment of Spinosads often necessary
	Aphids	<ul style="list-style-type: none"> • Yellow sticky traps • Proper identification of aphid species is important as many aphid species are dispersing to wheat and alfalfa also • Several predators and parasitoids attack aphids on onions, but natural enemies rarely adequate to control high field populations in spring
	<i>Peronospora destructor</i> (Downy mildew)	<ul style="list-style-type: none"> • Use disease free bulbs, sets and seeds to reduce initial disease pressure • A 3-year rotation of Allium species in fields where disease has occurred is recommended • Destroy volunteer plants in and around field • Locate onion fields where there is good air movement to promote rapid drying of foliage • Red onion cultivars are resistant to downy mildew • Well-drained, not clay, soil and weed control are good measures of control • Seed plants in rows running in direction of prevailing wind to influence humidity • Spray with Chlorothalonil, mancozeb or copper based compounds at first sight of disease
	<i>Cyperus rotundus</i> , <i>Amaranthus retroflexus</i> , <i>Solanum nigrum</i> , <i>Xanthium strumarium</i> , <i>Abutilon theophrasti</i> , <i>Hibiscus trionum</i> , <i>Portulaca oleracea</i> , <i>Sorghum halepense</i> , <i>Convolvulus arvensis</i> , <i>Plantago major</i> , <i>Cynodon dactylon</i> , <i>Cuscuta campestris</i> (Weeds)	<ul style="list-style-type: none"> • Monitor fields and keep records of weed species that occur • Plant onion and garlic in the most weed free fields, avoiding fields with high infestations • Clean cultivated fields or plant a green manure crop to limit weed growth • Heavily infested fields plowed with moldboard plows to bury tubers deeply • Irrigate fields before planting to germinate weed seed and after cultivate crop after killing weeds • Cultivate shallow so that weed seed is not brought up from deeper layers • Reduce weed populations after cultivation of crop by hand weeding

		<ul style="list-style-type: none"> • Maintain deep furrows to help keep bed tops from becoming overly wet and maintaining adequate soil moisture for the crop
--	--	--

Recommended Approach for Preparation a Pest Management Plan by Applicant for Sub-Project Loan

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

Stage A: Additional Information Request

The applicant would provide the following information:

1. *Types and application of pesticides*

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

2. *Purpose and appropriateness of pesticides*

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

3. *Handling, storage and disposal of pesticides*

- (i) How will the pesticides be transported to the project site?
- (ii) Where will the pesticides be stored in the farm?

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

4. ***Environmental Aspects***

- (i) Are pesticide application areas near water bodies, wetlands or areas of known natural habitats?
- (ii) Are there know natural pollinators found in the vicinity of the application areas? If so what precautions would be used to ensure that non-target beneficial species are not harmed?

Stage B: Preparation of Pest Management Plan

Based on the information provided by the subproject loan applicant, the PFI Loan Officer (if necessary, in consultation with RRA 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 RRA 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 RRA 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.

**Alternatives to Pesticide Use
(Biological, Mechanical and Cultural Options)**

When feasible, an effective IPM strategy will consider the use of alternatives to pesticides. These might include a range of biological, mechanical and physical, and cultural alternatives or approaches. It might also involve a more rational use of chemicals, when it is appropriate or as a last resort. Some possible options are listed below:

- Assign crop-free (fallow) periods and rotate crops to reduce the presence of pests and weeds in the soil ecosystem;
- Use pest-resistant crop varieties;
- Diversify plant varieties or intercrop plants;
- Choose pest-free or pest-avoidance planting dates (e.g. early planting in rainy season avoids stems borers in cereals);
- Enhance/provide shade for shade-grown crops
- Improve soil health;
- Use an appropriate planting density;
- Remove or destroy diseased plants or plant parts and pests;
- 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 and install traps;
- 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;
- Fertilize and irrigate appropriately:
- Release or augment predators/ parasites
- 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.

Good Practices in Pesticide Application, Handling and Storage, Disposal and Health and Safety

1. ***Best Practices in Pesticide Application.*** The following are examples of some important precautionary measures in the application of pesticides:

- 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.

2. ***Best Practices in Pesticide Handling and Storage.*** The following are some best practices in the handling and storage of pesticides:

- 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;
- Store pesticides in a secure building or location, where access to non-authorized persons is controlled and secured, and in sites that are not exposed to flooding in the rainy season;
- Isolate storage areas from dwellings, to avoid fire, leakage and water contamination;
- 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;
- If no village storage facility is available, farmers may decide to keep pesticides on their farms for their own use. As far as possible, these chemicals should be stored in accordance to principles described above, keeping chemicals covered and dry, well ventilated, secure from children and animals, and isolated from the rest of the farm.

3. ***Best Practices in Pesticide Disposal.*** Some recommendations for disposal of pesticides and pesticide containers are as follows:

- Never reuse cleaned pesticide containers or left lying about as these could be a source of pollution and potential safety hazard;
- Cleaned containers should be disposed via local authority waste collection service or through a registered waste disposal contractor;
- Do not burn empty, even rinsed pesticide containers on the farm or dwelling premises;
- Use personal protective equipment while disposing excess pesticides;
- Triple rinse empty containers after emptying the chemicals;
- Store cleaned containers where they are protected from the rain until they can be recycled or disposed of properly.

4. ***Best Practices in Ensuring Health and Safety in Use of Pesticides.*** There are a number of safety precautions that should be taken when manufacturing, transport, application, storage and handling of pesticides. These include:

- Wearing recommended protective (long sleeved shirt and long pants, socks, shoes and gloves) clothing to reduce exposure or contact with the skin;
- Chemical resistant footwear and gloves;
- Use protective eyewear or glasses;
- Use approved protective respiratory equipment;
- Stay upwind during application of pesticides;
- Do not expose food to pesticides;
- When pouring pesticides, keep container below eye level to prevent exposure;
- Wash thoroughly with soap and water before eating or drinking if you have been exposed to pesticides.

Good Practices in the Storage and Application of Fertilizer in the Field

1. ***Good practice for fertilizer storage:*** The following are some key recommendations for the safe storage of fertilizers in the field:

- 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 be 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.

2. ***Good practices for field usage of fertilizers: Provisions with regard to fertilizers field usage is provided as follows:***

- Keep fertilizer amounts to a minimum and covered to avoid unnecessary exposure 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.

ESMF disclosure and consultation

For the initial project the RRA has disclosed and consulted the ESMF with all interested stakeholders. The draft summary of the ESMF was submitted to the Ministry of Agriculture and Water Resources and other relevant ministries for their review and comments. Also, the Executive Summary of the document in Russian was posted on websites of MAWR for its access to wide public on January 17th, 2014. On February 13, 2014, the RRA organized a consultation on Draft document. After the consultation, draft ESMF was revised to consider inputs from consulted parties. The final ESMF was posted on the website of the Ministry of Agriculture on February 14, 2014 and submitted to the World Bank Infoshop on March 10, 2014. The details on the public consultation are provided in the Annex 10. For the HDP AF the updated ESMF was posted by RRA on its website on September 27, 2017, for further virtual public consultation. Additionally the RRA has provided hard copies of the document to key stakeholders: involved regional state agencies, environmental and health authorities, environmental NGOs, scientific and/or design companies related to environmental protection on the participating oblasts. The public consultations have been organized in Navoi, Bukhara,

Sirdarya and Shurkhandarya cities on October 25-26, 2017, where the RRA representatives, presented the main findings of the ESMF with a focus on potential impacts, proposed mitigation and monitoring measures and implementing arrangements. One more important issue discussed at the meeting was the grievance mechanism in the case of environmental and social non-compliance. The document largely was accepted by the participants.

ENVIRONMENTAL CATEGORIES

Bank Category A (Uzbekistan Law Category 1): A Category A project is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works, can cause serious and irrevocable impact upon the environment or human health. The category A subprojects will be not financed under HDP.

Bank Category B (Uzbekistan Law Category II and some Category III⁹): A Category B project has potential adverse environmental impacts on human populations or environmentally important areas - including wetlands, forests, grasslands, and other natural habitats - which are less adverse than that of Category A projects. These impacts are site-specific; few if any of them are irreversible; and in most cases mitigatory measures can be designed more readily than for Category A projects. The scope of EIA for a Category B project may vary from project to project, but it is narrower than that of a Category A assessment. Like Category A, a Category B environmental assessment examines the projects potential negative and positive environmental impacts and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance.

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

Bank Category FI: A Category FI project involves investment of Bank funds through a financial intermediary (FI), in subprojects that may result in adverse environmental impact (also known as Category F). Sub-projects may be defined as Category A, B or C within the FI Category¹⁰. Category A sub-projects will not be eligible for financing under the project.

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

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

⁹ Small construction and reconstruction activities

¹⁰ As indicated above, Category A sub-projects would not be eligible for financing under HDP.

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

Category A Sub-Projects	Category B Sub-Projects	Category C Sub- Projects
<p><i>Agriculture (large scale)</i></p> <ul style="list-style-type: none"> - Agriculture, horticulture, vineyards and orchards (medium scale intensive operations >500 ha)¹¹ - Re-cultivation of resting land (greater than 1000 hectares); - Utilization of agricultural land (over 50 hectares) for non-agricultural (commercial or industrial) purposes <p><i>Food processing industries (large scale)</i></p> <ul style="list-style-type: none"> - Canning industry (annually processing over 20,000 tons of output). 	<p><i>Agriculture (medium scale)</i></p> <ul style="list-style-type: none"> - Agriculture, horticulture, vineyards and orchards (medium scale intensive operations 50 -500 ha)¹ - Re-cultivation of resting land (up to 1000 hectares); - Utilization of agricultural land (30 to 50 hectares) for non-agricultural commercial purposes - Utilization of virgin soils and unbroken expanses for intensive agriculture - Construction of buildings to store agriculture goods and agricultural products - Construction of warehouses for chemical pesticides and mineral fertilizers <p><i>Food processing industries (medium scale)</i></p> <ul style="list-style-type: none"> - Agro-processing factories, foods, beverages, seeds, fibers (medium scale -- >5000 tons/year of output) - Canning industry (annually processing 10,000 to 20,000 tons of output). - Construction of agricultural products process buildings, facilities and enterprises 	<p><i>Agriculture (small scale)</i></p> <ul style="list-style-type: none"> - Agriculture, horticulture, vineyards and orchards (small scale <50ha) - Construction of glass-houses or polytunnels - Utilization of agricultural land (20 to 30 hectares) for non-agricultural purposes - Acquisition of tractors and other farm equipment - Agrotourism <p><i>Food processing industries (small scale)</i></p> <ul style="list-style-type: none"> - Canning industry (processing <3000 tons/year of raw materials). - Collection of medicinal herbs - Construction of a roasting enterprise (sunflower etc) - Establishment of semi-finished food factories (capacity <1000 tons/year) - Production of non-alcoholic beverages

¹¹There is no specific requirements for EA of agricultural, horticultural or orchard and vineyard activities under the local Law, so the HDP will specify >50ha and less than 500 ha category B and <50ha as Category C.

ENVIRONMENTAL SCREENING CHECKLIST FORMS FOR ACCESS TO CREDIT COMPONENT

Environmental Screening Checklist forms shall be included in the credit application forms. This is a sample document that is recommended by the team of experts for use during the preparation of credit guideline and manual under Access to Credit Component.¹²

Part A

FORM 1 - ENVIRONMENTAL SCREENING CHECKLIST

(To be completed by credit applicant)

1. *Sub-project name:*

2. *Brief Description of Sub-project:*

2.1 *Nature of the activity:*

2.2 *Cost:*

2.3 *Physical characteristics (description of items to be financed):*

2.4 *Site area (# of hectares) and location:*

2.5 *Property ownership:*

2.6 *Existence of ongoing operations?*

(yes/no)

2.7 *Plans for Expansion?*

¹² Sections 1 and 2 of Form 1 may be taken from the general application form

2.8 New construction? _____

3. Which of the following inputs would be financed? Indicate with a check below which inputs or investments would be financed.

Farm Input	Financed by Credit Line	Agriculture Enterprise	Financed by Credit Line
Seed	Yes/No	Agro-processing	Yes/No
Pedigree seed	Yes/No	Market refurbishment or new market structure	Yes/No
Fertilizer and Pesticide	Yes/No	Agriculture equipment hire or purchase	Yes/No
Land preparation (tractor and machinery hire)	Yes/No	Irrigation and drip systems	Yes/No
Tractors	Yes/No	Other agribusiness	Yes/No
Other farm implements	Yes/No	Agrotourism, ecotourism	Yes/No
Small equipment	Yes/No		
Irrigation equipment and irrigation maintenance	Yes/No		
Primary processing equipment	Yes/No		

3.1 Will pesticides be either financed or used in the sub-project? If so define the level of usage and degree of training and knowledge available for the safe use, storage and handling of pesticides and potential reliance on integrated pest management below. (to be completed if pesticides are to be used or purchased under the project)

Input	Level of Knowledge/Impact
List of pesticides needed and quantities	Name _____ Quantity _____ Name _____ Quantity _____ Name _____ Quantity _____ Name _____ Quantity _____
Are farmers trained in handling pesticides	Yes _____ No _____
Is secure location for storing pesticides available on site	Yes _____ No _____
Is protective Clothing to be used (rubber boots, coveralls, gloves, masks, eye protection) during spraying and handling	Yes _____ No _____
Are farmer/farmer assistants familiar with first-aid procedures for pesticide poisoning	Yes _____ No _____
Are IPM measures being currently used or proposed for control of pest/diseases	Yes _____ No _____

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

Environmental Component	Construction Phase	Operational Phase	Mitigation Measures
-------------------------	--------------------	-------------------	---------------------

Terrestrial environment			
Soil Erosion: which horticulture crops are envisaged? Is the land located on the slopes and/or on the plain areas? Will the project involve ploughing/plant cultivation on the slopes?			
Soil pollution: Will the project apply pesticides? If yes which types and their amount?			
Land, habitats & ecosystems degradation: Is the area which is to be used currently a natural 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 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 be located in vicinity of protected areas, wetlands or other sensitive areas supporting important habitats of natural fauna and flora? Will it result in modification of natural habitats			
Construction: Will there be disturbance to the land and natural environment			
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? 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 horticulture projects)?			
Degradation of natural aquatic ecosystems – will the project involve discharges in water courses and reservoirs of solid wastes; pesticides;			
Socio-economic environment			
Social impacts – does the project involve the following: (a) occupational safety issues; (b) health hazards; (c) land acquisition; (d) loss of			

the access to sources of income; and (e) disturbance of residents living near the project area.			
Does the project require public consultation to consider local people environmental concerns and inputs?			

5. For the environmental impacts that were indicated above with a check, describe the mitigation measures that will be included during the construction (C) or operational (O) phase of sub-project or both (B).

Simple Environmental Mitigation Plan¹³

Environmental impact (What is to be mitigated)	Sub-project Phase (C, O or B)	How and where will it be mitigated	Responsibility and cost

6. A typical sub-project monitoring plan would be prepared to monitor the implementation of the EMP for the sub-project.

Environmental Monitoring Plan¹⁴

Project phase	What is to be monitored	How and where will it be monitored	Frequency of monitoring	Responsibility	Cost
Baseline					
Construction					
Operation					
De-commissioning					

¹³ A mitigation plan should identify feasible and cost-effective measures that may reduce potentially significant adverse environmental impacts to acceptable limits. The plan should include compensatory measures if mitigation measures are not feasible, cost-effective or sufficient. The EMP will (a) identify anticipated impacts; (b) describe (with technical details, each mitigation measure, including the type of impact which it relates and the conditions under which is required; (c) estimates any potential environmental impacts of these measures; and (d) provides linkage with any other mitigation plans required for the project.

¹⁴ The monitoring plan specifies the type of monitoring, with linkages to the impact assessed in the EA report and the mitigation measures described in the EMP. It will provide monitoring and reporting procedures, and furnish information on the progress and results of mitigation.

ENVIRONMENTAL SCREENING CHECKLIST¹⁵
(To be completed by PFI)

1. *Sub-project name:*

2. *Environmental Category (B or C), based on sub-project application form:*

(For Category B sub-projects, the PFI will refer the screening to the RRA)

3. *Environmental assessment required (for B sub-projects):* ☐ **Yes**/ ☐ **No**

4. *What environmental issues raised by the sub-project:*

5. *If an environmental assessment is required, what are the specific issues to be addressed?*

6. *What is the time frame and estimated cost of conducting the environmental assessment?*

7. *Date referred to RRA:* _____

Environment Checklist for Existing Enterprise Screening Criteria

<i>Criteria</i>	<i>Comments</i>
1. Does the existing enterprise have a valid operating permit, licenses, approvals etc.?	If no, either: All required licenses/permits/ approvals etc. will be obtained prior to project approval, or Project investment must provide key investments needed to obtain them.
2. Does the existing enterprise meet all Uzbek environmental regulations regarding air emissions, water discharges and solid waste management?	If no: Enterprise must take corrective measures to meet all environmental regulations prior to project approval, or Project investment must provide key investments needed to meet them
3. If the existing enterprise has any significant outstanding environmental fees, fines or penalties or	If the enterprise has outstanding liabilities the facility must agree to take corrective measures to

¹⁵ In review, the PFIs will also review and evaluate the Environment Checklist for Existing Enterprise Screening Criteria

any other environmental liabilities (e.g. pending legal proceedings involving environmental issues etc.) will the investment be used to correct this condition?	remove them prior to project approval.
4.If there have been any complaints raised by local affected groups or NGOs regarding conditions at the facility will the investment be used to remedy these complaints?	If yes: RRA should examine the nature of the complaints and actions taken to address them. If there are significant unresolved complaints, RRA should consult with WB regarding appropriate action
5.Will the project likely have significant, diverse environmental impacts that are sensitive, diverse, or unprecedented? Impacts may affect an area broader than the sites of facilities subject to physical works	If yes, assign “Category A” and do not fund
6.Will the project have potential adverse impacts on human populations or environmentally important areas-including wetlands, forests, grasslands, and other natural habitats-are less adverse than those of Category A. Are the impacts site specific, few if any irreversible andmitigating measures are readily developed	If yes, assign “Category B”
7.Will the project likely have minimal or no impact	If yes, assign “Category C”

Form 3

FINAL ENVIRONMENTAL ASSESSMENT AND MONITORING CHECKLIST
(to be completed by the PFIs (in consultation with RRA Environmental Specialist)
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 RRA 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: minutes of consultation

Project Officer:

Date:

Environmental Screener:

Date:

Form 4

FIELD VISIT CHECKLIST FOR CATEGORY B SUB-PROJECTS UNDER THE ACCESS TO CREDIT COMPONENT

(To be completed by PFI and/or by RRA Environmental Specialist)

Project Name:

Date/time of Visit:

District:

Visitors:

Location

- Obtain a site map or make a sketch
- Locate site on local map or indicate area (e.g. for grazing)

Current activity and site history

- Who is the site contact (name, position, contact information)?
- What is the area of the site to be used for project activities?
- What are current uses of the site?
- What were previous uses of the site (give dates if possible)?
- Will the project result in displace of people displace people or have people been displaced for the purpose of the subproject?

Environmental Situation

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

Pesticide Situation

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

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)?
- If the project involves the use of an existing dam, does the dam meet World Bank safety standards

- Will the scheme lead to increased water abstraction from the rivers?

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)

Biological environment

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

Visual Inspection Procedures

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

Recommended Mitigation Measures

- Confirm proposed mitigation measures or provide recommendations for satisfactory mitigation measures

ENVIRONMENTAL MITIGATION AND BEST PRACTICE FOR CATEGORY B SUB-PROJECTS UNDER THE ACCESS TO CREDIT COMPONENT

Most farming, orchards, and horticulture operations have the potential to harm the environment through the use of chemicals, and due to inappropriate land and water management. Credits for medium-scale agriculture activities (>50 ha) that use fertilizers, pesticides and other farm chemicals would be Environmental Category-B, and would require mitigation and monitoring plans.

Most processing facilities produce some form of pollution and need to treat their effluent, control dust and smoke, dispose of solid wastes, and limit noise pollution from the plant. They are also subject to health and safety laws, and require permits to operate. Most medium scale processing plants that are potential applicants for project funding would be Category-B.

Table 3.1: Some Agricultural Good Practices – Guidelines for a Protected Environment and Sustainable Agriculture (Farm Inputs)

Activity	Good Practices
Seed	<ul style="list-style-type: none"> - Selection of seed with lowest agro-chemical input requirements to achieve high yields - Selection of seed with minimal level of pest and disease vulnerability. rigorous sanitation facilities and procedures for imported seed - rigorous sanitation facilities and procedures for exported seed - Extension services provide advice on appropriate fertilizer and pesticide applications. Wherever possible, extension service to promote sustainable agricultural practices including IPM, minimum tillage, contour ploughing, crop rotations, and green manure.
Fertilizers	<ul style="list-style-type: none"> - selection of best fertilizers for crop and prevailing soil conditions - application levels as per recommended by manufacturer and extension service
Pesticides	<ul style="list-style-type: none"> - PFIs and RRA will screen applications for credits and grants to ensure that no pesticides are financed. - Training on environmental due diligence for PFI staff will include familiarization with the national pesticide registration list. - Training and advisory services on integrated pest management (IPM) and safe handling and use of agricultural chemicals will be provided to farmers and agribusiness personnel under the Rural Training and Advisory Services component
Tractors	<ul style="list-style-type: none"> - purchase of engine efficient tractors that provide highest ratio of power and work to fuel input - tractors with high efficiency emissions control - tractors no larger than necessary for the most extensive work anticipated
Farm implements	<ul style="list-style-type: none"> - implements suitable for minimal tillage
Land preparation	<ul style="list-style-type: none"> - contour ploughing, minimum tillage, grassed waterways, etc.
Small equipment	<ul style="list-style-type: none"> - energy efficient equipment
Irrigation equipment	<ul style="list-style-type: none"> - highest efficiency equipment - equipment that assists in the use of irrigation water in an efficient manner

Farm buildings for stock, machinery, and chemicals	<ul style="list-style-type: none"> - Location of buildings where least disturbance of resources required. - energy efficient building design including heating, ventilation - building design to minimize materials and use of environmentally friendly materials
Fencing materials	N/A
Primary processing equipment	<ul style="list-style-type: none"> - high efficiency equipment including low emission fuels (e.g. gas, solar)
Fuel, lubricants, spare parts and other operating requirements	<ul style="list-style-type: none"> - safe storage of fuels, lubricants and chemicals

Table 3.2: Some Good Practices for Rural Enterprises – Guidelines for a Protected Environment and Sustainable Rural Development (Agri-businesses)

Enterprise Category	Good Practices
Agro-processing	<ul style="list-style-type: none"> - not to be located in environmentally sensitive areas - effective effluent management system in place - effective disposal of solid wastes - safety features in place
Other agribusiness	<ul style="list-style-type: none"> - avoid use of sensitive water courses - avoid location on sensitive sites - effective waste disposal - safety precautions and systems during construction - control of effluents and emissions
Trade (wholesale and retail) – rural markets	<ul style="list-style-type: none"> - location of markets to take into account micro- environmental effects such as erosion and potential water contamination - market operations to be guided by a printed and displayed list of good practices including waste disposal and sanitary procedures
Ecotourism, agrotourism	<ul style="list-style-type: none"> - environmentally sensitive areas not disturbed - hygiene standards to meet national requirements - energy efficient heating and cooking - safe work environment. proper disposal of wastes preventing water contamination, disease and vermin

Table 3.3: Some Good Practices for Small Scale Infrastructure and Construction Activities

Activity	Parameter	Mitigation Measures Checklist
A. General Conditions	Worker Safety	<ul style="list-style-type: none"> The local construction and environment inspectors and communities have been notified of upcoming activities The public has been notified of the works through appropriate notification in the media and/or at publicly accessible sites (including the site of the works) All legally required permits have been acquired for construction and/or rehabilitation All work will be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment. Workers will comply with international good practice (always hardhats, as needed masks and safety glasses, harnesses and safety boots) Appropriate signposting of the sites will inform workers of key rules and regulations to follow
B. General Construction or Rehabilitation Activities	Air Quality	<ul style="list-style-type: none"> During interior demolition use debris-chutes above the first floor Keep demolition debris in controlled area and spray with water mist to reduce debris dust Suppress dust during pneumatic drilling/wall destruction by ongoing water spraying and/or installing dust screen enclosures at site Keep surrounding environment (side walks, roads) free of debris to minimize dust There will be no open burning of construction / waste material at the site There will be no excessive idling of construction vehicles at sites
	Noise	<ul style="list-style-type: none"> Construction noise will be limited to restricted times agreed to in the permit During operations the engine covers of generators, air compressors and other powered mechanical equipment should be closed, and equipment placed as far away from residential areas as possible
	Water Quality	<ul style="list-style-type: none"> The site will establish appropriate erosion and sediment control measures such as e.g. hay bales and / or silt fences to prevent sediment from moving off site and causing excessive turbidity in nearby streams and rivers.
	Waste Management	<ul style="list-style-type: none"> Waste collection and disposal pathways and sites will be identified for all major waste types expected from demolition and construction activities. Mineral construction and demolition wastes will be separated from general refuse, organic, liquid and chemical wastes by on-site sorting and stored in appropriate containers. Construction waste will be collected and disposed properly by licensed collectors The records of waste disposal will be maintained as proof for proper management as designed.

		<ul style="list-style-type: none"> Whenever feasible the contractor will reuse and recycle appropriate and viable materials (except asbestos)
C. Individual wastewater treatment system	Water Quality	<ul style="list-style-type: none"> The approach to handling sanitary wastes and wastewater from building sites (installation or reconstruction) must be approved by the local authorities Before being discharged into receiving waters, effluents from individual wastewater systems must be treated in order to meet the minimal quality criteria set out by national guidelines on effluent quality and wastewater treatment Monitoring of new wastewater systems (before/after) will be carried out
D. Historic building(s)	Cultural Heritage	<ul style="list-style-type: none"> If the building is a designated historic structure, very close to such a structure, or located in a designated historic district, notify and obtain approval/permits from local authorities and address all construction activities in line with local and national legislation Ensure that provisions are put in place so that artifacts or other possible “chance finds” encountered in excavation or construction are noted, officials contacted, and works activities delayed or modified to account for such finds.
E. Acquisition of land	Land Acquisition Plan/Framework	<ul style="list-style-type: none"> If expropriation of land was not expected and is required, or if loss of access to income of legal or illegal users of land was not expected but may occur, that the World Bank Task Team Leader is consulted. The approved Land Acquisition Plan/Framework (if required by the project) will be implemented
F. Toxic Materials	Asbestos management	<ul style="list-style-type: none"> If asbestos is located on the project site, mark clearly as hazardous material When possible the asbestos will be appropriately contained and sealed to minimize exposure The asbestos prior to removal (if removal is necessary) will be treated with a wetting agent to minimize asbestos dust Asbestos will be handled and disposed by skilled & experienced professionals If asbestos material is be stored temporarily, the wastes should be securely enclosed inside closed containments and marked appropriately The removed asbestos will not be reused
	Toxic / hazardous waste management	<ul style="list-style-type: none"> Temporarily storage on site of all hazardous or toxic substances will be in safe containers labeled with details of composition, properties and handling information The containers of hazardous substances should be placed in an leak-proof container to prevent spillage and leaching The wastes are transported by specially licensed carriers and disposed in a licensed facility. Paints with toxic ingredients or solvents or lead-based paints will not be used
G. Affects forests and/or protected areas	Protection	<ul style="list-style-type: none"> All recognized natural habitats and protected areas in the immediate vicinity of the activity will not be damaged or exploited, all staff will be strictly prohibited from hunting, foraging, logging or other damaging activities. For large trees in the vicinity of the activity, mark and cordon off

		<p>with a fence large trees and protect root system and avoid any damage to the trees</p> <ul style="list-style-type: none"> • Adjacent wetlands and streams will be protected, from construction site run-off, with appropriate erosion and sediment control features to include but not limited to hay bales, silt fences • There will be no unlicensed borrow pits, quarries or waste dumps in adjacent areas, especially not in protected areas.
H. Traffic and Pedestrian Safety	Direct or indirect hazards to public traffic and pedestrians by construction activity	<ul style="list-style-type: none"> • In compliance with national regulations the contractor will insure that the construction site is properly secured and construction related traffic regulated. This includes but is not limited to • Signposting, warning signs, barriers and traffic diversions: site will be clearly visible and the public warned of all potential hazards • Traffic management system and staff training, especially for site access and near-site heavy traffic. Provision of safe passages and crossings for pedestrians where construction traffic interferes. • Adjustment of working hours to local traffic patterns, e.g. avoiding major transport activities during rush hours or times of livestock movement • Active traffic management by trained and visible staff at the site, if required for safe and convenient passage for the public. • Ensuring safe and continuous access to office facilities, shops and residences during renovation activities, if the buildings stay open for the public.

ACCEPT/REJECT DECISION MAKING FOR SUB-PROJECTS UNDER THE ACCESS TO CREDIT COMPONENT

It is the responsibility of the PFI to accept or reject a sub-project proposal on the grounds of environmental issues. The PFI will consult with the RRA environmental specialist in this regard. Providing that the sub-project has been adequately screened into Bank Categories B or C and that adequate EMP is proposed to mitigate significant environmental issues and adequately monitor the results of Category B projects, there should be no reason to reject a sub-project on environmental grounds.

If the sub-project is rejected on environmental grounds after an unsatisfactory site visit the proponent, at the discretion of the PFI, may submit an improved environmental proposal. Re-appraisal should be restricted to one iteration, and the proponent should not expect to make multiple applications on the basis of continues marginal improvements to the scheme. Any further consideration of the sub-project should be at the discretion of the PFI.

In some instances, however, there may be a number of environmental issues associated with a sub-project, and cumulatively the issues could be more serious than any one individual issue would indicate. For example, a sub-project may have several issues that individual screening would put in Category B or C. Cumulatively, however, the environmental issues may be more serious, and the sub-project may need a more stringent EMP, be screened into a higher Environmental Category or be rejected out of hand.

The PFI may use a checklist to provide a score of magnitude of impacts to produce a cumulative index. The higher the index the higher the environmental risk of the sub-project. Using Table 4.1 as a guide and noting that each activity requires its own individual score – the cumulative score of impacts will provide the overall score for that sub-project.

Table 4.1: Guideline for screening cumulative environmental impacts

Activity Risk	Significance of Impacts	Examples	Score
None	There is no detectable impact of any kind as a result of the activity	A procurement project with no direct impacts	0
Low	Small changes, measurable, usually confined to a small area, mitigation is simple or not necessary	Market facilities: small social disruption. Small scale processing, small scale farming; creates minor pollution	1
Low-moderate without mitigation	Measurable losses, or ecosystem disruption; ecosystem able to cope without mitigation	Small-medium scale agro-processing,; potential to produce some minor pollution	2
Moderate with mitigation	Measurable losses, or ecosystem disruption; Proposed EMP is adequate but in the event it is not fully used, ecosystem would be disrupted	Medium scale agro-processing, , most category B sub-project activities with potential for pollution or disruption	3

High	<p>Substantial losses or ecosystem disruption: Ecosystem would probably still function at a lower level.</p> <p>EMP inadequate or difficult/costly to operate and maintain</p>	<p>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 or increasing abstraction of water from the river; hazardous materials in more than incidental quantities; and involuntary displacement of people and other significant social disturbances.</p>	5
------	--	---	---

The sub-project may comprise many activities, and the cumulative score of the activities would indicate to the PFI the overall risk of the sub-project.

- If cumulative score is 5 or less the screened Environmental Category B for individual activities is probably adequate.
- If cumulative score is >5 the appraised Environmental Category may be inadequate, and additional requirements may be placed on the sub-project.

The applicant may be required to:

- Describe in detail the impacts likely to be experienced.
- Determine practical and reasonable EMP to be followed.
- Describe EMP measures to be taken, and good practices to be followed, to address impacts
- Prepare a monitoring schedule

The PFI will be required to:

- Discuss with RRA or Government environmental agency for input and support
- Ensure EMP is incorporated into sub-loan agreement.

The RRA will be required to:

- Supervise EMP implementation.
- Monitor activity on a regular basis.

**STAKEHOLDER CONSULTATION FOR CATEGORY B MID-SIZE CREDITS UNDER
THE ACCESS TO CREDIT COMPONENT**

Consultation is essential in any circumstances where the sub-project will affect local communities or individuals that are not directly part of the sub-project.

The physical and social environment must not be changed to the detriment of local residents, and any changes must be with their agreement. Consultation will involve public participation of affected community members and NGOs. The sub-borrower must:

- Provide compensation to the community (replacement of public amenities etc);
- Fully consider cumulative impacts;
- Deal with political and social problems associated with development;
- Offer further consultation and participation with affected communities.

In the event of public consultation, minutes are to be recorded of the discussions and records maintained of any public objections to the sub-project, together with the mitigating measures proposed by the sub-project proponent. The sub-borrower must provide the PFI with a report (where appropriate) describing the consultation with residents and of their support or rejection of the development plans.

TERMS OF REFERENCE FOR AN ENVIRONMENTAL ASSESSMENT

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

The environmental assessment report should include the following elements:

- (a) *Executive Summary.* This summarizes the significant findings and recommended actions.
- (b) *Policy, legal and administrative framework.* This section summarizes the legal and regulatory framework that applies to environmental management in the jurisdiction where the study is done.
- (c) *Project Description.* Describes the nature and scope of the project and the geographic, ecological, temporal and socioeconomic context in which the project will be carried out. The description should identify social groups that will be effected, include a map of the project site, and identify any off-site or support facilities that will be required for the project.
- (d) *Baseline data.* Describe relevant physical, biological and social condition including any significant changes anticipated before the project begins. Data should be relevant to project design, location, operation or mitigation measures.
- (e) *Environmental impacts.* Describe the likely or expected positive and negative impacts in quantitative terms to the extent possible. Identify mitigation measures and estimate residual impacts after mitigation. Describe the limits of available data and uncertainties related to the estimation of impacts and the results of proposed mitigation.
- (f) *Analysis of Alternatives.* Systematically compare feasible alternatives to the proposed project location, design and operation including the "without project" alternative in terms of their relative impacts, costs and suitability to local conditions. For each of the alternatives quantify and compare the environmental impacts and costs relative to the proposed plan.
- (g) *Environmental Management Plan (EMP).* If significant impacts requiring mitigation are identified, the EMP defines the mitigation that will be done, identifies key monitoring indicators and any needs for institutional strengthening for effective mitigation and monitoring to be carried out.
- (h) *Appendices.* These should include:
 - (i) The list of EA preparers;
 - (ii) References used in study preparation;
 - (iii) A chronological record of interagency meetings and consultations with NGOs and effected constituents;
 - (iv) Tables reporting relevant data discussed in the main text, and;
 - (v) A list of associated reports such as resettlement plans or social assessments that were prepared for the project.

In addition, the Terms of reference should specify the composition and qualifications of the study team, the duration of the studies, the scope and nature of any primary data collection and field visits that will be required, and include a schedule of reporting and the nature and constituencies for consultations with stakeholders that are to be carried out.

ENVIRONMENTAL MANAGEMENT PLAN CHECKLIST
(for small scale construction and reconstruction activities)

PART 1: GENERAL PROJECT AND SITE INFORMATION

INSTITUTIONAL & ADMINISTRATIVE				
Country				
Project title				
Scope of project and activity				
Institutional arrangements (Name and contacts)	WB (Project Team Leader)	Project Management	Local Counterpart and/or Recipient	
Implementation arrangements (Name and contacts)	Safeguard Supervision	Local Counterpart Supervision	Local Inspectorate Supervision	Contactor
SITE DESCRIPTION				
Name of site				
Describe site location			Attachment 1: Site Map []Y [] N	
Who owns the land?				
Description of geographic, physical, biological, geological, hydrographic and socio-economic context				
Locations and distance for material sourcing, especially aggregates, water, stones?				
LEGISLATION				
Identify national & local legislation & permits that apply to project activity				
PUBLIC CONSULTATION				
Identify when / where the public consultation process took place				
INSTITUTIONAL CAPACITYBUILDING				
Will there be any capacity building?	[] N or []Y if Yes, Attachment 2 includes the capacity building program			

PART 2: SAFEGUARDS INFORMATION

ENVIRONMENTAL /SOCIAL SCREENING			
	Activity	Status	Triggered Actions
Will the site activity include/involve any of the following??	A. Building rehabilitation	<input type="checkbox"/> Yes <input type="checkbox"/> No	See Section A below
	B. Minor new construction	<input type="checkbox"/> Yes <input type="checkbox"/> No	See Section A below
	C. Individual wastewater treatment system	<input type="checkbox"/> Yes <input type="checkbox"/> No	See Section B below
	D. Historic building(s) and districts	<input type="checkbox"/> Yes <input type="checkbox"/> No ??	See Section C below
	E. Acquisition of land ¹⁶	<input type="checkbox"/> Yes <input type="checkbox"/> No	See Section D below
	F. Hazardous or toxic materials ¹⁷	<input type="checkbox"/> Yes <input type="checkbox"/> No	See Section E below
	G. Impacts on forests and/or protected areas	<input type="checkbox"/> Yes <input type="checkbox"/> No	See Section F below
	H. Handling / management of medical waste	<input type="checkbox"/> Yes <input type="checkbox"/> No	See Section G below
	I. Traffic and Pedestrian Safety	<input type="checkbox"/> Yes <input type="checkbox"/> No	See Section H below

¹⁶ Land acquisitions includes displacement of people, change of livelihood encroachment on private property this is to land that is purchased/transferred and affects people who are living and/or squatters and/or operate a business (kiosks) on land that is being acquired.

¹⁷ Toxic / hazardous material includes but is not limited to asbestos, toxic paints, noxious solvents, removal of lead paint, etc.

PART 3: MITIGATION MEASURES

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
0. General Conditions	Notification and Worker Safety	<ul style="list-style-type: none"> (a) The local construction and environment inspectorates and communities have been notified of upcoming activities (b) 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) (c) All legally required permits have been acquired for construction and/or rehabilitation (d) The Contractor formally agrees that all work will be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment. (e) Workers' PPE will comply with international good practice (always hardhats, as needed masks and safety glasses, harnesses and safety boots) (f) Appropriate signposting of the sites will inform workers of key rules and regulations to follow.
A. General Rehabilitation and /or Construction Activities	Air Quality	<ul style="list-style-type: none"> (a) During interior demolition debris-chutes shall be used above the first floor (b) Demolition debris shall be kept in controlled area and sprayed with water mist to reduce debris dust (c) During pneumatic drilling/wall destruction dust shall be suppressed by ongoing water spraying and/or installing dust screen enclosures at site (d) The surrounding environment (side walks, roads) shall be kept free of debris to minimize dust (e) There will be no open burning of construction / waste material at the site (f) There will be no excessive idling of construction vehicles at sites
	Noise	<ul style="list-style-type: none"> (a) Construction noise will be limited to restricted times agreed to in the permit (b) During operations the engine covers of generators, air compressors and other powered mechanical equipment shall be closed, and equipment placed as far away from residential areas as possible
	Water Quality	<ul style="list-style-type: none"> (a) The site will establish appropriate erosion and sediment control measures such as e.g. hay bales and / or silt fences to prevent sediment from moving off site and causing excessive turbidity in nearby streams and rivers.
	Waste management	<ul style="list-style-type: none"> (a) Waste collection and disposal pathways and sites will be identified for all major waste types expected from demolition and construction activities. (b) 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. (c) Construction waste will be collected and disposed properly by licensed collectors (d) The records of waste disposal will be maintained as proof for proper management as designed. (e) Whenever feasible the contractor will reuse and recycle appropriate and viable materials (except asbestos)
B. Individual wastewater treatment system	Water Quality	<ul style="list-style-type: none"> (a) The approach to handling sanitary wastes and wastewater from building sites (installation or reconstruction) must be approved by the local authorities (b) 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 (c) Monitoring of new wastewater systems (before/after) will be carried out (d) Construction vehicles and machinery will be washed only in designated areas where runoff will not pollute natural surface water bodies.
C. Historic building(s)	Cultural Heritage	<ul style="list-style-type: none"> (a) If the building is a designated historic structure, very close to such a structure, or located in a designated historic district, notification shall be made and approvals/permits be obtained from local authorities and all construction activities planned and carried out in line with local and national legislation. (b) It shall be ensured that provisions are put in place so that artifacts or other possible "chance finds" encountered in excavation or construction are noted and registered, responsible officials contacted, and works activities delayed or modified to account for such finds.

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
D. Acquisition of land	Land Acquisition Plan/Framework	<p>(a) If expropriation of land was not expected but is required, or if loss of access to income of legal or illegal users of land was not expected but may occur, that the Bank's Task Team Leader shall be immediately consulted.</p> <p>(b) The approved Land Acquisition Plan/Framework (if required by the project) will be implemented</p>
E. Toxic Materials	Asbestos management	<p>(a) If asbestos is located on the project site, it shall be marked clearly as hazardous material</p> <p>(b) When possible the asbestos will be appropriately contained and sealed to minimize exposure</p> <p>(c) The asbestos prior to removal (if removal is necessary) will be treated with a wetting agent to minimize asbestos dust</p> <p>(d) Asbestos will be handled and disposed by skilled & experienced professionals</p> <p>(e) If asbestos material is be stored temporarily, the wastes should be securely enclosed inside closed containments and marked appropriately. Security measures will be taken against unauthorized removal from the site.</p> <p>(f) The removed asbestos will not be reused</p>
	Toxic / hazardous waste management	<p>(a) 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>(b) The containers of hazardous substances shall be placed in an leak-proof container to prevent spillage and leaching</p> <p>(c) The wastes shall be transported by specially licensed carriers and disposed in a licensed facility.</p> <p>(d) Paints with toxic ingredients or solvents or lead-based paints will not be used</p>
F. Affected forests, wetlands and/or protected areas	Protection	<p>(a) All recognized natural habitats, wetlands 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>(b) A survey and an inventory shall be made of large trees in the vicinity of the construction activity, large trees shall be marked and cordoned off with fencing, their root system protected, and any damage to the trees avoided</p> <p>(c) Adjacent wetlands and streams shall be protected from construction site run-off with appropriate erosion and sediment control feature to include by not limited to hay bales and silt fences</p> <p>(d) There will be no unlicensed borrow pits, quarries or waste dumps in adjacent areas, especially not in protected areas.</p>
G. Disposal of medical waste	Infrastructure for medical waste management	<p>(a) 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> <ul style="list-style-type: none"> ▪ Special facilities for segregated healthcare waste (including soiled instruments "sharps", and human tissue or fluids) from other waste disposal; and ▪ Appropriate storage facilities for medical waste are in place; and ▪ If the activity includes facility-based treatment, appropriate disposal options are in place and operational
H Traffic and Pedestrian Safety	Direct or indirect hazards to public traffic and pedestrians by construction activities	<p>(b) 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> <ul style="list-style-type: none"> ▪ Signposting, warning signs, barriers and traffic diversions: site will be clearly visible and the public warned of all potential hazards ▪ Traffic management system and staff training, especially for site access and near-site heavy traffic. Provision of safe passages and crossings for pedestrians where construction traffic interferes. ▪ Adjustment of working hours to local traffic patterns, e.g. avoiding major transport activities during rush hours or times of livestock movement ▪ Active traffic management by trained and visible staff at the site, if required for safe and convenient passage for the public. ▪ Ensuring safe and continuous access to office facilities, shops and residences during renovation activities, if the buildings stay open for the public.

PART 4: MONITORING PLAN

Phase	What (Is the parameter to be monitored?)	Where (Is the parameter to be monitored?)	How (Is the parameter to be monitored?)	When (Define the frequency / or continuous?)	Why (Is the parameter being monitored?)	Cost (if not included in project budget)	Who (Is responsible for monitoring?)
During activity preparation							
During activity implementation							
During activity supervision							

Terms of Reference RRA Environmental Specialist

A) Responsibilities

The RRA will be in charge of overall implementation of HDP AF in compliance with the requirements of Environment and Social Management Framework. Respectively, the RRA Environmental Specialist will be responsible for coordination and reporting on the ESMF, advising project participants on potential environmental questions, coordination the overall environmental monitoring at project level, and integration of environmental safeguards issues in the curricular for the agricultural extension programme. The RRA ES will also be responsible in identifying training needs of the PFIs, ensuring that the PFIs are integrating environmental requirements into bidding documents. Similarly he will be responsible for organizing capacity building for regional PIUs ESs to be hired, providing them on the job training. He will be responsible for analyzing information on changes and impact of the project activities. The RRA ES will be in charge of overall coordination of reporting on the ESMF, compiling presented by PIUs ESs reports presented quarterly to the RRA. He also will undertake periodical field visits to the subproject sites, ensuring the PIUs ESs are qualitatively fulfilling their duties on environmental supervision and monitoring and on overall environmental compliance.

Detailed responsibilities of the Environmental specialist in relation to HDP AF are listed below (but not limited to this list):

Ensuring overall coordination of the EFM implementation;

Guiding the project staffs, Regional PIUs ESs and PFIs on environmental on requirements and provide them required information regarding environmental policies and standards;

Assessing capacity building needs and organizing necessary training and information dissemination activities; ;

Ensuring ESMF reporting on semiannual basis by compiling and reviewing quarterly environmental progress reports, presented by the PIU ESs.

Guiding the PIU ES in preparation of the sub-projects and bidding documents for the compliance to the environmental standards with identifying the weak aspects, related to the specifications and/or the type of goods/work;

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

Conduct assessment of subprojects cumulative impacts;

Undertake site visits to the subprojects and provide guidance to the PIU ESs in reviewing environmental compliance and ensuring EMPs implementation.

Actively participate in IDA supervision missions.

B) Reporting

The RRA ES will report directly to the RRA/MAWR. On quarterly basis ES will prepare and submit concise quarterly reports to the attention of the RRA on the most important issues related to the ESMF. The format of the report will be prepared by the ES and approved by the RRA/MAWR. Also, on semiannual basis, ES will prepare summary reports on ESMF implementation to be included in the progress reports to be submitted to the WB.

C) Qualifications and Experience

The Environmental Specialist should have:

- i) A university degree in the area of environment and nature protection, agriculture, industrial engineering and/or similar.
- ii) At least 5 years experience of working in the area of monitoring, environment and nature protection and/or similar.
- iii) Broad experience in monitoring environmental impacts, national environmental standards and requirements for nature, human health and general safeguard policies and standards.
- iv) Understanding of international environmental standards, including World Bank's safeguard policies and requirements.
- v) Experience in interacting with GOU, international agencies, national and local administrations.
- vi) Good written and communication skills. Knowledge of English is preferable.

Terms of Reference Regional PIU Environmental Specialist

A) Responsibilities

The PIU ES will be responsible for assisting the PFIs in implementation of the Credit component of the project, including reviewing environmental EIA studies and/or environmental management plans, monitoring their implementation, advising and guiding PFIs on specific environmental issues and management options and ensuring that potential cumulative impacts are addressed. One of major area of their responsibility will be inspection of environmental compliance at worksites, ensuring the EMP provisions are fully implemented. The PIUs ESs will advise PFIs in terms of integrating environmental requirements into bidding documents, and analyzing contracts and their implementation in terms of environmental management and mitigation issues. ES will be responsible also for analyzing the environmental condition of the subprojects' area and identify main environmental parameters. On quarterly basis PIUs ESs will prepare short reports on implementing ESMF and site specific EMPs for supported sub-projects. They will also will identify the status of environmental compliance of subprojects implementation, and, when needed will undertake relevant measures and agree with the subproject beneficiaries on corrective measures and/or proposing to the PFIs and RRA canceling subproject financing.

Detailed responsibilities of the Environmental specialist in relation to HDP AF are listed below (but not limited to this list):

Gathering and analyzing information related to environmental issues in the project area;

Guiding the subprojects beneficiaries in the areas of sub-projects requirements and provide them required information regarding environmental policies and standards;

Reviewing environmental standards of each-sub-projects with the aim to identify appliance of the project classification in respect with the ESMF requirements;

Monthly provide report to the PIU Manager on project progress and effectiveness of the taken measures and environmental parameters, identified for each sub-projects for the duration of the project and recommendation on the mitigation measures;

Guiding the PFIs and providing assistance in preparation of the subprojects, bidding documents for the compliance to the environmental standards with identifying the weak aspects, related to the specifications and/or the type of goods/work;

Conducting inspection of environmental compliance at worksites, ensuring the EMP provisions are fully implemented.

Act as the communication point between the regional authorities and organizations involved in the Environment and Nature Protection;

Conduct assessment of subproject cumulative impacts;

Preparing and submitting on quarterly basis progress reports on EFM and site specific EMPs implementation and on environmental compliance;

Undertaking, when needed in the case of environmental non-compliance, corrective measures and/or proposing to the PFIs and RRA proposals on canceling subproject financing.

Actively participate in IDA supervision missions.

B) Reporting

The ES will report directly to the Regional PIU Manager. ES will prepare and submit concise quarterly reports to the attention of the PIU Manager on the most important issues related to the EMPs implementation and environmental compliance. The format of the report will be prepared by the ES and approved by the Regional PIU Manager.

C) Qualifications and Experience

The Environmental Specialist should have:

- i) A university degree in the area of ecology, environment and nature protection, industrial engineering and/or similar.
- ii) At least 5 years experience of working in the area of environment and nature protection, agriculture, environmental engineering, and/or similar.
- iii) Broad experience in monitoring environmental impacts, national environmental standards and requirements for nature, human health and general safeguard policies and standards.
- iv) Understanding of international environmental standards, including World Bank's safeguard policies and requirements.
- v) Experience in interacting with GOU, international agencies, national and local administrations.
- vi) Good written and communication skills. Knowledge of English is preferable.

**UZBEKISTAN – HORTICULTURE DEVELOPMENT PROJECT AF
SUMMARY OF STAKEHOLDERS MEETING ON ESMF
October 25-26, 2017**

BACKGROUND INFORMATION

In response to the GOU request for additional financing under the HDP Project, WB Mission in the period of September 11-22, 2017 conducted a survey in the HDP Project areas to determine the potential need for the additional financing. WB Missions findings did confirm the need for an additional financing and it has been advised to include four new regions (Bukhara, Navoiy, Sirdarya and Surkhandarya), so the HDP Project area shall cover the whole territory of the Republic of Uzbekistan. Furthermore, it has been agreed to provide an additional financing in the amount of 500 mln. USD within HDP Project.

Therefore, the WB Mission recommended RRA to conduct a workshop/public consultations on social and environmental issues in the newly added regions. In accordance with the recommendations of the WB Mission, RRA did conduct a workshops/public consultations in the abovementioned regions. 227 stakeholders participated in the public consultations.

Screening sub-loans: It is expected that Access to Credit Component of the project will not have significant environmental impact to the environment. It was recommended by project preparation team to introduce screening mechanism to avoid any potential risks that could arise from financing various rural and farming activities. During the consultation, screening mechanism was discussed with the participants, where representatives of local commercial banks raised the matter that, proposed screening checklists might not be adequately completed due to its complexity for farmers. It was recommended to simplify the checklists. Coordinator for REFC informed that it is a local requirement for borrower to have project approved by State Committee for Nature Protection of RUz, should the project fall into the certain category indicated in the resolution of Cabinet of Ministers of RUz#491 dated 31.12.2001. For example, it is not a requirement for borrower to have environmental assessment undertaken neither screen the loan application should the borrower consider purchasing tractor or similar equipment. Hence, screening mechanism should be simplified but not completely eliminated.

Here is the brief summary of the provided workshops/public consultations.

SIRDARYA REGION (October 25, 2017)

Deputy Head of Sirdarya region's agriculture and water resources department Mr.Nematov opened the meeting with his introductory speech. Then, Mr. Nematov gave the floor Mr. Makhmudov - the Credit Line Specialist of RRA. Mr. Makhmudov's conducted presentation about the HDP Project's aims and objectives as well as WB requirements on social and environmental issues (ESMF). It is necessary to note that before the presentation draft ESMF have been disseminated among the meeting participants.

Following the presentation, the participants of the meeting asked questions about the issues they are interested in. The questions were mainly about the new credit line conditions. There were no significant questions or comments on ESMF, which could be due to the fact that the project does not have a significant negative impact on the environment (the project is included in the "B" category).

Representatives of commercial banks raised the issue of conducting more training for the loan officers and increase the environmental awareness activities through the project. Particular questions were about pest management methods and tools. RRA representative Mr. Makhmudov informed the audience that the WB as well as the HDP Project encourages the project beneficiaries to adopt Integrated Pest Management (IPM) approaches while handling pesticides. At the same time, representatives of commercial banks participated in the meeting raised the issue of enhancing the environmental awareness of bank employees and farmers (farmers and dehkans) within the expected project by organizing of special workshops. It was noted that these workshops should involve qualified and experienced international experts, including the specialists of the Plant Protection Research Institute (Uzbekistan). On the second issue of the agenda, Mr. Makhmudov gave a detailed information, in particular, he noted that the projects developed by women entrepreneurs in the field of agriculture are very important and such projects will be considered first of all (in terms of financing).

SURKHANDARYA REGION (October 25, 2017).

First deputy mayor of Surkhandarya region Mr. T. Bobolov chaired the workshop/public consultation. Mr. Omonov - the Environment Specialist of RRA informed the meeting participants on HDP Project, its aims and objectives as well as WB requirements on social and environmental issues.

Mr. Omonov's presentation was followed by active discussions of the meeting participants. The most of the questions were about set of documents required for applying to WB credit funds, interest rates, environmental requirements (documents, procedures, frequency of monitoring visits and so on).

Particular attention was on screening of sub-loans: Mr. Omonov recommended to introduce screening mechanism to avoid any potential risks that could arise from financing some certain types of rural and farming activities. During the workshop/public consultation, screening mechanism was discussed with the participants, where representatives of local commercial banks proposed to simplify the screening checklists so it could be completed without much difficulty by the beneficiary himself.

Besides, representative of Surkhandarya region's State Committee for Nature Protection. Mr. Turapov informed the participants that there are local requirements on nature protection in the RUz, that should be taken into account. Eventually, it was agreed by all the parties to work on simplifying the screening checklist.

BUKHARA REGION (October 26, 2017).

The workshop/public consultations in Bukhara region was attended by all the interested parties including local regional and district government officials, commercial banks, state committee for nature protection agribusinesses, farmers and dehkans.

The meeting was chaired by the Governor Adviser of Bukhara Region Mr. T.Khujakulov. Mr. Kushnazarov - Manager of the HDP during his presentation informed the participants about the ongoing WB projects, the results achieved so far under the HDP and about the planned additional financing as well as the WB policies on environment and gender. The required environmental terms and conditions of AF HDP credit line will be the same as CAMP4ASB of IDA, which is being implemented by RRA.

Generally, the audience was interested in terms and conditions for applying for a credit line funds. Mr. Kushnazarov informed the workshop participants on environmental and gender

policies of the WB. There were some questions about the difference of categories set according to National Legislation and WB Safeguards policies, which were duly explained with some examples. Also, the Representative of Bukhara region's State Committee for Nature Protection briefed on the details of National Legislation.

Finally, representative of State Committee for Nature Protection of Republic of Uzbekistan stressed that, any construction and or rehabilitation works that is planned under Access to Credit component must obtain approval from the Committee prior to start of any civil works. It could be even in the form of framework analysis, but needs to comply with the structure and requirements of the local regulations.

NAVOIY REGION (October 26, 2017).

Deputy mayor of Navoiy region Mr.Istamov welcomed the workshop/public consultation participants. Mr.Ganiev - the Monitoring and Evaluation Specialist of RRA informed the meeting participants on the results achieved under the HDP Project, also he told the audience on the work being carried out by the GOU and the WB to provide an additional financing in the amount of 500,0mln.USD under the HDP Project.

The workshop participants asked many questions on the types of activities that can be financed under the HDP, on the terms and conditions for applying for the credit funds, on the types and forms of documents that shall be prepared, etc.

The representative of the regional branch of the State Committee for Nature Protection Mr.Hudoykulov inquired about the stages of environmental impact evaluation.

Mr.Ganiev informed the audience that as per the ESMF of the HDP Project dated 24.02.2014:

a) baseline, b) construction, c) operation and d) de-commissioning phases of the sub-project are subject to be monitored and the frequency of monitoring can vary depending on the nature and scope of the sub-project.

Overall, in all 4 newly added regions workshops/public consultations were held in actively manner, where all the participants took an active part in discussions and debates.

ANNEX 11

List of pesticides registered in Uzbekistan

S/Nb	Name of the chemicals	Origin of the production	Type of chemicals	Names of the tested crops	Registration expiry date
Insecticides and Acaridaecides					
1	Avaunt 15% s.k.	Dupon - USA	Indoksakarb	Cotton, mulberry, vine, tomato, apple	31.12.2014
2	Alexandr 15% s.k	Paridjat Adjensis - India	Indoksakarb	Cotton, tomato	31.12.2014
3	Vaulent k.s. 150 g/l	Astra industrial complex – Saudi Arabia	Indoksakarb	Cotton, safflower	31.12.2015
4	Dalinka 15% s.k.	Dalston Associated SA - Panama	Indoksakarb	Cotton, mulberry, vine, tomato, apple	31.12.2013
5	Admiral 10% k.e.	Sumitomo Chemical - Japan	Pyriproxyfen	Cotton, cucumber, tomato, apple	31.12.2014
6	Adonis 4% k.e.	Bayer Environmental Science SAS - France	Fipronil	Potatoes, pasture, mulberry	31.12.2013
7	Vigor 4% k.e.	Euro Team Ltd JV – Uzbekistan - Germany	Fipronil	Pasture, mulberry	31.12.2013
8	Dalpronil Super 20% k.s.	Dalston Associated SA - Panama	Fipronil	Potatoes, mulberry, cotton	31.12.2013
9	Derbent 20% k.s.	Agro Best Group - Turkey	Fipronil	Potatoes, mulberry, pasture	31.12.2013
10	Lokstin 4% k.e.	Moer Chemsience Co.Ltd. - China	Fipronil	Pasture, mulberry	31.12.2013
11	Maksim 4% k.e.	Agrokim Ltd - Uzbekistan	Fipronil	Pasture	31.12.2013
12	Regent 20% k.s.	BASF Agro BV - Switzerland	Fipronil	Potatoes, mulberry, cotton	31.12.2016
13	Applaud 25% s.p.	Nihon Nohiaku - Japan	Buprofezin	Cucumber, tomato, cotton	31.12.2014
14	Applovud 25% s.p.	Regal Globe Service Ltd - Uzbekistan	Buprofezin	Tomato	31.12.2014
15	Safflaud 40% s.k.	Euro Team Ltd JV – Uzbekistan - Germany	Buprofezin	Cucumber, tomato	31.12.2013
16	Atilla 5% k.e. (R)	Agrokim Ltd - Uzbekistan	Lambda cyhalothrin	Cotton, wheat, vine, apple, mulberry, pasture	31.12.2016
17	Atilla Super 10% k.e. (R)	Agrokim Ltd - Uzbekistan	Lambda cyhalothrin	Cotton, wheat, vine, apple, mulberry, potatoes, pasture	31.12.2016
18	Breik ME 100 g/l (R)	Close joint-stock company "Avgust", Russia	Lambda cyhalothrin	Cotton, wheat, apple, pasture	31.12.2017
19	Gunsyao Super 20% k.e. (R)	Nanjing Essence Fine-Chemical - China	Lambda cyhalothrin	Cotton, wheat, apple, pasture	31.12.2017
20	Dalate 5% k.e. (R)	Ifoda Agro Kimyo Himoya Ltd - Uzbekistan	Lambda cyhalothrin	Cotton, vine, mulberry, pasture	31.12.2014
21	Karate 5% k.e.(R)	Singenta - Switzerland	Lambda cyhalothrin	Apple, cotton, vine, potatoes, wheat, lucerne, corn, soy, pasture, mulberry	31.12.2017
22	Karate Zeon 5% k.e. (R)	Singenta - Switzerland	Lambda cyhalothrin	Cotton, potatoes, wheat, lucerne, corn, mulberry, pasture, vine	31.12.2016

S/Nb	Name of the chemicals	Origin of the production	Type of chemicals	Names of the tested crops	Registration expiry date
23	Karache 10% k.e. (R)	Himreaktiv-Snab Ltd - Uzbekistan	Lambda cyhalothrin	Cotton, wheat, apple, pasture	31.12.2015
24	Bagira 20% k.e.	Agrokim Ltd - Uzbekistan	Imidacloprid	Cotton, mulberry, pasture	31.12.2016
25	Bagira 20% r.k.	Agrokim Ltd - Uzbekistan	Imidacloprid	Cotton, mulberry, pasture, tobacco, potatoes, wheat, apple	31.12.2017
26	Dacloprid 20% r.k.	Moer Chemsience Co.Ltd. - China	Imidacloprid	Cotton, wheat, potatoes, pasture	31.12.2015
27	Dalprid 200 g/l v.k.	Dalston Associated SA - Panama	Imidacloprid	Cotton, wheat, pasture	31.12.2016
28	Imidor 200 g/l v.r.k.	Close joint-stock company "Shelkovo Agrokhim", Russia	Imidacloprid	Cotton, mulberry, pasture	31.12.2014
29	Imiprid 200 SL 20% v.k.	Astra industrial complex – Saudi Arabia	Imidacloprid	Cotton, potatoes	31.12.2015
30	Konfidor 200 g/lv.r.k	Bayer CropScience– Germany	Imidacloprid	Cotton, tomato, potato, tobacco, pasture, apple, sugar-beet	31.12.2017
31	Koginor 20% k.e.	Makteshim Agan - Israel	Imidacloprid	Cotton, tomato, potato, tobacco, pasture, apple, sugar-beet	21.12.2015
32	Komprador 35% k.s.	Euro Team Ltd JV – Uzbekistan - Germany	Imidacloprid	Cotton, tomato, potatoes	21.12.2013
33	Pilarking 20% k.e.	Pilar Agree Saens Corp. - Canada	Imidacloprid	Cotton, apple, potato, tomato, tobacco, pasture	31.12.2016
34	Tanrek 200 g/l v.p.k	Close joint-stock company "Avgust", Russia	Imidacloprid	Cotton, mulberry	31.12.2014
35	Etolucho 20% k.e.	Ifoda Agro Kimyo Himoya Ltd - Uzbekistan	Imidacloprid	Cotton, mulberry	31.12.2016
36	Imitrin 20% k.e.	Himreaktiv-Snab Ltd - Uzbekistan	imidacloprid + bifenthrin	Cotton, apple, wheat, pasture	31.12.2017
37	Borey 20% k.s.	Close joint-stock company "Avgust", Russia	imidacloprid + lambda-cyhalothrin	Cotton, apple, wheat, mulberry	31.12.2015
38	Perfecto 17,5% k.s.	Euro Team Ltd JV – Uzbekistan - Germany	imidacloprid + lambda-cyhalothrin	Cotton, apple, tobacco, pasture	31.12.2015
39	Benzofosfat 30% s.p. (R), Benzofosfat 30% k.e. (R)	JV Close JSC Elektrokhimzavod - Uzbekistan	Phosalone	Cotton, wheat, potato, aubergine, mulberry, tomato, cabbage, Cruciferae's culture, sugar-beet, apple, pear, plum, cherry-tree, citrus, barley, lucerne, tobacco, rose, cloves, carnation	31.12.2013
40	Zolon 35% k.e.(R)	Keminova A/S - Denmark	Phosalone	Cotton, potato, aubergine, tomato, cabbage, Cruciferae's culture, sugar-beet, apple, pear, plum, cherry-tree, vine, citrus, wheat, barley, lucerne, tobacco, rose, carnation	31.12.2014
41	Bee-58 new 40% k.e.,	BASF - Germany	Dimethoate	Corn, wheat, barley, rye, oats, leguminous plants, apple,	31.12.2014

S/Nb	Name of the chemicals	Origin of the production	Type of chemicals	Names of the tested crops	Registration expiry date
				pear, plum, vine, citrus, sugar-beet, mangel-wurzel, beet, vegetable's culture, potato. Tobacco, makhorka, kenaf, lucerne	
42	Nugor 40% k.e.	Cerexagri - Turkey	Dimethoate	Corn, wheat, barley, rye, oats, leguminous plants, apple, pear, plum, vine, citrus, sugar-beet, mangel-wurzel, beet, vegetable's culture, potato. Tobacco, makhorka, kenaf, lucerne	31.12.2014
43	Dalmetoat 40% k.e.	Dalston Associated SA - Panama	Dimethoate	Cotton	31.12.2016
44	Danadim 40% k.e.	Keminova A/S - Denmark	Dimethoate	Cotton, wheat, barley, rye, oats, leguminous plants, apple, [ear, plum, vine, citrus, sugar-beet, mangel-wurzel, beet, vegetable plants. Potato, lucerna, tobacco, makhorka, kenaf, mulberry	31.12.2014
45	Zipper 40% k.e.	Agri Science - Turkey	Dimethoate	wheat	31.12.2016
46	Vanteks 6% s.k.	Keminova A/S - Denmark	Gamma-cyhalothrin	Cotton, mulberry	31.12.2017
47	Abalon 1,8% k.e.	Euro Team Ltd JV – Uzbekistan - Germany	Abamectin	Cotton	31.12.2013
48	Abamek 18 ES, 1,8% k.e.	Astra industrial complex – Saudi Arabia	Abamectin	Cotton	31.12.2015
49	Akarinsekt 1,8% k.e.	Ecokimyobioservis Ltd - Uzbekistan	Abamectin	Cotton, tomato, cucumber	31.12.2017
50	Algamek 1,8% k.e.	Agro Best Group - Turkey	Abamectin	Cotton, tomato	31.12.2013
51	Altin 1,8% k.e.	Agrokim Ltd - Uzbekistan	Abamectin	Cotton, tomato	31.12.2016
52	Vertimek 1,8% k.e.	Singenta - Switzerland	Abamectin	Cotton, tomato, carnation,	31.12.2013
53	Golmektin 1,8% k.e.	Golsam Gurgon - Iran	Abamectin	Cotton, tomato	31.12.2017
54	Dalemektin 1,8% k.e.	Dalston Associated SA - Panama	Abamectin	Cotton, tomato, carnation,	31.12.2017
55	Pilarmektin 1,8% k.e.(R)	Pilar Agree Saens Corp. - Canada	Abamectin	Cotton, tomato, rose, vine	31.12.2016
56	Errorou 1,8% k.e.	Cerexagri - Turkey	Abamectin	Cotton	31.12.2017
57	Danitol 10% k.e. (R)	Sumitomo Chemical - Japan	Fenpropathrin	Cotton, mulberry, apple	31.12.2017
58	Uzphen 20% k.e. (R)	JVCloseJSCElektrokhimzavod - Uzbekistan	Fenpropathrin	Cotton	31.12.2014
59	DVA mayt 72% k.e. (R)	Euro Team Ltd JV – Uzbekistan - Germany	Propargite	Cotton, apple	31.12.2015
60	Oltin Vodiy 57% k.e. (R)	Agrokim Ltd - Uzbekistan	Propargite	Cotton, apple, vine, tomato, potato	31.12.2016

S/Nb	Name of the chemicals	Origin of the production	Type of chemicals	Names of the tested crops	Registration expiry date
61	Omayt 57% k.e. (R)	Kemtura Europe Ltd - UK	Propargite	Cotton, apple, citrus, vine, soy, sugar-beet, cherry-tree	31.12.2017
62	Omayt 570 EW 57% k.e.v. (R)	Kemtura Europe Ltd - UK	Propargite	Cotton, apple, cherry-tree, peach, plum. Vine, tomato, potato	31.12.2015
63	Tetramayt 57% k.e. (R)	Moer Chemsience Co.Ltd. - China	Propargite	Cotton	31.12.2017
64	Uzmayt 30% s.p. (R)	JVCloseJSCElektrokhimz avod - Uzbekistan	Propargite	Cotton	31.12.2016
65	Uzmayt 57% k.e. (R)	JVCloseJSCElektrokhimz avod - Uzbekistan	Propargite	Cotton,apple	31.12.2014
66	Entomayt 570 EW 57% k.e.v. (R)	Ifoda Agro Kimyo Himoya Ltd - Uzbekistan	Propargite	Cotton	31.12.2015
67	Deltaphos 36% k.e. (R)	Bayer CropScience– Germany	deltamethrin + triazophos	Cotton, mulberry	31.12.2013
68	Primagold 36% k.e. (R)	Euro Team Ltd JV – Uzbekistan - Germany	deltamethrin + triazophos	Cotton	31.12.2017
69	Superjet 36% k.e. (R)	Agro Best Group - Turkey	deltamethrin + triazophos	Cotton, mulberry	31.12.2013
70	Dalmetrin 10% k.e. (R)	Dalston Associated SA - Panama	Deltamethrin	Cotton, tomato, mulberry, vine, apple, wheat, pasture	31.12.2017
71	Delzis 2,5% k.e. (R)	Euro Team Ltd JV – Uzbekistan - Germany	Deltamethrin	Cotton, wheat, pasture	31.12.2013
72	Deziban k.e. 25 g/l (R)	Astra industrial complex – Saudi Arabia	Deltamethrin	Wheat, cotton	31.12.2016
73	Dezis 2,5% k.e. (R)	Bayer CropScience - Germany	Deltamethrin	Cotton, sunflower, sugar-beet, tomato, corn, lucerne, Cruciferae's culture, tobacco, wheat, apple, pear, peach, vine, potato, cabbage, carrot, water-melon, melon, pasture natural growth, mulberry	31.12.2016
74	Dezis 10% k.e. (R)	Bayer CropScience - Germany	Deltamethrin	Tomato, vine, cotton, wheat, apple, mulberry	31.12.2014
75	Dezis 10% k.e. (R)	Bayer Environmental Science SAS - France	Deltamethrin	Pasture	31.12.2014
76	Tadj 10% k.e. (R)	Agrokim Ltd - Uzbekistan	Deltamethrin	Wheat, mulberry, apple, pasture, potatoes	31.12.2015
77	Pilardelta 2,5% k.e. (R)	Pilar Agri Science Corp. - Canada	Deltamethrin	Mulberry, pasture, tobacco, apple	31.12.2016
78	Ecozis 2,5% k.e. (R)	Ecokimyobioservis Ltd - Uzbekistan	Deltamethrin	Cotton, wheat, pasture	31.12.2014
79	Ecozis 10% s.p. (R)	Ecokimyobioservis Ltd - Uzbekistan	Deltamethrin	Cotton, wheat, mulberry, pasture	31.12.2014
80	Diazinon 60% k.e. (R)	Nippon Kayaku - Japan	Diazinon	Wheat, rice	31.12.2014
81	Diazinon Express KE 600 g/l (R)	Close joint-stock company "Shelkovo Agrokhim", Russia	Diazinon	Wheat	31.12.2017
82	Gerold v.s.k. 240 g/l	Close joint-stock company "Avgust", Russia	Diflubenzuron	Pasture	31.12.2016

S/Nb	Name of the chemicals	Origin of the production	Type of chemicals	Names of the tested crops	Registration expiry date
83	Gerold UMO m.s. 60 g/l	Close joint-stock company "Avgust", Russia	Diflubenzuron	Pasture	31.12.2016
84	Dimilin OF-6, 6% m.s.	Krompton(Uniroyal Chemical) Registrations Ltd - UK	Diflubenzuron	Pasture	31.12.2013
85	Dimilin 48% k.s	Krompton(Uniroyal Chemical) Registrations Ltd - UK	Diflubenzuron	Pasture, mulberry	31.12.2014
86	Difuz 48% k.s.	Euro Team Ltd JV – Uzbekistan - Germany	Diflubenzuron	Pasture, mulberry	31.12.2016
87	Mergan OF-6, 6% m.s.	Ifoda Agro Kimyo Himoya Ltd - Uzbekistan	Diflubenzuron	Pasture	31.12.2014
88	Zum 10% s.k.	Sumitomo Chemical - Japan	Etoxazole	Cotton	31.12.2014
89	Lime-sulfuric Decoction	Uzbekistan	Polysulfide calcium	All cultivation	31.12.2017
90	Soluble polysulfide preparation	Academy of Science - Uzbekistan	Polysulfide calcium	All cultivation	31.12.2013
91	Calipso 48% k.s.	Bayer CropScience - Germany	thiacloprid	Cotton, mulberry, apple, vine, tomato	31.12.2014
92	Acetaplan 200 SL, 20% v.k.	Astra industrial complex – Saudi Arabia	Acetamiprid	Cotton	31.12.2015
94	Achiv 20% v.p.	Euro Team Ltd JV – Uzbekistan - Germany	Acetamiprid	Cucumber, mulberry	31.12.2013
95	Goldplan 20% s.p.	Agro Best Group - Turkey	Acetamiprid	Cotton	31.12.2013
96	Camelot 20% s.p.	Agrokim Ltd - Uzbekistan	Acetamiprid	Cotton, mulberry	31.12.2016
97	Mospilan 20% s.p.	Nippon Soda - Japan	Acetamiprid	Cotton, cucumber of covered soil, potato, sugar-beet, pasture, mulberry	31.12.2015
98	Nestor 20% s.p.	Cropprotect Ltd - Uzbekistan	Acetamiprid	Cotton, potatoes	31.12.2014
99	Pilarmos 20% s.p.	Pilar Agri Science Corp. - Canada	Acetamiprid	Cotton, tomato of covered soil, pasture, mulberry	31.12.2016
100	Tagspilan 20% s.p.	Tagros Chemicals India Limited - India	Acetamiprid	Cotton, mulberry	31.12.2014
101	Karbofos 50% k.e. (R)	JVCloseJSCElektrokhimzavod - Uzbekistan	Malathion	Wheat, lucerna, apple, tomato, pasture, cotton, mulberry	31.12.2015
102	Phuphanon 57% k.e. (R)	Keminova A/S - Denmark	Malathion	Wheat, rice, corn, pea pod, sugar-beet, beet, cotton, apple, pear, quince, cherry, plum, cherry-tree, unfruitful garden, currants, raspberries, strawberries, vine, cabbage, tomato, cucumber, melon, water-melon, lucerna, tobacco, makhorka, sunflower, soy, peanut, sesame, citrus, agricultural, natural growth, mulberry, fruit's culture,	31.12.2013

S/Nb	Name of the chemicals	Origin of the production	Type of chemicals	Names of the tested crops	Registration expiry date
				berrie culture	
103	Akito 10% k.e.	Cerexagri - Turkey	Beta-cypermethrin	Cotton, mulberry, pasture	31.12.2013
104	Kinmix 5% k.e. (R)	Agro-Kemy - Hungary	Beta-cypermethrin	Cotton, pasture, potato, cabbage, wheat, vine, apple, plum	31.12.2014
105	Kurakron 50% k.e.	Singenta - Switzerland	Profenofos	Cotton	31.12.2014
106	Lanser 75% r.p.	United Phosphorus - India	Acephate	Cotton	31.12.2016
107	Orten 75% r.p.	Arista Life Science SAS - France	Acephate	Tobacco	21.12.2016
108	Marshall 25% k.e.	FMC - USA	Carbosulfan	Sugar-beet	31.12.2016
109	Mital 20% k.e.	Arista Life Science SAS - France	Amitraz	Cotton, Apple, Vine, pear, peach, tomato	31.12.2017
110	Mitaron k.e. 500 g/l	Astra industrial complex – Saudi Arabia	Bromopropylate	Cotton	31.12.2016
111	Neoron 50% k.e.	Singenta - Switzerland	Bromopropylate	Cotton, vine, apple, citrus, currant	31.12.2017
112	Eoksorun 5% k.e.	Agro Best Group - Turkey	Hexythiazox	Cotton	31.12.2013
113	Nissoran 5% k.e.	Nippon Soda - Japan	Hexythiazox	Cotton, apple	31.12.2014
114	Nissoran 10% k.e.	Nippon Soda - Japan	Hexythiazox	Cotton, apple	31.12.2014
115	Tetrasan 10% s.p.	Moer Chemsience Co.Ltd. - China	Hexythiazox	Cotton	31.12.2013
116	Heksoran 5% k.e.	Euro Team Ltd JV – Uzbekistan - Germany	Hexythiazox	Cotton	31.12.2013
117	Entosoran 10% s.p.	Ifoda Agro Kimyo Himoya Ltd - Uzbekistan	Hexythiazox	Cotton, apple	31.12.2014
118	Nomolt 15% s.k.	BASF - Germany	Teflubenzuron	Pasture	31.12.2013
119	Nomolt UMO 50 g/l m.s.	BASF Agro - Germany	Teflubenzuron	Pasture	31.12.2017
120	Agrophos-D 55% k.e. (R)	Ifoda Agro Kimyo Himoya Ltd - Uzbekistan	Cypermethrin + chlorpyrifos	Cotton, wheat	31.12.2014
121	Gurell-D 55% k.e. (R)	Agro Best Group - Turkey	Cypermethrin + chlorpyrifos	Cotton	31.12.2013
122	Dabl-D 55% k.e. (R)	Agrokim Ltd - Uzbekistan	Cypermethrin + chlorpyrifos	Cotton, apple, wheat, vine, corn	31.12.2016
123	Duet 55% k.e. (R)	Moer Chemsience Co.Ltd. - China	Cypermethrin + chlorpyrifos	Cotton, apple, wheat	31.12.2014
124	Elnur-D 55% k.e. (R)	Nanjing Essence Fine-Chemical - China	Cypermethrin + chlorpyrifos	Cotton, apple, wheat	31.12.2017
125	Murell-D 55% k.e. (R)	Sanjar Gold - Uzbekistan	Cypermethrin + chlorpyrifos	Cotton, apple, wheat	31.12.2017
126	Nurell-D 55% k.e. (R)	Dau AgroScience - USA	Cypermethrin + chlorpyrifos	Cotton, apple, wheat	31.12.2017
127	Sayeren-s 55% k.e.(R)	Ceraminova A/S - Denmark	Cypermethrin + chlorpyrifos	Cotton, apple	31.12.2013

S/Nb	Name of the chemicals	Origin of the production	Type of chemicals	Names of the tested crops	Registration expiry date
128	Tagrell B 55% k.e.(R)	Tagros Chemicals India Limited - India	Cypermethrin + chlorpyrifos	Cotton, apple, wheat	31.12.2014
129	Urell-D 55% k.e. (R)	United Phosphorus - India	Cypermethrin + chlorpyrifos	Cotton, apple	31.12.2016
130	Zipi Plus 55% k.e. (R)	Agrotrade - Bulgary, Agorus -Russia	Cypermethrin + chlorpyrifos	Cotton, apple	31.12.2016
131	Chlorzirin 55% k.e. (R)	Euro Team Ltd JV – Uzbekistan - Germany	Cypermethrin + chlorpyrifos	Cotton, wheat	31.12.2013
132	Ziperphos 55% k.e.	JVCloseJSCElektrokhimzavod - Uzbekistan	Cypermethrin + chlorpyrifos	Cotton, apple, wheat, mulberry	31.12.2015
133	Ortus 5% S.K.	Nihon Nohiaku - Japan	fenpyroximate	Cotton	31.12.2016
134	Baton k.e. 100 g/l (R)	Astra industrial complex – Saudi Arabia	bifenthrin	Cotton, tomato	31.12.2016
135	DVA-trin 10% k.e. (R)	Euro Team Ltd JV – Uzbekistan - Germany	bifenthrin	Cotton, apple, tomato	31.12.2015
136	Pillarstar 10% k.e.	Pilar Agree Saens Corp. - Canada	bifenthrin	Cotton, apple,	31.12.2016
137	Talstar 10% k.e.	FMC - USA	bifenthrin	Cotton, apple, tomato, mulberry	31.12.2014
138	Baron 48% k.e.	Agri Science - Turkey	Chlorpyrifos	Apple	31.12.2016
139	Pirinex 48% k.e.	Makteshim-Agan - Israel	Chlorpyrifos	Cotton, apple	31.12.2014
140	Pirinex Super 42% k.e.	Makteshim-Agan - Israel	chlorpyrifos +bifenthrin	Cotton, apple, wheat, melons	31.12.2015
141	Polytreen K 31,5% k.e.	Singenta - Switzerland	profenofos + lambda-cyhalothrin	Cotton, mulberry, pasture	31.12.2014
142	Polo 50% k.s.(R)	Singenta - Switzerland	Diaphentiuron	Cotton	31.12.2015
143	Ovipron 2000 k.e. 800 g/l	Cerexagri - Turkey	petroleum oil	decorative and forrest plants, apple, pear	31.12.2014
144	Preparation №30 76% petroleum emulsion	FGUP “VNII HSZR” - Russia	petroleum oil	Cotton, apple, pear, cherry, plum, decorative plants, currants, raspberries, citrus, vine	31.12.2016
145	Segra 80% s.p. (fine-dyspersated)	Agrokim Ltd - Uzbekistan	sulfur	Cotton	31.12.2016
146	Sulfur shredded	Shorsyiskoe GH0 - Uzbekistan	sulfur	All cultivation	31.12.2014
147	Sulfur shredded	Phar Kimyo Trans Ltd – Uzbekistan	sulfur	Cotton	31.12.2016
148	Sulfur water-wettable	Institute of Flora and Fauna Genofond of the Academy of Science of Uzbekistan	sulfur	Cotton	31.12.2017
149	Bestgol 200 g/l k.e. (R)	Agro Best Group - Turkey	esfenvalerate	Wheat	31.12.2013
150	Sumy-5 5% k.e. (R)	Agrokim Ltd - Uzbekistan	esfenvalerate	Cotton, apple, wheat, potatoes, vine, pasture	31.12.2016
151	Sumy-alfa 5% k.e.	Sumitomo Chemical - Japan	esfenvalerate	Cotton, apple vine, potato, cabbage, barley, wheat, rape, agricultural plants, natural growth	31.12.2017

S/Nb	Name of the chemicals	Origin of the production	Type of chemicals	Names of the tested crops	Registration expiry date
152	Sumy-alfa 20% k.e.	Sumitomo Chemical - Japan	esfenvalerate	lucerna, wheat, pasture, mulberry, cotton	31.12.2017
153	Esphen-Alpha 5% k.e.(R)	JV Close JSC Elektrokhimzavod - Uzbekistan	esfenvalerate	Potatoes, cotton, wheat, apple, cabbage, pasture	31.12.2014
154	Esphen-Alpha 20% k.e.(R)	JV Close JSC Elektrokhimzavod - Uzbekistan	esfenvalerate	Cotton, pasture, mulberry	31.12.2013
155	Sumition 50% k.e.	Sumitomo Chemical - Japan	fenitrothion	Wheat, cotton	31.12.2016
156	Bestcyper 25% k.e. (R)	Agro Best Group - Turkey	cypermethrin	Cotton, mulberry, pasture	31.12.2013
157	Dante 25% k.e. (R)	Agri Science - Turkey	cypermethrin	Wheat	31.12.2016
158	Moermetrin 25% k.e. (R)	Moer Chemsience Co.Ltd. - China	cypermethrin	Cotton, pasture, mulberry, wheat	31.12.2013
159	Superkill	Agrephar AS - Belgium	cypermethrin	Cotton, apple, vine, tomato, cucumber, cabbage, potato, soy, lucerna, wheat	31.12.2016
160	Himfoks 40% k.e. (R)	Himreaktiv-Snab Ltd - Uzbekistan	cypermethrin	Cotton, wheat, pasture	31.12.2017
161	Zipermetrin 25% k.e. (R)	JVCloseJSCElektrokhimzavod - Uzbekistan	cypermethrin	Cotton, apple, cabbage, potato, lucerne, wheat, pasture, sunflower	31.12.2015
162	ZIPI 25% k.e.(R)	Agrotrade - Bulgary, Agrorus -Russia	cypermethrin	Cotton, apple, vine, tomato, cucumber, cabbage, potato, Cruciferae's culture, sugar-beetsoy, lucerna, maize, pasture, water-melon, melon, carrot, wheat	31.12.2016
163	Ziprin k.e. 250 g/l (R)	Astra industrial complex – Saudi Arabia	cypermethrin	Cotton	31.12.2016
164	Zirax 25% k.e. (R)	Cerexagri - Turkey	cypermethrin	Cotton, apple, vine, tomato, cucumber, cabbage, Cruciferae's culture, potato, sugar-beetsoy, lucerne, maize, water-melon, melon, carrot, wheat, mulberry	31.12.2015
165	Zitrin 50% k.e. (R)	Euro Team Ltd JV – Uzbekistan - Germany	cypermethrin	Apple, wheat, mulberry, pasture	31.12.2016
166	Sherpa 25% k.e. (R)	Bayer CropScience – Germany	cypermethrin	cotton, apple, potato, pasture, natural growth	31.12.2013
167	Entometrin 25% k.e. (R)	Ifoda Agro Kimyo Himoya Ltd - Uzbekistan	cypermethrin	Cotton, wheat, pasture, mulberry	31.12.2015
168	Titaron 30% s.k.(R)	Nippon Soda - Japan	fluakripyrim	Cotton	31.12.2017
169	Alphazid k.e. 100 g/l (R)	Astra industrial complex – Saudi Arabia	alpha-cypermethrin	Wheat, potatoes, cotton	31.12.2016
170	Besta Alpha KS 100 g/l (R)	Agro Best Group - Turkey	alpha-cypermethrin	pasture	31.12.2013
171	Bestseller 10% k.e. (R)	Agrephar AS - Belgium	alpha-cypermethrin	Cotton, wheat, pasture	31.12.2014

S/Nb	Name of the chemicals	Origin of the production	Type of chemicals	Names of the tested crops	Registration expiry date
172	Bestseller 20% k.s. (R)	Euro Team Ltd JV – Uzbekistan - Germany	alpha-cypermethrin	Pasture, wheat	31.12.2016
173	Tramp 10% k.s. (R)	Tagros Chemicals India Limited - India	alpha-cypermethrin	Cotton, pasture	31.12.2014
174	Phastak 10% s.k.(R)	BASF Agro BV - Switzerland	alpha-cypermethrin	Cotton, pasture, potato,	31.12.2016
175	Phaskord k.e. 100 g.l. (R)	Close joint-stock company "Shelkovo Agrokhim", Russia	alpha-cypermethrin	Cotton, mulberry, wheat, pasture	31.12.2015
176	Phaskord UMO20 g.l. (R)	Close joint-stock company "Shelkovo Agrokhim", Russia	alpha-cypermethrin	Pasture	31.12.2016
177	Phenkill 20% k.e. (R)	Cerexagri - Turkey	fenvalerate	Cotton, apple, vine, currants, potato, cabbage, rape, lucerne, perennial plants, maize, wheat, barley, carrot, melon, pasture, natural growth	31.12.2016
178	Phlumayt 20% k.c.	Agro-Kemy - Hungary	flufenzin	Cotton	31.12.2017
179	Barley v.k. 100 g/l (R)	Astra industrial complex – Saudi Arabia	zeta-cypermethrin	Potatoes, cotton	31.12.2016
180	Ph'yry 10% v.k. (R)	FMC - USA	zeta-cypermethrin	Cotton, potato, apple, vine, cabbage, pasture, mulberry	31.12.2015
181	Piligrim 24,7%	Euro Team Ltd JV – Uzbekistan - Germany	lambda-cyhalothrin + thiametoxam	Cotton, tomato, melons, corn	31.12.2016
182	Endgeo 24,7% k.c.	Singenta - Switzerland	lambda-cyhalothrin + thiametoxam	Cotton, mulberry	31.12.2014
	Chemicals for seed processing before sowing				
183	Avalanche 70% s.p.	Tagros Chemicals India Limited - India	imidacloprid	Cotton	31.12.2015
184	Gaucha WS 70.	Bayer CropScience– Germany	imidacloprid	Cotton	31.12.2014
185	Dalucha 70% c.p.	Dalston Associated SA - Panama	imidacloprid	Cotton	31.12.2016
186	Tabu 50%	Close joint-stock company "Avgust", Russia	imidacloprid	Cotton	31.12.2017
187	Baraka 60% p.c.	privately owned enterprise Baraka - Uzbekistan	sodium salt cotton's soapstoka	Winter wheat, cotton	31.12.2014
188	Bakhor 93% v.r.p.	Navkar Service - Uzbekistan	ammonium salt salicylic acid	Cotton, winter wheat,	31.12.2015
189	Bakhor 60% v.r.	Navkar Service - Uzbekistan	ammonium salt salicylic acid	Winter wheat	31.12.2014
190	Blumovit v.g/	privately owned enterprise Amari Orxid Farma - Uzbekistan	bacterium+antagonist+humus+microelement	Cotton	31.12.2016
191	Bronotak 12% p.	Bayer CropScience– Germany	bronopol	Cotton	31.12.2017
192	Bronopol 12% p.	JVCloseJSCElektrokhimzavod - Uzbekistan	bronopol	Cotton	31.12.2017

S/Nb	Name of the chemicals	Origin of the production	Type of chemicals	Names of the tested crops	Registration expiry date
193	Bron 12% v.d.g	“Agro-Inovacii”, Russia	bronopol	Cotton	02.01.2016
194	Dabron 12% p.	AOYA Guy Zey - Chinese People's Republic	bronopol	Cotton	01.01.2015
195	Dalbron 12% p.	Dalston Associated SA - Panama	bronopol	Cotton	02.01.2016
196	Zirh 36% s.p.	Close joint-stock company "Avgust", Russia	bronopol	Cotton	02.01.2016
197	Emissar v.r.k.	Close joint-stock company "Shelkovo Agrokhim", Russia	bronopol	Cotton	02.01.2016
198	Bugdoydor 2% k.c.	JVCloseJSCElektrokhimz avod - Uzbekistan	dinikonazol	Winter wheat	31.12.2015
199	Vial TrasT 12,9% v.c.k	Close joint-stock company "Avgust", Russia	thiabendazole + tebuconazole	Winter wheat	31.12.2014
200	Vinzit 5% c.k.	Keminova A/S - Denmark	flutriafol + thiabendazole	Winter wheat	31.12.2015
201	Vitavaks 200 75% c.p.	Krompton(Uniroyal Chemical) Registrations Ltd - UK	carboxin + thiram	Wheat, cotton	31.12.2014
202	Vitavaks 200 FF 34% v.c.k.	Krompton(Uniroyal Chemical) Registrations Ltd - UK	carboxin + thiram	Wheat, cotton, winter wheat	31.12.2014
203	Vitaroc 34% v.c.k/	Close joint-stock company "Avgust", Russia	carboxin + thiram	Cotton, winter wheat	31.12.2014
204	Dalvaks 34% v.c.k.	Dalston Associated SA - Panama	carboxin + thiram	Cotton	31.12.2016
205	Gaucha 58,5% c.p.	Bayer CropScience– Germany	imidacloprid + pencycuron + thiram	Cotton	31.12.2013
206	GMK 30% p.	NPP Print-TM - Uzbekistan	sodium salt humic acid + sulphate copper	Cotton	31.12.2014
207	Darmon-4 25-30% p/	Darmon Ltd - Uzbekistan	mixture of sodium salt kapron & carbolic acid	Cotton	31.12.2014
208	Dividend 3% k/c/	Singenta - Switzerland	Difenokonazole	Winter wheat	31.12.2017
209	Sidigard 3% k.c	Paridgat Adgensys - India	Difenokonazole	Winter wheat	31.12.2016
210	Dividend star 036 FS 3.6%	"Singenta", Switzerland	difenoconazole + cyproconazole	Winter wheat	31.12.2017
211	Dividend extrim 115 FS 11.5%	"Singenta", Switzerland	difenoconazole + mefenoxam	Winter wheat	31.12.2014
212	Dorilin 10%	IHRV under AS, Uzbekistan	Copolymer fibers of nitron with nitrolignin and copper sulfate	Cotton	31.12.2016
213	Kisan, 30%	"Cerexagri Ziraat ve Kimya Sanayi ve Ticaret	2 - (tiocyanometiltio)	Cotton	01.01.2016

S/Nb	Name of the chemicals	Origin of the production	Type of chemicals	Names of the tested crops	Registration expiry date
		Limited Sirketi", Turkey	benzotiasol		
214	Cruiser 350 FS 35%	"Singenta", Switzerland	thiametoxam	Cotton	31.12.2014
215	Medal 35%	"Paridjat Adjensis", India	thiametoxam	Cotton	31.12.2016
216	Lomardor 40%	"Bayer CropScience", Germany	Tebukonasol+protic onasol	Winter wheat	31.12.2014
217	Lancer 80%	"Cereagri Ziraat ve Kimya Sanayi ve Ticaret Limited Sirketi", Turkey	acephate	Cotton	31.12.2016
218	Dalcephat 80%	"Dalston Associated SA", Panama	acephate	Cotton	31.12.2016
219	Orten 75%	"Arista life Science SAS", France	acephate	Cotton	31.12.2016
220	Maxim 2,5%	"Singenta", Switzerland	fludioxonil	Potatoes	31.12.2016
221	Maxim XL035 FS, 3.5%	"Singenta", Switzerland	fludioxonil + mefenoxam	Cotton	31.12.2014
222	Marchal 40%	"FMC", USA	Carbosulfan	Cotton	31.12.2017
223	Moncern 25%	"Bayer Crop Science", Germany	pencycuron	Cotton	31.12.2013
224	Navruz 10%	IHRV under AS, Uzbekistan	Triterpen acid	Cotton	31.12.2014
225	P-4 65%	Agrokim Ltd., Uzbekistan	Dimetilol-carbamid	Cotton	31.12.2015
226	Panoktin 35%	Makteshim-Agan - Israel	Guazatine	Cotton, winter wheat	31.12.2014
227	Pahta 42%	"Yangi Tehnologiyalar" Ltd, Uzbekistan	Mono, di, trietanolamines	Cotton	31.12.2016
228	Pahta M 20%	"Verisel Kafolat" Ltd, Uzbekistan	Mono, di, trietanolamines	Cotton	31.12.2015
229	Polysand 62.5%	Chemical and polymer institute under AS, Uzbekistan	oxadixyl	Cotton	31.12.2016
230	Previcur SL 722	"Bayer CropScience", Germany	propamocarb hydrochloride	Cotton fine-fibre	31.12.2015
231	Premis 2.5%	"BASF AgroBV", Switzerland	triticonazole	Wheat	31.12.2016
232	Raksill 60 FS 6%	"Bayer CropScience", Germany	tebuconazole	Winter wheat	31.12.2017
233	Bunker 60 g/l	Close joint-stock company "Avgust", Russia	tebuconazole	Winter wheat	31.12.2015
234	Vinner 6%	"Tagros Chemical India Ltd"	tebuconazole	Winter wheat	31.12.2015
235	Gensil 6%	Agro Best Group – Turkey	tebuconazole	Winter wheat	31.12.2014
236	TEBU 60 ME 60 g/l	Close joint-stock company "Shelkovo Agrokhim", Russia	tebuconazole	Winter wheat	31.12.2014
237	Raksil new, 2.5%	"Bayer CropScience", Germany	tebuconazole	Winter wheat	31.12.2017

S/Nb	Name of the chemicals	Origin of the production	Type of chemicals	Names of the tested crops	Registration expiry date
238	Gerkules 6%	Agrokim Ltd., Uzbekistan	tebuconazole	Winter wheat	31.12.2017
239	Daltebu FS 6%	"Dalston Associated SA", Panama	tebuconazole	Winter wheat	31.12.2017
240	Moerkonazol 6%	Moer Chemsience Co.Ltd. - China	tebuconazole	Winter wheat	31.12.2016
241	Orius 6%	Makteshim-Agan - Israel	tebuconazole	Winter wheat	31.12.2016
242	Pilartebu 6%	Pilar Agree Saens Corp. - Canada	tebuconazole	Winter wheat	31.12.2017
243	Ekokinazol 6%	Ecokimyobioservis Ltd - Uzbekistan	tebuconazole	Winter wheat	31.12.2017
244	Sumy-8 2% FLO	"Sumitomo Chemical", Japan	diniconazole-M	Winter wheat, spring wheat	31.12.2016
245	Topsin-M 70%	"Nippon Soda", Japan	thiophanate methyl	Winter wheat	31.12.2016
246	UzHitAN 2%	Chemical and polymer institute under AS, Uzbekistan	khitozan	Cotton	31.12.2014
247	Himoya 10%	Ecokimyobioservis Ltd - Uzbekistan	Polychloriodine	Cotton	31.12.2016
248	Himoya - C 31.5%	Ecokimyobioservis Ltd - Uzbekistan	Polychloriodine +2 acetatethanolamine	Cotton	31.12.2016
	Nematicids				
249	Vidat L 24%*	"Dupon" USA	Oxamyl	Tomato for hothouse	31.12.2016
250	Faymet 24% v.k.*	Astra industrial complex – Saudi Arabia	Oxamyl	Tomato for hothouse	31.12.2016
251	Mokap 10%	"Bayer CropScience", Germany	ethoprophos	Tomato for hothouse, Cucumber for hothouse	31.12.2013
252	EZO 10%	Euro Team Ltd JV – Uzbekistan - Germany	ethoprophos	Cucumber for hothouse	31.12.2016
253	Lepidocid, p/ BA-3000 EA/mg	Institut of microbiology under Academy of Science, Uzbekistan	Bacillus thuringiensis var. kurstaki strain U56	Tomato	31.12.2016
254	Prestij	Private company "AnGuzalAgroservis" - Uzbekistan	Bacillus thuringiensis var.thuringiensis, BA-3000 EA/ml	Cotton	31.12.2017
255	Prestij Plus k.e.	Private company "AnGuzalAgroservis" - Uzbekistan	Bacillus thuringiensis var.thuringiensis, BA-3000 EA/ml	Cotton	31.12.2017
256	Virin HSK BA 5*10 ⁹ polyhedra/ml	"Altay Vitamini" Close JSC - Russia	viral polyhedra strain XC-17	Cotton	31.12.2013
257	Fungiosporin BA 1500 EA/ml	Private company "AnGuzalAgroservis" - Uzbekistan	Complex microbial spores	Potatoes, cotton	31.12.2014
258	Beta Pro	BASF – Germany	Complex spore Bacillus thuringiensis SPP kurstaki (100 billion/spore)	Cotton	31.12.2016

S/Nb	Name of the chemicals	Origin of the production	Type of chemicals	Names of the tested crops	Registration expiry date
259	Green Gard v.r.	BASF – Germany	Metarhizium anisopline var. acridum	pasture	31.12.2016
	Pheromones				
260	Isocin MK (3g/l) (P)	Close joint-stock company "Shelkovo Agrokhim", Russia	Isopropilpfenacin	Field with rodent	31.12.2015
261	Armigal 2 mg	IBOH under Academy of Science, Uzbekistan	Cis - 11 - gexadecenal +cis - 9 - gexadecenal	Tomato, Cotton, maize, tobacco	31.12.2015
262	Armigal 2 mg	"Rukim" Moldova	Cis - 11 - gexadecenal +cis - 9 - gexadecenal	Cotton	31.12.2013
263	Armigal 2 mg	"MobilUZ - group" Uzbek-American joint venture	Cis - 11 - gexadecenal +cis - 9 - gexadecenal	Cotton	31.12.2014
264	Cotton worm 2 mg	Pheromon JV – Uzbekisatn-Estonia	Cis - 11 - gexadecenal +cis - 9 - gexadecenal	Cotton	31.12.2013
265	Atracon PF 0.45mg	"Rukim" Moldova	Trance-10, trance-12, cis-14 - gexadectrienilacetate	Mulberry-tree	31.12.2013
266	Mulberry-tree PF 1.5 mg	"MobilUZ - group" Uzbek-American joint venture	Acetatetrance - 10, trance-12, cis-14 - gexadectrienilacetate	Mulberry-tree	31.12.2015
267	Pheroflor-SR	Pheromon JV – Uzbekisatn-Estonia	Trance, trance-8, 10-dodekadienol	Apple	31.12.2014
268	Garantex 0,005%	Euro Team Ltd JV – Uzbekistan - Germany	brodifacoum	Field with rodent	31.12.2013
	Herbicide				
269	Alienza 600g/l	"Bayer CropScience", Germany	Flurtamone	Cotton	31.12.2013
270	AMIR 50%	"Parijat Agentcis" India	Acetochlor	Cotton	31.12.2013
271	Dachlor 50	AOYA "Juy Zei", China	Acetochlor	Cotton	31.12.2013
272	Arsenal 25% (R)	BASF, Germany	Imazapyr	Land for no-agricultural needs	31.12.2016
273	Asirius 40%	OOO "Agrokhim" Uzbekistan	bispyribac-sodium	Rice	31.12.2016
274	Nominal 400 g/l k.s.	Euro Team Ltd JV – Uzbekistan - Germany	bispyribac-sodium	Rice	31.12.2013
275	Nominant 40% k.s.	Euro Team Ltd JV – Uzbekistan - Germany	bispyribac-sodium	Rice	31.12.2015
276	Nominy 400 g/l	"Kumiay Chemical", Japan	bispyribac-sodium	Rice	31.12.2014
277	Nominium 400 g/l k.s.	Nanjing Essence Fine-Chemical - China	bispyribac-sodium	Rice	31.12.2017
278	Atlantis 3.6%	"Bayer CropScience", Germany	Mesosulfuron metil natrium	Winter wheat	31.12.2017

S/Nb	Name of the chemicals	Origin of the production	Type of chemicals	Names of the tested crops	Registration expiry date
			+iodinesulfuron metil natrium		
279	Bazagran 48%	BASF, Germany	Bentazon	Wheat, rye, barley, rice, maize	31.12.2014
280	Banvel 24%	JVCloseJSCElektrokhimz avod - Uzbekistan	Dicamba	Maize, wheat, rye, barley, oats	31.12.2015
281	Basta 14%	"Bayer CropScience", Germany	glufosinate- ammonium	Horticultural crops, vineyard, citrus plants, berry plantation	31.12.2017
282	Biozin 360+22.2g/l	Ecokimyobioservis Ltd - Uzbekistan	Dicamba + chlorsulfuron	Winter wheat	31.12.2015
283	Fenizan 360+22.2g/l	Close joint-stock company "Shelkovo Agrokhim", Russia	Dicamba + chlorsulfuron	Winter wheat	31.12.2014
284	Biostar 75%	Ecokimyobioservis Ltd - Uzbekistan	Tribenuron-methyl	Winter wheat	31.12.2016
285	Granat 750 g/kg	Close joint-stock company "Shelkovo Agrokhim", Russia	Tribenuron-methyl	Winter wheat	31.12.2017
286	Grand 75% v.d.g.	Euro Team Ltd JV – Uzbekistan - Germany	Tribenuron-methyl	Winter wheat	31.12.2015
290	Granland 75% s.t.s	Euro Team Ltd JV – Uzbekistan - Germany	Tribenuron-methyl	Winter wheat	31.12.2013
291	Granstar 75 DF 75% s.t.s	"Dupon" USA	Tribenuron-methyl	Winter wheat, spring wheat, barley	31.12.2014
292	Gromstor 75% s.t.s	Agro Best Group - Turkey	Tribenuron-methyl	Winter wheat	31.12.2013
293	Dalstar 75%	"Dalston Associated SA", Panama	Tribenuron-methyl	Winter wheat	31.12.2016
294	Moerstar 75%	Moer Chemsience Co.Ltd. - China	Tribenuron-methyl	Winter wheat	31.12.2017
295	Tayfun 75%	Agrokim Ltd - Uzbekistan	Tribenuron-methyl	Winter wheat	31.12.2013
296	Trimeksa 75%	MAC GmbH – Germany	Tribenuron-methyl	Winter wheat	31.12.2017
297	Ekstrim 75%	"Tagros Chemicals India"	Tribenuron-methyl	Winter wheat	31.12.2015
298	Entostar	Ifoda Agro Kimyo Himoya Ltd - Uzbekistan	Tribenuron-methyl	Winter wheat	31.12.2014
299	Gezagard 50 50% s.p. (R)	"Singenta", Switzerland	Prometryn	Cotton, potatoes, carrot, celery, dill, parsley	31.12.2017
300	Gezagard 50% s.k. (R)	"Singenta", Switzerland	Prometryn	Cotton under film	31.12.2017
301	Avena Super 10% k.e.	Moer Chemsience Co.Ltd. - China	phenoxaprop-P- ethyl +antidot	Winter wheat	31.12.2017
302	Avestar 10% k.e.	Agro Best Group - Turkey	phenoxaprop-P- ethyl +antidot	Winter wheat	31.12.2013
303	Bengal 120 EC	"Agan Chemical Manufactures" Ltd. Israel	phenoxaprop-P- ethyl +antidot	Winter wheat, rice	31.12.2015
304	Dalzlak 7,5%	"Dalston Associated SA", Panama	phenoxaprop-P- ethyl +antidot	Winter wheat	31.12.2016
305	Lastik 70 g/l	Close joint-stock company "Avgust", Russia	phenoxaprop-P- ethyl +antidot	Winter wheat	31.12.2016

S/Nb	Name of the chemicals	Origin of the production	Type of chemicals	Names of the tested crops	Registration expiry date
306	Lastik 100 g/l	Close joint-stock company "Avgust", Russia	phenoxaprop-P-ethyl +antidot	Winter wheat	31.12.2015
307	Ovsyugen Extra 140+35 g/l	Close joint-stock company "Shelkovo Agrokhim", Russia	phenoxaprop-P-ethyl +antidot	Winter wheat	31.12.2016
308	Puma super 7.5%	"Bayer CropScience", Germany	phenoxaprop-P-ethyl +antidot	Winter wheat, spring wheat	31.12.2016
309	Stella 7,5%	Agrokim Ltd - Uzbekistan	phenoxaprop-P-ethyl +antidot	Winter wheat	31.12.2014
310	Ento Super 7,5%	Ifoda Agro Kimyo Himoya Ltd - Uzbekistan	phenoxaprop-P-ethyl +antidot	Winter wheat	31.12.2014
311	Dalzlak super 15%	"Dalston Associated SA", Panama	fluazifop-P-butyl	Cotton	31.12.2016
312	Legion Super 12,5%	Ifoda Agro Kimyo Himoya Ltd - Uzbekistan	fluazifop-P-butyl	Cotton, onion, carrot	31.12.2014
313	Flusilad super 12,5%	"Singenta", Switzerland	fluazifop-P-butyl	Soy, white beet, table beet, mangel, carrot, onion of all generation, sunflower, cotton, tomato, cabbage, cucumbers, horticultural crops, vineyard, citrus plants	31.12.2016
314	Fuzilad forte 15%	"Singenta", Switzerland	fluazifop-P-butyl	Cotton, white beet, apple-tree, vine, tomato	31.12.2017
315	Halomex 104 g/l	MAC GmbH – Germany	haloxyfop-R-methyl	Cotton, onion	31.12.2017
316	Dalzlak extra 104 g/l	"Dalston Associated SA", Panama	haloxyfop-R-methyl	Cotton	31.12.2016
317	Dragon Super 104 g/l	Sanjar Gold - Uzbekistan	haloxyfop-R-methyl	Potatoes, onion	31.12.2016
318	Zellec super 104 g/l	"Dau AgroScience", USA	haloxyfop-R-methyl	Cotton, white beet, mangel, carrot, onion of all generation, potatoes	31.12.2014
319	Glyphogan 360 g/l	"Maktechim Agan", Israel	glyphosate	Cotton, wheat	31.12.2014
320	Glyphor 75,7%	Moer Chemsience Co.Ltd. - China	glyphosate	Cotton, winter wheat	31.12.2017
321	Glyphos 360 g/l	"Keminava A/C" Denmark	glyphosate	Wheat, barley, cotton, land for no-agricultural needs	31.12.2015
322	Dalglyphos 500 g/l	"Dalston Associated SA", Panama	glyphosate	Cotton, winter wheat, vine	31.12.2017
323	Daphostat 360 g/l	AOYA "Juy Zei", China	glyphosate	Fields for cotton and grain-crops	31.12.2015
324	Nokdaun Max 74,8%	Euro Team Ltd JV – Uzbekistan - Germany	glyphosate	Winter wheat	31.12.2013
325	Raundal 360 g/l	"Monsanto" USA	glyphosate	Fields for grain-crops, land for no-agricultural needs	31.12.2016
326	Smerch 360 g/l	Agrokim Ltd - Uzbekistan	glyphosate	Cotton, winter wheat, land for no-agricultural needs	31.12.2014
327	Sonraund 480 g/l	Agro Best Group - Turkey	glyphosate	orchards	31.12.2013
328	Terminator 360 g/l	Ecokimyobioservis Ltd - Uzbekistan	glyphosate	Cotton, winter wheat, fields for grain-crops	31.12.2017

S/Nb	Name of the chemicals	Origin of the production	Type of chemicals	Names of the tested crops	Registration expiry date
329	Terminator 75%	Ecokimyobioservis Ltd - Uzbekistan	glyphosate	Cotton, winter wheat, land for no-agricultural needs	31.12.2014
330	Uragan Forte 500 g/l	"Singenta", Switzerland	glyphosate	For fields for agricultural and no-agricultural needs, vineyard	31.12.2013
331	Goltix 70%	"Bayer CropScience", Germany	Metamitron	Sugar-beet	31.12.2013
332	Azimex 50%	MAC GmbH – Germany	azimsulfuron	Rice	31.12.2017
333	Alligator 50%	Ecokimyobioservis Ltd - Uzbekistan	azimsulfuron	Rice	31.12.2017
334	Boliver 50%	Agro Best Group - Turkey	azimsulfuron	Rice	31.12.2013
335	Gulliver 50%	"Dupon" USA	azimsulfuron	Rice	31.21.2014
336	Entoliver 50%	Ifoda Agro Kimyo Himoya Ltd - Uzbekistan	azimsulfuron	Rice	31.21.2015
337	Dimet 500 g/l	Close joint-stock company "Avgust", Russia	dicamba +metsulfuron-methyl	Winter wheat	31.12.2015
338	Derby 175 SC 17,5%	"Dau AgroScience", USA	flumetsulam + florasulam	Wheat	31.12.2014
339	Cotoran 80%	"Agan Chemical Manufactures" Ltd. Israel	fluometuron	Cotton	31.12.2017
340	Cotonex 80%	"Maktechim Agan", Israel	fluometuron	Cotton	31.12.2015
341	Cotoran 80%	JVCcloseJSCElektrokhimz avod - Uzbekistan	fluometuron	Cotton	31.12.2013
342	Londax 60%	"Dupon" USA	bensulfuron-methyl	Rice	31.21.2014
343	Magnum 600 g/l	Close joint-stock company "Avgust", Russia	metsulfuron-methyl	Wheat of indispensable condition sowing the next year	31.13.2014
344	Nabu 20%	"Nippon Soda", Japan	sethoxydim	Onion, carrot, cotton	31.12.2014
345	Genotref48%	Agri Science - Turkey	trifluralin	Cotton	31.12.2017
346	Triflurex 48%	"Agan Chemical Manufactures" Ltd. Israel	trifluralin	Cotton, tomato	31.12.2014
347	Ordram 6E 72%	"Singenta", Switzerland	Molinate	Rice	31.12.2015
348	Pantera 40 g/l	(Uniroyal chemical) Registrations Ltd. UK	quizalofop-P-tefuryl	Cotton, sugar-beet	31.12.2016
349	Enterra 40 g/l	Ifoda Agro Kimyo Himoya Ltd - Uzbekistan	quizalofop-P-tefuryl	Cotton	31.12.2015
350	Targa super 5%	"Nissan Chemical" Japan	quizalofop-P-ethyl	Cotton, potatoes, tomato, cucumber	31.12.2014
351	Forvard MKE 60 g/l	Close joint-stock company "Shelkovo Agrokhim", Russia	quizalofop-P-ethyl	Cotton, tomato	31.12.2017
352	PIK, 75%	"Singenta", Switzerland	Prosulfuron	Winter wheat	31.12.2015
353	Rainbou 2.5%	"Dau AgroScience", USA	Penoxulam	Rice	31.12.2017
354	Zorro 33%	Moer Chemsience Co.Ltd. - China	pendimethalin	Cotton, onion	31.12.2014

S/Nb	Name of the chemicals	Origin of the production	Type of chemicals	Names of the tested crops	Registration expiry date
355	Penmort 33%	Astra industrial complex – Saudi Arabia	pendimethalin	Cotton	31.12.2016
356	Samuray 33%	"Parijat Avencis" India	pendimethalin	Cotton, maize, potatoes, onion, carrot	31.12.2016
357	Stomp 33%	BASF, Germany	pendimethalin	Onion for all generation, cotton maiz, carrot, potatoes	31.12.2015
358	Stonp 50%	Euro Team Ltd JV – Uzbekistan - Germany	pendimethalin	Cotton, onion	31.12.2015
359	Stop 33%	Agrokim Ltd - Uzbekistan	pendimethalin	Cotton, maize, potatoes, onion, carrot	31.12.2016
360	Super Stomp 33%	Sanjar Gold - Uzbekistan	pendimethalin	maize, potatoes, onion	31.12.2016
361	Trinity 33%	Cropprotect Ltd - Uzbekistan	pendimethalin	Cotton	31.12.2014
362	Fist 33%	Cerexagri - Turkey	pendimethalin	Cotton, onion, carrot	31.12.2017
363	Entostop 33%	Ifoda Agro Kimyo Himoya Ltd - Uzbekistan	pendimethalin	Cotton, maize, potatoes, onion, carrot	31.12.2015
364	Estamp KE 330 g/l	Close joint-stock company "Shelkovo Agrokhim", Russia	pendimethalin	Cotton, onion	31.12.2017
365	Saturn 50%	"Kumiay Cemical" Japan	benthiocarb	Rice	31.12.2014
366	Serto plus 75%	BASF, Germany	dicamba +tritosulfuron-ethyl	Winter wheat, barley	31.12.2017
367	Avangard 10%	Himreaktiv-Snab Ltd - Uzbekistan	pyrazosulfuron-ethyl	Rice	31.12.2016
368	Sirius 10%	"Nissan Chemical" Japan	pyrazosulfuron-ethyl	Rice	31.12.2015
369	Starane 200 20%	"Dau AgroScience", USA	fluroxypyr	Winter wheat, maize, onion	31.12.2014
370	Starane Premium 330 EC	"Dau AgroScience", USA	fluroxypyr	Winter wheat, onion	31.12.2013
371	Fluroxypyr 36%	Euro Team Ltd JV – Uzbekistan - Germany	fluroxypyr	Winter wheat, onion	31.12.2016
372	Himrane 400 g/l	Nanjing Essence Fine-Chemical - China	fluroxypyr	Winter wheat	31.12.2017
373	Ento-Rane 20%	Ifoda Agro Kimyo Himoya Ltd - Uzbekistan	fluroxypyr	Wheat, onion	31.12.2015
374	Stapl 85%	"Kumiay Cemical" Japan	pyrithiobac-sodium	Cotton	31.12.2015
375	Titus 25%	"Dupon" USA	Rimsulfuron	Maize, tomate	31.12.2014
376	Gramin 8%	Euro Team Ltd JV – Uzbekistan - Germany	clodinafop-propargyl + cloquintocet mexyl	Winter wheat	31.12.2015
377	Dalzlak-T 8%	"Dalston Associated SA", Panama	clodinafop-propargyl + cloquintocet mexyl	Winter wheat	31.12.2013
378	Clodimex 8%	MAC GmbH – Germany	clodinafop-propargyl + cloquintocet mexyl	Winter wheat	31.12.2017
379	Terdok 8%	Agro Best Group - Turkey	clodinafop-propargyl +	Winter wheat	31.12.2013

S/Nb	Name of the chemicals	Origin of the production	Type of chemicals	Names of the tested crops	Registration expiry date
			cloquintocet mexyl		
380	Topic 8%	"Singenta", Switzerland	clodinafop-propargyl + cloquintocet mexyl	Winter wheat	31.12.2015
381	Hussar 5%	"Bayer CropScience", Germany	Iodosulfuron-methyl sodium	Winter wheat	31.12.2014
382	Centurion 25.4%	"Arista life Science SAS", France	clethodim	Cotton, sugar-beet, onion	31.12.2015
383	Facet 25%	BASF, Germany	quinclorac	Rice	31.13.2017
384	Cefat 25%	JVCloseJSCElektrokhimzavod - Uzbekistan	quinclorac	Rice	31.13.2016
385	Shogun 10%	"Maktechim Agan", Israel	propaquizafop	Cotton	31.12.2017
Defoliant and Desiccant					
386	Avguron 500 g/l	Close joint-stock company "Avgust", Russia	thidiazuron	Cotton middle-fibre	31.12.2014
387	Dropp 50%	"Bayer CropScience", Germany	thidiazuron	Cotton middle-fibre	31.12.2017
388	Avguron exrta 540 g/l	Close joint-stock company "Avgust", Russia	thidiazuron + diuron	Cotton middle-fibre	31.12.2014
389	Dalron super SK	"Dalston Associated SA", Panama	thidiazuron + diuron	Cotton middle-fibre	31.12.2016
390	Defolux 540 g/l	Moer Chemscience Co.Ltd. - China	thidiazuron + diuron	Cotton middle-fibre	31.12.2013
391	Jinstar 540 g/l	"Bayer CropScience", Germany	thidiazuron + diuron	Cotton middle-fibre	31.12.2014
392	Dropp Ultra 18%	"Bayer CropScience", Germany	thidiazuron + diuron	Cotton	31.12.2015
393	Yanichar SK	Close joint-stock company "Shelkovo Agrokhim", Russia	thidiazuron + diuron	Cotton middle-fibre	31.12.2016
394	Kabuki 2.5%	"Nihon Nohiaku", Japan	Piraphluphenetil	Cotton	31.12.2014
395	Mezon, 53%	IONH under AS, Uzbekistan	Chlorat sodium	Cotton middle-fibre	31.12.2016
396	Optim - 2 70%	TIIM, UzNIISGPZ, Uzbekistan	Phenilammoniy 2 chlor etil phosphonat	Cotton middle-fibre	31.12.2014
397	Reglon Super 15%	"Singenta", Switzerland	diquat	Cotton middle-fibre	31.12.2016
398	Rivet 24%	"FMC" USA	Carventrazon - etil	Cotton middle-fibre	31.12.2014
399	Sadaf 70%	IONH under AS, Ecomiyobioservis Ltd - Uzbekistan	Tricarbamidohlorat natriy	Cotton middle-fibre	31.12.2015
400	Sadaf - K 96.6%	IONH under AS, Uzbekistan	Tricarbamidohlorat natriy	Cotton middle-fibre	31.12.2015
401	Sihat70.5%	IONH under AS, Uzbekistan	Tricarbamidohlorat natriy	Cotton middle- and fine- fibre	31.12.2015

S/Nb	Name of the chemicals	Origin of the production	Type of chemicals	Names of the tested crops	Registration expiry date
402	Samara 70%	Ecokimyobioservis Ltd - Uzbekistan	Dicarbomidchloride hloratnatriy + diacetatetanolamin	Cotton middle-fibre	31.12.2016
403	Sardor 52%	IONH under AS, Uzbekistan	Chlorat natrium + 2 chloretilphosphonat monoetanol ammoniy	Cotton middle-fibre	31.12.2014
404	Sahovat 45%	HosilotLtd, Uzbekistan	Chlorat natrium + phosphat etanolamina	Cotton middle-fibre	31.12.2017
405	Super HMD j	IONH under AS, Uzbekistan	365 g/l chlorat magniy + 4.5 g/l phosphat etanoplamin	Cotton middle-fibre	31.12.2016
406	Finish 540 g/l	"Bayer CropScience", Germany	Etephon + ciclonilid	Cotton middle- and fine- fibre	31.12.2015
407	Polydef 18%	IHFP, Uzbekistan	Chlorat Magniy	Cotton	31.12.2014
408	Chlorat Magniy 60%	"Azot", Uzbekistan	Chlorat Magniy	Cotton middle- and fine- fibre, rice	31.12.2013
409	Chlorat Magniy 36%	"Azot", Uzbekistan	Chlorat Magniy	Cotton	31.12.2014
410	Chlorat Magniy 43%	"Azot", Uzbekistan	Chlorat Magniy	Cotton	31.12.2014
411	UzDEF	IONH under AS, Uzbekistan	Chlorat Magniy 33% + 10% carbamide	Cotton middle-fibre	31.12.2017
412	UzDEF-I	IONH under AS, Uzbekistan	Chlorat Magniy + carbamide + acetamiprid	Cotton middle-fibre	31.12.2017
Growth Regulators					
413	Baraka 60%	Privately owned enterprise "Baraka", Uzbekistan	Natriy of cotton soapstok	Winter wheat	31.12.2014
414	Bahor 93%	OOO "Navkar servis", Uzbekistan	Ammonium of salicylic acid (ammonium salicylate)	Winter wheat, cotton	31.12.2015
415	Vitavax 200 FF 34%	(Uniroyal chemical) Registrations Ltd. UK	Carboxin + thiram	Winter wheat, cotton	31.12.2014
416	Vitaros 34%	Close joint-stock company "Avgust", Russia	Carboxin + thiram	Cotton	31.12.2014
417	Gumat Natriy 30%	Research-and-production association "Print - TM",	Natrium salt of guminium acid	Cotton middle-fibre, cotton, wheat, tomato, cucumber, potatoes	31.12.2015
418	Gumat Natriy 30%	Privately owned enterprise "Gutnikov", Uzbekistan	Natrium salt of guminium acid	Cotton, tomato	31.12.2017
419	Gummi 30%	Privately owned enterprise "Green grass", Uzbekistan	Natrium salt of guminium acid	Tomato, cucumber, cabbage	31.12.2014

S/Nb	Name of the chemicals	Origin of the production	Type of chemicals	Names of the tested crops	Registration expiry date
420	Dalpiksi 5%	"Dalston Associated SA", Panama	mepiquat chloride	Cotton	31.12.2016
421	Pahta-djan 98%	Agrokim Ltd., Uzbekistan	mepiquat chloride	Cotton	31.12.2017
422	Uztikc 5%	JVCloseJSCElektrokhimz avod - Uzbekistan	mepiquat chloride	Cotton	31.12.2016
423	Entojean 98%	Ifoda Agro Kimyo Himoya Ltd - Uzbekistan	mepiquat chloride	Cotton	31.12.2015
424	Madad 50 g/l	IONH under AS, Uzbekistan	Phosphat-etanol-amin	Wheat, cotton, tomato, cucumber, potatoes	31.12.2016
425	Moviy 50%	"Hosilot" Ltd, Uzbekistan	Phosphat-etanol-amin	Winter wheat, cotton, tomato, potatoes, cabbage	31.12.2014
426	Hosil 40%	IONH under AS, Uzbekistan	Phosphat-etanol-amin	Wheat, cotton, tomato, potatoes, cabbage	31.12.2013
427	Nitrolin 10%	IHRV under AS, Uzbekistan	Polymer of saponificated nitron	Cotton, cucumber	31.12.2014
428	KGMU	Zarina-Zerno Ltd, Uzbekistan	Salt of guminium acid	Cotton, wheat, tomato	31.12.2017
429	Linogumat	Albit-Lingumat Ltd, Uzbekistan	Salt of guminium acid	Cotton, wheat	31.12.2013
430	Ocigumat 10%	"Grand Agro Plus" Uzbekistan	Salt of guminium acid	Cotton, cucumber	31.12.2015
431	UzGUMI	"TBS Group" Ltd, Uzbekistan	Salt of guminium acid	Cotton, wheat, tomato, potatoes	31.12.2016
432	Edagum SM	"Specesnastika SM Service" Ltd, Russia	Salt of guminium acid	Cotton, wheat, tomato, rice	31.12.2013
433	P-4 65%	Agrokim Ltd., Uzbekistan	Dimetilol-carbamid	Cotton	31.12.2015
434	Roslin 10%	IHRV under AS, Uzbekistan	Copolymer fibers of nitron with nitrolignin	Cotton, winter wheat, tomato, cucumber	31.12.2016
435	Rostbisol 60%	IGEBR under AS, Uzbekistan	Tetrametilendiamin of oxalic acid	Cotton	31.12.2015
436	Stimulator T 2.5 g/l	Biochemical Institute under AS, Uzbekistan	Di-iodine-ociphen-oci di-phenilamin	Cotton	31.12.2016
437	TJ-85 p.	IONH under AS, Uzbekistan	Ocietil urea zinchhydrate	Cotton	31.12.2015
438	Uchkun 1%	IHRV under AS, Uzbekistan	Derivative of isoprene	Cotton	31.12.2014
439	HS-2 70%	NTC "Himstim", NTPC "Dilfayz-Sulnodira", Uzbekistan	Furfuroliden-dicarbamide	Cotton, wheat	31.12.2014
440	CeCeCe 750 g/l	BASF, Germany	chlormequat chloride	Wheat	31.12.2016
441	Dalrost 720 g/l	"Dalston Associated SA", Panama	etephon	Cotton	31.12.2017
442	Uzprep 720 g/l	JVCloseJSCElektrokhimz avod - Uzbekistan	etephon	Cotton middle- and fine- fibre	31.12.2013
443	Verbaktin 50 mg/ml	Institute of Microbiology, IHRV under AS, Uzbekistan	Bacillus licheniformis strain 234 + streptomyces roseoflavus strain 33	Cotton	31.12.2015

S/Nb	Name of the chemicals	Origin of the production	Type of chemicals	Names of the tested crops	Registration expiry date
444	Plantastim	Private company “AnGuzalAgroservis” - Uzbekistan	Trichoderma Lignorum strain AN 988, BA – 3000 EA/g	Tomato	31.12.2015
Fungicides					
445	Quadris 25% (250 g/l)	"Singenta", Switzerland	azoxystrobin	Vine, tomato and cucumber under film	31.12.2014
446	Geros 25% (250 g/l)	Agri Science - Turkey	azoxystrobin	Vine	31.12.2016
447	Fundazol 50% (500 g/kg)	Agro-Kemy - Hungary	benomyl	Wheat, tomato, cucumber, apple, pear, vine	31.12.2015
448	Vectra 10% (100 g/l)	"Bayer CropScience", Germany	bromuconazole	Vine, apple	31.12.2015
449	Akrobat MC 690 g/kg	BASF, Germany	dimethomorph 90 g/kg + mancozeb 600 g/kg	Potatoes, cucumber, onion, vine	31.12.2016
450	Broader 30% k.e. (150 g/l + 150 g/l)	Agro Best Group - Turkey	difenoconazole + propiconazole	Wheat	31.12.2014
451	Strobi 50% (500 g/kg)	BASF, Germany	kresoxym-methyl	Apple	31.12.2014
452	Benvol 50%	Agri Science - Turkey	kresoxym-methyl	Apple	31.12.2016
453	Ridomil Gold MC 68% (640+40 g/kg)	"Singenta", Switzerland	mancozeb + metalaxyl-M	Tomato, vine	31.12.2016
454	Fungoceb Plus 68% (640+40 g/kg)	Euro Team Ltd JV – Uzbekistan - Germany	mancozeb + metalaxyl-M	Tomato, vine	31.12.2015
455	Lotos 10% (100 g/l)	Moer Chemsience Co.Ltd. - China	penconazole	Vine, tomato and cucumber, apple	31.12.2014
456	Pavlina 10% (100 g/l)	Cropprotect Ltd - Uzbekistan	penconazole	Vine, apple	31.12.2014
457	Penco 10%	Euro Team Ltd JV – Uzbekistan - Germany	penconazole	Vine, apple	31.12.2016
458	Topaz 10% (100 g/l)	"Singenta", Switzerland	penconazole	Vine, apple, cucumber, tomato, peach, wild strawberry	31.12.2017
459	Topuzum 10%	Himreaktiv-Snab Ltd - Uzbekistan	penconazole	Vine	31.12.2015
460	Fulpas 10% (100 g/l)	Agro Best Group - Turkey	penconazole	Vine, apple	31.12.2013
461	Ento Paz Extra 10% (100 g/l)	Ifoda Agro Kimyo Himoya Ltd - Uzbekistan	penconazole	Vine, apple, tomato	31.12.2014
462	Akanto Plus 28%	"Dupon International Operations" - Switzerland	picoxistrobin 200 g/l + cyproconazole 80 g/l	Winter wheat	31.12.2016
463	Lime-sulfuric Decoction	Uzbekistan	polysulfide calcium	Apple, pear, cheary, plum, vine, cucumber, apricot, peas, haricot, sugar beet, raspberry, rose	31.12.2017
464	Previkur SL 722	"Bayer CropScience",	propamocarb	Cotton fine-fibre, tomato	31.12.2015

S/Nb	Name of the chemicals	Origin of the production	Type of chemicals	Names of the tested crops	Registration expiry date
		Germany	hydrochloride 722 g/l		
465	Prevekur 60,7%	Regal Globe Service Ltd - Uzbekistan	propamocarb hydrochloride 722 g/l	Tomato	31.12.2014
466	Prokure 772 SL 77,2%	Astra Industrial Complex Co.Ltd. – Saudi Arabia	propamocarb hydrochloride 722 g/l	Tomato, cucumber, potatoes	31.12.2015
467	Proksanil 45%	Euro Team Ltd JV – Uzbekistan - Germany	propamocarb hydrochloride 400 g/l + cymoxanil 50 g/l	Vine, tomato, cucumber, potatoes	31.12.2016
468	Bumper 25%	"Maktechim Agan", Israel	Propiconazole	Vine, wheat	31.12.2014
469	Krest 25%	"Tagros Chemical India Ltd"	Propiconazole	Vine, winter wheat	31.12.2015
470	Tilzole 25%	Astra Industrial Complex Co.Ltd. – Saudi Arabia	Propiconazole	Winter wheat	31.12.2015
471	Titul 390 g/l	Close joint-stock company "Shelkovo Agrokhim", Russia	Propiconazole	Vine, winter wheat	31.12.2015
472	Bumper Super	Makteshim Chemical Works Ltd – Israel	Propiconazole 90 g/l + prochloraz 400 g/l	Winter wheat	31.12.2016
473	Kolosal Pro (300 + 200 g/l)	Close joint-stock company "Avgust", Russia	propiconazole + tebuconazole	Vine, winter wheat, apple, plum	31.12.2015
474	Titul Duo (200 + 200 g/l)	Close joint-stock company "Shelkovo Agrokhim", Russia	propiconazole + tebuconazole	Winter wheat	31.12.2015
475	Alto Super 33% (250 + 80 g/l)	"Singenta", Switzerland	propiconazole + cyproconazole	Winter wheat	31.12.2015
476	Nikarden 70%	Agri Science - Turkey	Propineb 700 g/kg	Vine	31.12.2017
477	Segra 80% s.p. (fine-dyspersated)	Agrokim Ltd - Uzbekistan	sulfur	Cotton	31.12.2016
478	Sulfur shredded	Shorsuv hamkor biznes kapitalLtd - Uzbekistan	sulfur	All cultivation	31.12.2013
479	Iron vitriol 53%	NGMK, Uzbekistan	ferrous sulphate	Apple, pear, vine	31.12.2013
480	Copper vitriol 98% (980 g/kg)	AGMK, Uzbekistan	copper sulfate	Apple, pear, apricot, plum, cherry, sweet cherry, peach, currants	31.12.2013
481	Liquid Bordeaux	Uzbekistan	copper sulfate + calcium hydroxide	Apple, pear, apricot, plum, cherry, sweet cherry, peach, currants, quince, citrus crops, potatoes, tomato, cucumber, onion, melon, water melon, mangel, red and sweet beet, lucerne	31.12.2017
482	Daleton 250 g/l	"Dalston Associated SA", Panama	tebuconazole	Vine	31.12.2017

S/Nb	Name of the chemicals	Origin of the production	Type of chemicals	Names of the tested crops	Registration expiry date
483	Kolosal 25% (250 g/l)	Close joint-stock company "Avgust", Russia	tebuconazole	Vine, winter wheat	31.12.2014
484	Pilarkur 25% (250 g/l)	Pilar Agree Saens Corp. - Canada	tebuconazole	Vine, wheat	31.12.2016
485	Duplet TT 22,5% (125+100 g/l)	Agrokim Ltd - Uzbekistan	tebuconazole + triadimefon	Vine, wheat, rice	31.12.2014
486	Zangcid 22,5% (125+100 g/l)	Ecokimyobioservis Ltd - Uzbekistan	tebuconazole + triadimefon	Wheat	31.12.2014
487	Tebumex Plus 22,5% (125+100 g/l)	MAC GmbH – Germany	tebuconazole + triadimefon	Vine	31.12.2017
488	Torso 22,5% (125+100 g/l)	Euro Team Ltd JV – Uzbekistan - Germany	tebuconazole + triadimefon	Vine, winter wheat	31.12.2013
489	Uredocin 22,5% (125+100 g/l)	Moer Chemsience Co.Ltd. - China	tebuconazole + triadimefon	Vine, wheat, rice	31.12.2014
490	Foliar BT 22,5% (125+100 g/l)	Euro Team Ltd JV – Uzbekistan - Germany	tebuconazole + triadimefon	Vine, wheat, rice	31.12.2015
491	Folikur BT 22,5% (125+100 g/l)	"Bayer CropScience", Germany	tebuconazole + triadimefon	Vine, wheat, rice	31.12.2016
492	Entolikur 22,5% (125+100 g/l)	Ifoda Agro Kimyo Himoya Ltd - Uzbekistan	tebuconazole + triadimefon	Vine, wheat, rice	31.12.2014
493	Falkon 46%	"Bayer CropScience", Germany	tebuconazole + spiroxamine + triadimenol	Winter wheat	31.12.2017
494	Malkon 46%	Sanjar Gold - Uzbekistan	tebuconazole + spiroxamine + triadimenol	Vine	31.12.2017
495	Topsin-M 70% (700 g/kg)	"Nippon Soda", Japan	thiophanate-methyl	Cucumber, vine, apple, rice	31.12.2014
496	Bayleton 25% (250 g/kg)	"Bayer CropScience", Germany	triadimefon	Wheat, barley, maize, oat, sugar-beet, cucumber, tomato, melon, apple, vine, wild strawberry, plum, rose	31.12.2013
497	Batyr 25%	MM Agro Corporation, USA	triadimefon	Vine, apple	31.12.2013
498	Saprol 20% (200 g/l)	Sumitoma Corporation, Japan	triforine	Vine, apple	31.12.2015
499	BIM 750 g/kg	"Dau AgroScience Export SAS", France	tricyclazole	Rice	31.12.2014
500	Ultimatrix 52,5%	Agri Science - Turkey	Famoxadone 225g/kg + cymoxanil 300g/kg	Cucumber	31.12.2017
501	Panch 40%	"Dupon International Operations" - Switzerland	flusilazole	Vine, apple	31.12.2013
502	Impakt 25%	Keminova A/S - Denmark	flutriafol	Vine, apple, winter wheat	31.12.2016
503	Himpakt 35% (350 g/l)	Himreaktiv-Snab Ltd - Uzbekistan	flutriafol	Vine, apple, winter wheat	31.12.2016
504	Shavit F 72%	Makteshim Chemical Works Ltd – Israel	folpet 700g/kg + triadimenol 20g/kg	Vine, tomato, cucumber	31.12.2016

S/Nb	Name of the chemicals	Origin of the production	Type of chemicals	Names of the tested crops	Registration expiry date
505	Copper oxychloride 85% (850 g/kg)	Himreaktiv-Snab Ltd - Uzbekistan	copper oxychloride	Vine, coniferous and deciduous decorative plants	31.12.2015
506	Amarant 50% (500 g/kg)	Agri Science - Turkey	copper oxychloride	Vine	31.12.2016
507	Entohlorok 85% (850 g/kg)	Ifoda Agro Kimyo Himoya Ltd - Uzbekistan	copper oxychloride	Vine	31.12.2016
508	Kurzat R (397,5 g/kg + 42g/kg)	"Dupon International Operations" - Switzerland	copper oxychloride + cymoxanil	Vine, tomato, cucumber, potatoes	31.12.2013
509	Entohlorok Plus (397,5 g/kg + 42g/kg)	Ifoda Agro Kimyo Himoya Ltd - Uzbekistan	copper oxychloride + cymoxanil	Vine, potatoes	31.12.2017
510	Centrik 50%	Agri Science - Turkey	cymoxanil 50g/kg + mancozeb 450g/kg	Potatoes	31.12.2016
511	Cimopro 76%	Agri Science - Turkey	Cymoxanil 60g/kg + propineb 700g/kg	Tomato	31.12.2017
512	Konsul 12,5%	BASF, Germany	epoxiconazole	Winter wheat	31.12.2016
513	Rex Duo 49,5% (187g/l + 310g/l)	BASF, Germany	epoxiconazole + thiophanate-methyl	Winter wheat	31.12.2013
514	Sporagin 1500 EA/g	Private company "AnGuzalAgroservis" - Uzbekistan	Bacillus subtilis, strain AN 2004	Winter wheat, cotton	31.12.2016
515	BIST k.s. 0,8-1 billion/1 ml	National University, Uzbekistan	Pseudomonas putida Pp-1	Tomato, cucumber	31.12.2015

*Used only by special trained personnel with strict following the instructions with application of substance for individual protection of respiratory organs, that filtrates through masks and special dress coat.

Source: Handbook: List of pesticides and agrochemicals permitted for use in agriculture in Republic of Uzbekistan (Tashkent, 2013).

ANNEX12

LIST OF CHEMICAL PROTECTANTS, INCLUDED INTO THE REGISTER OF FORBIDDEN AND LIMITED ON APPLICATION THE ACTIVE AND NON-ACTIVE INGREDIENTS.

#	Name of preparation or reactant	CAS No.	Registration date	Registration period validity	Reason of forbidden or limitation
1.	DDT and metabolites. 1.1-di-(4-chlorophenol) 2.2.2 trichloroethane (pesticide)	50-29-3	28.02.2001	Permanently	High-persistent pesticide, with full-blown cumulative behavior
2.	Hexachloran (sum of isomers GCCH) 1.2.3.4.5.6.-Hexachloro-cyclohexane(pesticide)	608-73-1	28.02.2001	Permanently	Stable in external environment, with carcinogenic, embryotoxic action, cumulative behavior. High level of products pollution
3.	2.4.5-T (dynoxol TCF)* (pesticide)	93-76-5	28.03.2002	Permanently	Teratogen, carcinogen, mutagen. Stable in external environment
4.	Aldrin ** (pesticide)	309-00-2	28.03.2002	Permanently	Highly toxic, Stable in external environment
5.	Captaphol * (pesticide)	2425-06-1	28.03.2002	Permanently	Carcinogenic, Stable in external environment
6.	Chlordan ** (pesticide)	57-74-9	28.03.2002	Permanently	Stable in external environment
7.	Chlordimeform * (pesticide)	6164-98-3	28.03.2002	Permanently	Mutagen, Carcinogenic, Stable in external environment
8.	Chlorbenzilat * (pesticide)	510-15-6	28.03.2002	Permanently	Oncogenic, Stable in external environment
9.	Heptachlor ** (pesticide)	76-44-8	28.03.2002	Permanently	Highly toxic, Carcinogenic, Stable in external environment
10.	Deldrin ** (pesticide)	60-57-1	28.03.2002	Permanently	Virulent toxic agent, Stable in external environment
11.	Dinoseb and it's salts * (pesticide)	88-85-7	28.03.2002	Permanently	Highly toxic, Teratogen, Stable in external environment
12.	1.2 – Dibromethane * (pesticide)	106-93-4	28.03.2002	Permanently	Oncogenic, Stable in external environment
13.	Fluoroacetamide * (pesticide)	640-19-7	28.03.2002	Permanently	Highly toxic, Stable in external environment
14.	Hexachlorobenzene ** (pesticide)	118-74-1	28.03.2002	Permanently	Highly cumulative, Stable in external environment
15.	Lindan * compound	58-89-9	28.03.2002	Permanently	Highly cumulative, Oncogenic, Stable in external environment
16.	Mercury compounds * phenol		28.03.2002	Permanently	Highly toxic, Stable in external environment
17.	Pentachloro-phenol * phenol	87-86-5	28.03.2002	Permanently	Full-blown skin-resorptive action, Stable in external environment
18.	Monocortophos * (dangerous formulation)	6923-22-4	28.03.2002	Permanently	Highly toxic, Stable in external environment
19.	Metamydophos * (dangerous formulation)	10265-92-6	28.03.2002	Permanently	Stable in external environment
20.	Phosphamydon * (dangerous formulation)	13171-21-6	28.03.2002	Permanently	Stable in external environment
21.	Methyl-parathyon * (dangerous formulation)	298-00-0	28.03.2002	Permanently	Highly toxic, Teratogen, embryotoxic, Stable in external environment
22.	Parathyon * (dangerous formulation)	56-38-2	28.03.2002	Permanently	Highly toxic, Stable in external environment
23.	Endrin ** (pesticide)	77-20-8	21.10.2005	Permanently	Highly toxic, Stable in external environment
24.	Mirex ** (pesticide)	2385-85-5	21.10.2005	Permanently	Carcinogenic, Stable in external environment
25.	Toxaphen ** (pesticide)	8001-35-2	21.10.2005	Permanently	Highly toxic, Carcinogenic

26.	TMTD (thiram, thiuram)	137-26-8	26.06.2013	Permanently	Fetotoxic, gonadotoxic, teratogen, carcinogen, mutagen.
27.	Carbendazim	10605-21-7	26.06.2013	Permanently	Teratogen, carcinogen, mutagen, fetotoxic, gonadotoxic.

* the most dangerous chemical compounds, forbidden and limitation of which is approved by the Rotterdam convention.

** the most dangerous chemical compounds, forbidden and limitation of which is approved by the Stockholm convention.

Decision to include these preparations to the given "Register" was accepted on the sittings of State Chemical Commission (Goshimkimissiya) on 28 March 2001, 28 March 2002, 21 October 2005, 26 June 2013.

Source: List of chemical protectants, included into the register of forbidden and limited on application the active and non-active ingredients (Tashkent, 2013)

SUMMARY OF PROJECT OUTCOMES OF RESP-II

UZ-RESP-II. Outputs of the Credit Component and Environmental impacts

A	B	C	D	E	F	G
	UNIT	TOTAL	Positive Env Impacts	Negative Env. Impacts	Mitigation Measures	Responsibility
Agricultural machinery	units	287	reducing pollution by increasing fuel and lubricant efficiency; increase of soil fertility (organic structure, capillaries, drainability) by replacing the top soil layer through more timely cultivation & ploughing	compacting the earth from over use of the machine on the field (esp. wheeled tractors, not the track tractors)	supply and use of appropriate type and size equipment	farmers
Livestock (cattle)	heads	2,396	Increase in organic fertilizer (manure), increase of crop rotation and diversification of plants, (e.g. alfalfa increases nitrogen level of the soil)	overgrazing; contamination of surface & ground waters from concentration of uncleaned wastes	(i) regulations on animal pressures on pastures (e.g. 1 cattle/1 ha irrigated land and 1,5 ha pasture; (ii) use of manure as fertilizer	(i) local authorities; (ii) farmers
Livestock (sheep)	heads	1,910	Increase in organic fertilizer (manure), increase of crop rotation and diversification of plants, (e.g. alfalfa increases nitrogen level of the soil)	overgrazing; contamination of surface & ground waters from concentration of uncleaned wastes	(i) regulations on animal pressures on pastures (e.g. 10 sheep/1 ha irrigated land and 1,5 ha pasture; (ii) use of manure as fertilizer	(i) local authorities; (ii) farmers
Poultry (chickens)	heads	601,788	Increase in organic fertilizer (manure)	contamination of surface & ground waters from concentration of uncleaned wastes	use of manure as fertilizer	poultry farmers
Orchards and vineyards	hectares	278	Use of intensive technology increases yields per hectare, which reduces cropping area.	water pollution, soil contents in using pesticides	training in safe pesticide use and handling; introduction of IPM	Rural advisory services for training; farmers for adoption of appropriate methods
Cold storage (capacity)	tonnes	5,550	Use of modern technology and storage the farm outputs	air pollution, safety and health, noise	Using acceptable Substitutes for CFCs	credit recipient
Green-houses	projects	4	Use of intensive technology increases yields per hectare, which reduces cropping area.	use of negative pesticides, wastes from cleaning, wastes from cleaning, left over materials from construction, oil & fuel spills, dust, noise	introduce IPM, biological treatments; disposal of old metals and structures to scrap heaps, watering the surface to reduce dust, working during daytime to avoid noise	contractors/project manager

Agro-processing (fruits and vegetables, milk processing, production of bakery products, etc)	projects	16	Use of modern technology and processing the farm outputs	Water pollution.safety and health.biophysical and cultural losses through location	wastewater treatment, proper siting, proper control of construction wastes and impact (noise, dust)	credit recipient
TOTAL COST	USD	35,810,733				

Source: M&N unit of RRA