

Annexure 6-B: Environmental Survey Checklist (Existing)

SCREENING CHECKLIST – FISHERY 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 : _____

Fishery Farm (Private/Govt.)

Section A: Project Siting

Sl.	Will the Project	Yes/No	Specify/Remarks
1	<ul style="list-style-type: none"> • Be located within or near environmentally sensitive areas like: • intact natural forests • wetlands • Threatened species • Special area for protecting biodiversity • Cultural heritage site? 		
2	Affect environmentally sensitive areas or critical habitats – wetlands, woodlots, natural forests, rivers, etc.)?		
3	Affect the indigenous biodiversity (flora and fauna)?		
4	Cause any loss or degradation of any natural habitats, either directly (through project works) or indirectly?		
5	Affect the aesthetic quality of the landscape?		
6	Cause soil erosion or degradation?		
7	Divert the water resource from its natural course /location?		

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8	Affect the migratory birds visiting that area?		
9	Have approach to roads and what is its quality?		
10	Have suitable area for construction purposes?		

Section B: Constructional Impacts(w.r.t Infrastructure requirements)

	Will the Project	Yes/No	Specify/Remarks
11	Noise from construction?		
12	Air pollution from the construction?		
13	Water pollution from the constructional activities?		
14	Soil contamination and degradation due to construction?		
15	Risk and vulnerabilities related to occupational health and safety due to physical chemical and biological hazards during project construction and operation?		
16	Large population influx during project construction and operation that cause increased burden on social infrastructure and services (such as water supply and sanitation systems)?		
17	Social conflicts if workers from other regions are hired?		
18	Any generation of construction and disposal wastes?		

Section C: Potential Environmental Impacts

	Will the Project :	Yes/No	Specify/Remarks
19	Overexploitation of the fish stocks and long-term degradation of resource base?		
20	Capture of non-target species and habitat damage through use of destructive fishing methods and gears?		
21	Accidental damage?		
22	Downstream water pollution from discharge of pond effluents with drain water?		
23	Reduction of water supplies from competing uses (e.g., irrigation or domestic)?		
24	Pollution from nearby aquatic environments by pond drainage and in adequate farm management?		
25	Depletion of local fish population by stocking of wild fry/fingerlings in ponds?		

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26	Spread of diseases and parasites from exotic cultured species or escape of pond fish to wild?		
27	Reduction of water available to downstream users during peak seasons?		
28	Increased community health risks due to increased incidence or introduction of waterborne or water related diseases?		
29	Risk to community health and safety due to transport, storage and use and/or disposal of materials likely to create physical chemical and biological hazards during construction and operation?		
30	What are the fish varieties being cultured by the farmers/farm?		
31	How often indigenous varieties are being cultured?		
32	From where the seeds are brought? Were they able to meet their requirements?		
33	What are the feed materials used?		
34	From where do they buy the feed materials?		
35	Were they able to meet their feed requirements? If not, what are the alternative feeds used?		
36	What is the most common natural risk occurs every year/half-year/seasonally?		
37	What are the common diseases the fishes suffer from? Were they aware of the fish infections, caused by lice, worms, fungi, bacteria etc.?		
38	What steps do they take in such cases? Are they provided with any remedial facilities in such cases?		
39	What is the amount of fishes dies every year due to disease, natural calamities or any other accidents?		
40	What is done to the diseased dead fishes?		
41	What are the other wastes generated from fishery? How they manage and dispose the wastes?		
42	Do they apply any chemicals to overcome the accidents?		
43	What are the fertilizers or other chemicals use to increase the fodder growth in the area?		
44	From where do they buy these, chemicals, fertilizers, medicines?		
45	Do the farmers use any Personal Protective Equipment at the time of handling the chemicals?		

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46	How the cleanliness and oxygen level is maintained in the pond water?		
47	Is there any monitoring program running to check the quality of aquaculture water?		
48	Do any migratory birds visit the site?		
49	What are the types of local bird species found in that area?		
50	What are the types of water flora found in that area and how they are managed during fish farming?		
51	Are there any cases of disease contamination from diseased fish to local animals and birds?		
52	Are they aware of the advance technologies and methods in fish farming?		
53	Are they getting satisfactory results in case of productivity by their present farming techniques and methods?		
54	What is the distance of their nearby market and what is their mode of transportation?		
55	What is the condition of road to the market?		
56	Are the farmers aware of their health and what are the type of medical facilities are being provided?		

Fishery Whole Sale Market

Sl. No.	Questions asked to the Whole Sellers	Response	Specify/Remarks
1	What are the types of wastes generated at the market?		
2	Where the wastes are disposed?		
3	Is there any waste management practices followed?		
4	Is the market provided with well drainage facility?		
5	Does the market have lavatory facility?		
6	What are the cleaning agents/detergents used for cleaning and disinfecting the market?		
7	Is there any cold storage/ware house/ice plant near the market?		
8	What are the pest management practices followed at the market?		

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

Fishery Sector

Sl. No.	Project Stage	Project Activity	Environmental / Operational Impacts	Mitigation Measures
1.	Planning Stage	<ul style="list-style-type: none"> • Land requirement • Excavation activities for artificial waterbodies (ponds, tanks etc..) 	<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"> • N.A for existing Govt. Farms • Compensatory measures for restoring the affected flora and fauna should be explored. (including de-siltation) • Provision should be made as per the existing landuse policies, laws and land rights
			<ul style="list-style-type: none"> • Site Clearance 	<ul style="list-style-type: none"> • Site clearance shall be carried out in such a way that the clearance and grubbing waste are disposed immediately in the designated dumping site identified for the project.
2.	Execution Stage (Construction Related)	<ul style="list-style-type: none"> • Upgradation of roads and culverts (for the link/ approach roads) 	<ul style="list-style-type: none"> • Generation of noise from construction machineries. • Air pollution (dust and emission) resulting from the movement of construction vehicles and from the construction site. • Surface water quality may get deteriorated due to the runoff from the construction site • Degradation of soil quality. • Loss of Top soil • Transportation of construction materials 	<ul style="list-style-type: none"> • Construction machineries should be fitted with acoustic proof to reduce noise levels. . • Construction activities should be avoided near environmental sensitive areas. • Construction activities which causes high noise levels should be performed during the day time • Application of water sprays should be carried out to reduce dust emission. • All the vehicles must have valid PUC certificates at all the time during construction phase of the project • wastewater that are generated from site activities should be collected in settlement tanks / soak pit and should be disposed according to environmental regulations (as per CPCB wastewater discharge standards). • No burning of materials should be carried out on site. • Proper handling and care should be taken of the wastes that are generated at the site to avoid run off. • Top soil should be preserved and it shall be reused for

Sl. No.	Project Stage	Project Activity	Environmental / Operational Impacts	Mitigation Measures
				landscaping/ horticulture etc., <ul style="list-style-type: none"> • The contractor should obtain the construction material only from approved quarries / sites. • All vehicles transporting construction material shall be covered with Tarpaulin to avoid fugitive dust during transportation
		<ul style="list-style-type: none"> • Construction and civil works 	<ul style="list-style-type: none"> • Generation of construction and demolition wastes like, metal scrapers, bricks, cement, stones etc. • Generation of excavated soils • Habitat modification. • Transportation of construction materials 	<ul style="list-style-type: none"> • Reusing and recycling of the wastes are to be adopted for those other than hazardous wastes which will be removed and managed by licensed vendors. • For wastes which could not be reused or recycled, a reputable collector should be employed by the Contractor to remove this waste to landfill. • Construction spoils shall be reused to the extent possible as a filling material/ construction purposes. • Implementation of Solid Waste Management Plan/Practice. • The contractor should obtain the construction material only from approved quarries / sites. • All vehicles transporting construction material shall be covered with Tarpaulin to avoid fugitive dust during transportation
		<ul style="list-style-type: none"> • Engagement of labours for construction purpose and their settlement (construction labour camps). 	<ol style="list-style-type: none"> 1. Waste generation from labour camp. 2. Exploitation of land and water resources. 3. Modification of land for their establishment. 	<ol style="list-style-type: none"> 4. Proper toilets and waste disposal areas should be provided to the labours residing at the site. 5. Water for drinking and sanitation purposes should be supplied in order to reduce exploitation of water resources. 6. Uncultivable / barren land should be used as temporary settlement (construction labour camps) for the labours.
Operation Stage Impact				
	<ul style="list-style-type: none"> • Fish productivity enhancement • Establishment of Fish Mill and Hatcheries • Enhancement of production of 	<ul style="list-style-type: none"> • Selection of fish species 	<ul style="list-style-type: none"> • Selection of fish species that cannot adapt to the local climatic conditions will lead to loss or results in low productivity. 	<ul style="list-style-type: none"> • Selection of fish species suitable to the climate is a key factor in fish cultivation. Hence those species that promises climate adaptability shall be selected. Native species have greater adaptability

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	<ul style="list-style-type: none"> formulated fish feed • Establishment of Common Service Center • Refrigerated Fish carrying van • Road • Capacity Building 			<ul style="list-style-type: none"> • Indigenous species should be promoted through artificial insemination facility • Interactions with the technicians of the fish seed provider would be helpful to make a suitable choice of fish species as per climate and season requirement. • Refer the Aquaculture management plan which guides / recommends the fish species/ variety which is suitable under local conditions.
		Indigenous species	<ul style="list-style-type: none"> • Threaten to biodiversity loss as well as loss of Indigenous species; in order to have higher yield farmers may introduce exotic species or more productive fish species which may create competition to the indigenous species and as a consequence, a threat to local species may arise 	<ul style="list-style-type: none"> • Select local fish species / varieties that would respond and adapt well to the local climatic conditions • The selected fish species/ variety should reduce external inputs and maintenance costs • Refer the Aquaculture management plan which can be used as a guide and it recommends the fish species/ variety that are suitable for local conditions.
		Use of chemical fertilizer and pesticides	<ul style="list-style-type: none"> • Use of Chemicals/fertilizer for obtaining better production may lead to bioaccumulation in the fish body and later it get transferred into food chain 	<ul style="list-style-type: none"> • Conducting trainings/ workshops to the farmers about the health hazards with respect to the use of chemicals/ pesticides, the bio accumulation process in the fish and its implications. . • Promoting the use of bio manure, bio food for agriculture practices and use of traditional fish feed like Mustard Oil cake, by-products of polished rice etc. as fish feed • Promote Integrated farming practices so as to encourage the use of farm waste, livestock manure in fish farming as a fertilizer. • Use of agriculture by-product such as rice bran and mustard oil cake in the ratio of 70:30 at 2-3% of the body weight of fishes can be provided.
		Oxygen Depletion	<ul style="list-style-type: none"> • Oxygen Depletion may occur due to the 	<ul style="list-style-type: none"> • Provision of oxygen

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			<p>enhanced production of fish in the same cultivated area (water body/pond/tank) and over crowding may lead to oxygen stress</p>	<p>supplementation</p> <ul style="list-style-type: none"> • Changing feeding regimes, Recirculating water/ aeration and De-stocking are some of the measures that are to be taken care of • Creating an awareness among the cultivators shall help them to understand and act proactively
		<p>Natural Calamities</p>	<p>Natural Calamities</p> <ul style="list-style-type: none"> • Flood • Drought 	<ul style="list-style-type: none"> • Proper embankment should be constructed to tackle the flood situation. • <i>Shallow areas</i> of derelict water bodies/ponds/lakes/ can be made use of for raising fishes and prawns in enclosure (<i>pens</i>) • Awareness must be provided to calculate water loss due to evaporation. For instance, for a minimum of five feet total depth allow at least two feet of water loss resulting from evaporation and seepage during the drought . • Select fish species which has better acclimatization with higher temperature (in drought)
		<ul style="list-style-type: none"> • Excess input of feed materials. • Water Quality Problem 	<ul style="list-style-type: none"> • Eutrophication may occur due to the use of fertilizer, other feeds (rich in nutrients) for increasing the yield will lead to the water quality problem and nutrient enrichment 	<ul style="list-style-type: none"> • Nutrients rich fish feed should be used in limited / required quantity. The dosage limit must be arrived at with the help of technicians • Prohibit use of unwanted and lethal chemicals without proper awareness and lack of knowledge of related hazards. • Establishment of water quality testing for various parameters at least four times a year should be followed. • Testing the suitability of the water and other environmental conditions for the chosen fish species must be done before cultivation • Creating an Awareness of the various problems with the help of technicians • Knowledge on the toxicity

Sl. No.	Project Stage	Project Activity	Environmental / Operational Impacts	Mitigation Measures
		<ul style="list-style-type: none"> Climate Change 	<ul style="list-style-type: none"> Release of noxious gases 	<p>must be provided, If possible, LCA shall be carried out as part of APART project. LD50 & LD100 must also be determined</p> <ul style="list-style-type: none"> Adoption of Climate resilient options to reduce the GHG emission should be promoted through training programs. Fish - livestock farming systems is a highly assured technology where predetermined quantum of livestock waste obtained by rearing the livestock in the pond area is applied in the pond to raise the fish crop without any other additional supply of nutrients. The byproducts generated from the production and processing of livestock can be used as a feed for aquaculture. Integrated Fish Farming practices such as Pig - Fish Farming should be promoted, where urine, excreta of pig and spilled pig feeds can be applied manually to the pond water at a pre-determined dose.
	Intervention in Beel Fisheries	<ul style="list-style-type: none"> Disturbance to the Physiochemical parameters of the water quality 	<ul style="list-style-type: none"> The water quality in the Beel (water body) may deteriorate due to the increase in suspended particles from the aquaculture wastes. Due to this, there will be a raise in the nutrient concentration which leads to the turbidity resulting in depletion of Dissolved Oxygen (DO) 	<ul style="list-style-type: none"> Monitoring the Feeding material regularly that are used in the beel fisheries. Feed shall be calculated based on fish density and the same amount should be let into the system. Establishment of a proper water quality monitoring at least once in every season (4 times in year) Beel committee should compile the records of water quality monitoring of each beel and shall be maintained as per Beel Act Auto stock practice should be made mandatory in beel Other Climate resilient Options are as follows: <ul style="list-style-type: none"> Popularize low impact aquaculture and Resource efficient

Sl. No.	Project Stage	Project Activity	Environmental / Operational Impacts	Mitigation Measures
				<p>production system through Community-based management (Cluster)</p> <ul style="list-style-type: none"> • Bio-floc technology- Accumulation of nitrogenous waste in fish ponds can be converted into feed through environment friendly bio-floc technology. • While feeding fishes with good quality feed, feed quantity needs to be assessed according to the fish biomass at recommended feeding rate; this will reduce the amount of feed and loss during feeding. This would result in oxygen demand
			<ul style="list-style-type: none"> • Inadequate using of chemicals in aquaculture 	<ul style="list-style-type: none"> • Ensure control on the dosage of chemicals, fertilizer or any medicines etc. that have been used in aquaculture system, Performance and method of administration must be determined.
		<ul style="list-style-type: none"> • Accidental events/spills (e.g. fuel, hydraulic fluid and lubricants). 	<ul style="list-style-type: none"> • Degradation of water quality. • Release of hazardous materials. 	<ul style="list-style-type: none"> • Minimization of leaks from boat engines, water pumps and generators. • Proper drainage should be provided to reduce the contamination of hazardous materials.
	Awareness		<ul style="list-style-type: none"> • Lack of awareness among small beneficiaries for sustainable fish farming will lead to problems for productivity enhancement urging the need to select exotic breed, chemicals and other unhygienic practices that might have a negative impact may arise. 	<ul style="list-style-type: none"> • Providing awareness and capacity building on promising approaches having low impact of aquaculture amongst the farmers, participating communities, local authorities, extension agents, development practitioners etc to protect the environment.