

Annexure 6-B: Environmental Survey Checklist (Existing)

SCREENING CHECKLIST – AGRICULTURE SECTOR (EXISTING)

ASSAM AGRIBUSINESS AND RURAL TRANSFORMATION PROJECT

Basic Information

Name of Project :
 Village : Cluster:
 Block : District:
 Type of the Project :
 Total Area :
 Name of Monitor's :
 Name of Supervisor :

Sl. No.	Questions asked to the Farmers	Response	Specify/Remarks
1.	Area of the Demonstration Plot?		
2.	Is the plot located within or near to any environmentally sensitive area like notified forest area, biosphere reserve, wildlife sanctuary, wetland, etc.?		
3.	What crop variety will be cultivated under APART demonstration?		
4.	Status of Land ownership? (Patta land, Lease land, Exonia, Govt. Land, Etc.)		
5.	How many times a year the farmers cultivate?		
6.	What are the crop varieties the famers cultivate?		
7.	Do they cultivate any local varieties?		
8.	From where do they bring the seeds?		
9.	Do the farmers use any types of fertilizers? What are those?		
10.	What steps the farmers take in case of disease outbreak and pest attacks in crops?		
11.	Do they use pesticides? What are those?		
12.	Do they procure chemicals, fertilizers and pesticides from licensed seller?		
13.	Dot he farmers use persona protective equipment during handling and application of chemicals/pesticides/fertilizers?		

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14.	Does the agricultural field have proper irrigation facility?		
15.	What is the period of occurrence of flood in that area?		
16.	Do the farmers practice fish cum rice cultivation?		
17.	Do the farmers have proper storage facilities for the gains?		
18.	Do the agricultural fields have proper drainage system?		
19.	Do the farmers undergo any soil test?		
20.	Do they follow integrated pest management practices?		
21.	Are there any disturbances from wild animals or birds?		
22.	What are the common birds, insects, amphibians etc. found in the field. Any loss of commonly found species?		
23.	Do they follow any type of waste management practices?		

ANNEXURE 7: ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (BY PROJECT SECTORS)

Agriculture and Horticulture

Sl. No.	Project Stage	Project Activity	Environmental / Operational Impacts	Mitigation Measures
1.	Pre-Construction Stage Impacts	<ul style="list-style-type: none"> Land requirement Land and soil surveys Conflict with small land holder farmers over land resources 	<ul style="list-style-type: none"> Loss of land and properties Habitat modification Effect to the local flora and fauna Change in landuse pattern 	<ul style="list-style-type: none"> Provision of compensation for the affected people (PAP's) as per the proposed Entitlement Matrix. In the worst case, there should be a provision for Resettlement and Rehabilitation (R&R) Use of participatory methods to include affected people in decision making process Compensatory measures for restoring the affected flora and fauna should be explored Provision should be made as per the existing landuse policies, laws and land rights
		<ul style="list-style-type: none"> Site Selection 	<ul style="list-style-type: none"> Inappropriate site selection may lead to lesser yield and loss 	<ul style="list-style-type: none"> Suitable soil selection should be done as per the crops requirements. Any well drained soil is suitable for maize cultivation. Sites having sandy and sandy loam fertile soils shall be preferred. Generally sandy soils are suitable for mustard cultivation. However, other light soils are also equally good for Mustard crop cultivation.
2.	Construction Stage Impacts	<ul style="list-style-type: none"> Land Preparation Farm layout 	<ul style="list-style-type: none"> Soil erosion 	<ul style="list-style-type: none"> Appropriate soil and water conservation measures should be adopted
			<ul style="list-style-type: none"> Loss of biodiversity 	<ul style="list-style-type: none"> Limiting clearance of vegetation to those areas where farming will be conducted only
			<ul style="list-style-type: none"> Disruption of hydrological cycle 	<ul style="list-style-type: none"> Preserve surface water hydrology, surface water quality or water resource within or adjacent to project Abide to the existing rules and regulations
			<ul style="list-style-type: none"> Increase stream sedimentation and damage to aquatic ecosystem 	<ul style="list-style-type: none"> Protect water catchment areas
			<ul style="list-style-type: none"> Air and Noise pollution caused by heavy machineries 	<ul style="list-style-type: none"> Use appropriate and regularly services of machineries Encourage use of protective gears Use sound proof machines
			<ul style="list-style-type: none"> Contamination of soil due to oil leakage from 	<ul style="list-style-type: none"> Use appropriate and provide regular

Sl. No.	Project Stage	Project Activity	Environmental / Operational Impacts	Mitigation Measures
			<ul style="list-style-type: none"> • machineries 	<ul style="list-style-type: none"> • services of Machinery and vehicles • Provide specific area for conducting machine services
			<ul style="list-style-type: none"> • Soil compaction due to heavy machineries 	<ul style="list-style-type: none"> • Use of environmentally friendly Machinery e.g. Subsoilers and rippers • Concentrate activities in the project core areas.
3.	Operation Stage Impact (Productivity Enhancement)	<ul style="list-style-type: none"> • Use of chemical • Fertilizer and pesticides 	<ul style="list-style-type: none"> • Soil contamination may result due to overuse of fertilizer and other chemicals that are used to enhance the productivity/ yield. 	<ul style="list-style-type: none"> • Use of suitable fertilizer with a prescribed dose limit (guidance shall be obtained from Agriculture Department). • Overuse of fertilizers particularly nitrogen attract more aphids. • A combination of organic and inorganic fertilizer is a good option • Promoting the use of bio-fertilizer • Training on IPM should be facilitated to farmer in order to make them aware of the hazards of fertilizer and other alternative climate resilient methods. • Integrated pest management plan should be referred with respect to the proposed Project Interventions and accordingly the suggested mitigation/ management measures should be adopted.
			<ul style="list-style-type: none"> • Increased use of pesticides/ fertilizers could lead to issues related to storage, handling, application and disposal 	
			<ul style="list-style-type: none"> • probability of pesticides and fertilizers flowing into food chain and posing a health risks/ hazards 	
		<ul style="list-style-type: none"> • Selection of crop (Cereals, Pulses, Fruits and Vegetables) variety 	<ul style="list-style-type: none"> • If appropriate variety of crop (Cereals, Pulses, Fruits and Vegetables) with respect to the particular season and climatic zone 	<ul style="list-style-type: none"> • Selection of suitable crop (Cereals, Pulses, Fruits and Vegetables) variety with respect to area/ zone should be adopted. (please refer Annexure 5, detailing the variety of crops (Cereals, Pulses, Fruits and Vegetables) recommended for particular season and climatic zone)
		<ul style="list-style-type: none"> • Cultivation precautions 	<ul style="list-style-type: none"> • Use of chemicals in the waterlogged paddy field may create GHG emission (N₂O) 	<ul style="list-style-type: none"> • Use Azolla as a good alternative for Nitrogen dosage.
		<ul style="list-style-type: none"> • Soil Nutrient deficiency 	<ul style="list-style-type: none"> • Excessive use of chemical Fertilizers would leave residues in the soil which would ultimately increase salinity / alkalinity of the soil which in turn will affect the soil structure. 	<ul style="list-style-type: none"> • Integrated Soil Fertility management using organic manures, bio-fertilizers should be adopted • Crop rotation practice should be followed such as before sowing paddy any crop related to legume family (pea, pulse, lentil) should be practiced so as to restore the nitrogen and other micronutrient. • Rhizobium inoculum mixed with soil should be used for soil treatment. • Organic manure such as cow dung, crop residue etc., should be used to

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				<p>keep the soil healthy.</p> <ul style="list-style-type: none"> • Intercropping of Mustard with wheat, barley, gram and lentil under the rain fed conditions and intercropping of mustard with potato under the irrigated conditions could be promoted. • Creating awareness among the farmers to grow pulses following crop rotations for increasing production by restoration of soil fertility and biological nitrogen for long life of soil. • Integrated pest management plan should be referred and accordingly the suggested mitigation/management measures should be adopted.
		<ul style="list-style-type: none"> • Crop rotation problem 	<ul style="list-style-type: none"> • Mono cropping of paddy may lead to depletion of similar kind of nutrients from the soil 	<ul style="list-style-type: none"> • Rice cultivation shall be followed by short duration legumes such as green gram, black gram which shall be cultivated to maintain the soil nutrient balance.
		<ul style="list-style-type: none"> • Irrigation 	<ul style="list-style-type: none"> • Increase in production and farming will increase the demand for irrigation facilities 	<ul style="list-style-type: none"> • All Irrigation facilities should be carried out after obtaining legal consent from irrigation department. • Promotion of more efficient method of irrigation like drip irrigation can be practiced
4.	Post Construction and Operation Stage Impacts	<ul style="list-style-type: none"> • Field sorting, grading and packing 	<ul style="list-style-type: none"> • Inadequate field sorting, grading and packing protocols for commodities that lend well to field packing 	<ul style="list-style-type: none"> • Establish sorting, grading and packing protocols for certain commodities • Educate the farmers and stakeholders
		<ul style="list-style-type: none"> • Storage of the agro products in dry and cold storages 	<ul style="list-style-type: none"> • Insect pests of stored grain / agro products (fruits and vegetables) • High consumption of electricity. • Gas emissions from the unit. • Use of water for cleaning and cooling purposes. • Waste disposal. 	<ul style="list-style-type: none"> • Use Hot water treatment to control fungal infection and hot air treatment to decrease fungal infection. • Maintaining temperature at 38°C for 4 days, or within one week of being retained at 20°C shall increase the shelf life of the fruits • Use of suitable renewable energy like, solar, wind etc. • Advanced cooling equipment should be used to reduce emissions. • Waste water treatment and its recycling should be practiced. • Proper waste disposal and treatment should be followed.
		<ul style="list-style-type: none"> • Transportation 	<ul style="list-style-type: none"> • Vehicular emissions to the ambient atmosphere. 	<ul style="list-style-type: none"> • BS-IV vehicles with valid emission certificate should be used for transportation.

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			<ul style="list-style-type: none"> • Cracking of roads due to over weighing vehicles. • Poor temperature management, loading and unloading practices 	<ul style="list-style-type: none"> • Overweighing Vehicles carrying loads exceeding those permissible without proper permission should not be allowed to pass through the constructed roads. • Create awareness on proper transport system management
		<ul style="list-style-type: none"> • Marketing. 	<ul style="list-style-type: none"> • Market waste generation, both solid and liquid. 	<ul style="list-style-type: none"> • Proper waste disposal techniques should be followed in the market. • The market should have proper drainage facility. • Hygiene should be maintained at the market.