

Environmental and Social Assessment and Environmental and Social Management Framework for the National Agricultural Innovation Project

**Indian Council for Agricultural
Research**

Final Report -Executive Summary

December 2005

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Indian Council for Agricultural Research

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and Social Management
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Agricultural Innovation Project

Executive Summary

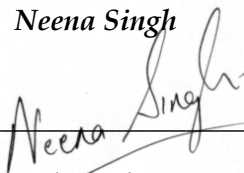
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For and on behalf of ERM

Approved by: *Neena Singh*

Signed: _____



Position:

Technical Director

Date:

12 December 2005

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1 EXECUTIVE SUMMARY

1.1 INTRODUCTION

This Environmental and Social Management Framework has been prepared by ERM India for the National Agricultural Innovation Project (NAIP) of the Indian Council of Agricultural Research.

1.1.1 Background

About 65% population in India is dependent on agriculture for their livelihood. In order to generate additional income and employment for rural farmers, the role of research and development in agriculture becomes critical. Since there is a limited scope for area expansion, enhanced productivity, profitability and competitiveness would be the main source of agricultural growth, which will be triggered by advances, innovations and applications of science in agriculture. NAIP aims to harness scientific advances in selected priority areas to attain global competitiveness with larger spin off benefits.

The project will have 4 components including:

Component 1: Strengthening ICAR's role as the catalysing agent of the emerging national agricultural research system.

Component 2: Research on production to consumption systems.

Component 3: Research on livelihoods improvement in disadvantaged areas.

Component 4: Basic and strategic research at the frontiers of science.

The project will open up opportunities for the positive impacts like enhanced livelihoods, increased production, improved environment, innovations and research. This Environmental and Social Management Framework, however, focuses on the adverse impacts as these can become risks for the project. The framework produces a mechanism to identify the key environmental and social impacts and to screen projects on the basis of these impacts. The objective is to minimise risks and mitigate them to the extent possible. The framework will act as a guideline for more project specific environmental and social impact assessment (ESIAs) to be prepared at the project formulation stage and will assist NAIP and the consortia to achieve compliance with applicable national laws and regulations and with relevant World Bank safeguards on environment and social issues.

This framework covers:

- Regulatory framework
- Environmental and social setting of the project
- Stakeholder analysis

1.2

REGULATORY FRAMEWORK IN INDIA

The Indian regulatory framework comprehensively covers environmental and social issues in the country and would be one of the basis for screening the sub-projects in NAIP. The environmental framework covers the following:

- Forests, Wildlife, Coastal Regulation Zone, Ecological Sensitive Areas, Fisheries, Biodiversity management related safeguards.
- Hazardous Micro organisms - Genetically Engineered Organisms or Cells.
- Guidelines related to Aquaculture and related state specific legislations.
- Guidelines related to Biotechnology including Transgenic Research.
- Discharge and emission standards and permits/ authorizations required to operate industrial set ups including agro-industries.
- Environmental protection norms related to air quality, surface water quality, bio medical and hazardous wastes and Hazardous Chemicals (including insecticide).
- Groundwater resource management – state government specific legislative controls.
- Prior EIA, Public Hearing and Environmental Clearance of Scheduled projects including Major Irrigation, Canal Improvement, Pesticide Manufacturing, Construction Projects and projects in CRZ.

There is a dedicated institutional arrangement in place at the national as well as the state level for enforcing the environment regulatory framework.

The socio-legal implications of the NAIP covered by a multitude of constitutional provisions and sectoral legislation are given below:

- Constitutional provisions safeguarding individual rights.
- Land acquisition laws.
- Policies such as Resettlement, agricultural and tribal policies.
- Tribal laws and other relevant legislation for indigenous people.
- Safeguards protecting rights of women.
- Laws governing social issues such as child labour, equal remuneration, labour rights etc.
- Local self government regulations such as Panchayat Act and its extension to Scheduled Areas (PESA) etc.
- Agricultural laws having implications on social issues like livelihood, impoverishment etc.
- Right to Information Act, October 2005.

1.3

ENVIRONMENTAL AND SOCIAL SETTING

India, spread over 32,87,263 sq km, shows great diversity in terms of environmental settings as well as social profile of the people and the area and this needs to be understood in the context against which the NAIP has been designed and its objectives set up.

Key environmental issues in the country in agriculture and allied sectors include:

- **Ground Water:** There is declining ground water resources in states like AP, TN, Goa, MP, UT of Lashwadeep and Kerala among others. Problem of GW quality (fluorides, iron, sulphides, nitrates, salinity or arsenic) in 13 states.
- **Drainage:** There is wide disparity in access to perennial river waters – northern rivers are mostly snowfed while states like Rajasthan and Gujarat primarily depend on seasonal rivers.
- **Natural Disasters:** 17 states are vulnerable to natural disasters including cyclones, landslides, earthquakes, floods and droughts.
- **Biodiversity:** India is a biodiversity rich country both in floral and faunal species. Rich crop diversity includes 356 domesticated species of economic importance, 326 wild relatives of crop plants, 1500 edible plant species and 9500 species of ethno botanical significance. There are several Protected areas, which include 88 national parks, 490 sanctuaries, 14 biosphere reserves, 25 Ramsar sites and 5 world heritage sites.
- **Fertilizers and Pesticides:** High consumption of NPK and Pesticides is reported in Punjab, Haryana, Andhra Pradesh and Uttar Pradesh. Low consumption is recorded in Northeast states (except Manipur). There is net negative balance of nutrients in soil in many states. Pesticides use is low in hilly areas and states like MP, Orissa and Bihar. Organic Farming is picking up in Uttaranchal, Karnataka and MP.
- **Livestock:** India is the largest milk producer in the world. Livestock output includes 86.4 million tonnes of milk, 41.7 billion eggs, 52.1 thousand tonnes wool, 4.94 million tonnes of meat (as per 2002 –03). Livestock is primarily dependent on natural resources for fodder and hence intensification of agriculture has put pressure on forest resources for both fodder and fuelwood.
- **Fisheries:** Both capture and culture fisheries are practiced in marine and inland waters. In inland 80% of fish is sourced from culture source. In marine fishery, capture fishery is the primary source with heavy dependence on mechanized means.

Key social issues that are relevant for NAIP include

- **Production:** Food grain production has grown from 51 million tonnes in early '50s to 212 million tonnes by 2004. There are over 200 million farm workers. About 35% of cultivable land is under irrigation. Cropping intensity is 134.6%.
- **Pattern of land holdings:** Average area per operational land holding (1996) ranges from 0.40 ha for marginal farmers to 17.21 ha for large farmers. The average land holding size for the Scheduled Tribe communities at 2.82 ha is higher than the national average of 1.41 ha. 58% of total agricultural land is owned by large farmers and only 2% by marginal farmers, which highlights the existing disparities.

- Gender issues: 90% of the drudgery work in farms and allied activities is done by women. Women are discriminated in wages, and are more vulnerable to health and safety risks.
- Migration: Migration from rural areas is of three kinds: migration for coping and survival; migration for additional work and income (after village work is over) and migration for better remuneration, better work environment and to acquire new skills.
- Occupational change: There is a gradual occupational change in rural India with a shift away from self employment to wage labour. Small cultivators being pushed out of farming rather than being pulled by new employment opportunities.

1.4 *STAKEHOLDER ANALYSIS*

There are several stakeholder groups who will have direct and indirect stakes in the NAIP project. Each of these groups will have different levels of influence as well as interest in it. The important stakeholders include the relevant government departments and ministries; regulatory bodies, agricultural scientists and research institutions; NGOs; the farming community and individuals (agriculture and allied activities); panchayats and other representative bodies, the private sector and donor agencies. A detailed stakeholder analysis has been provided in the E & SM Framework, and similar analysis would need to be done at the sub-project levels, wherever relevant.

1.5 *ENVIRONMENTAL AND SOCIAL IMPACTS*

The project sub components will primarily fall under the following categories:

- Agriculture
- Horticulture
- Livestock development
- Fisheries
- Strategic and basic research

Under each sector, the sub-activities would cover the production, harvesting, storage and transportation, food processing and packaging and marketing stages. These activities will primarily fall under Components 2 and 3, while the research aspects fall under Component 4.

Potential environmental and social impacts that can arise out of these components have been summarised in the impact **Tables A and B**. However, for most project activities, these impacts would not be significant.

Mitigation measures against most of these impacts are possible, both at the project development stages as well as implementation stages, and these will be identified by the consortia from among the suggestive measures provided in the E & SM Framework as well as through advice from the Consortia Advisory Committees, National Coordinators and the Help Desk.

Table A
Activity-Impact Identification - Environment

Impact	Agriculture					Horticulture				Livestock		Fisheries		Research	
	Cultivation (HYVs, HVCrop, Diversification etc.)	Development of irrigation systems	Harvesting & Storage of Agriculture Produce	Transportation & Processing of Agriculture Produce	Packaging and Marketing	Horticulture farm production	Harvesting & Storage of Horticulture Produce	Transportation & Processing of Produce	Packaging and Marketing	Livestock Development & Production	Storage, Transportation, Processing, Packaging & Marketing	Aquaculture, Fishing (inland, riverine, coastal and marine)	Fish Storage, Transportation, Processing, Packaging & Marketing	Laboratory research	Field research
Stress on water resources	√	√		√		√		√		√	√	√	√		
Increased salinity/Land degradation	√	√				√									
Soil and ground water contamination (due to use of pesticides etc.)	√					√						√			
Eutrophication and impact on aquatic fauna	√					√									
Health and safety	√			√		√	√	√		√	√	√	√		
Pesticide/Insecticides residues in food chain.	√		√			√	√				√		√		
Disposal of Pesticide/fertilizer containers	√					√									
Bio diversity loss (Plant/ Animal)	√					√				√					
Increase in crop/plant vulnerabilities (crop failures)	√														
Uncontrolled cultivation of genetically	√					√									√

Impact	Agriculture					Horticulture				Livestock		Fisheries		Research	
	Cultivation (HYVs, HVCrop, Diversification etc.)	Development of irrigation systems	Harvesting & Storage of Agriculture Produce	Transportation & Processing of Agriculture Produce	Packaging and Marketing	Horticulture farm production	Harvesting & Storage of Horticulture Produce	Transportation & Processing of Produce	Packaging and Marketing	Livestock Development & Production	Storage, Transportation, Processing, Packaging & Marketing	Aquaculture, Fishing (inland, riverine, coastal and marine)	Fish Storage, Transportation, Processing, Packaging & Marketing	Laboratory research	Field research
engineered varieties															
Impacts on natural habitats	√					√				√		√			√
Deforestation & Vegetation loss	√	√				√				√					
Loss of soil fertility	√														
Landuse change (Loss of agriculture land)	√	√	√	√		√	√	√		√	√	√	√		
Crop residue disposal			√				√								
Air quality (Construction/operation)		√	√	√			√	√			√		√		
Wastage of food products			√								√		√		
Waste generation and disposal			√	√	√			√	√	√	√		√		
Disposal of plastic/other non bio degradables					√				√		√		√		
Wastewater generation and treatment				√				√			√		√		
Surface water quality				√				√				√			

Impact	Agriculture					Horticulture				Livestock		Fisheries		Research	
	Cultivation (HYVs, HVCrop, Diversification etc.)	Development of irrigation systems	Harvesting & Storage of Agriculture Produce	Transportation & Processing of Agriculture Produce	Packaging and Marketing	Horticulture farm production	Harvesting & Storage of Horticulture Produce	Transportation & Processing of Produce	Packaging and Marketing	Livestock Development & Production	Storage, Transportation, Processing, Packaging & Marketing	Aquaculture, Fishing (inland, riverine, coastal and marine)	Fish Storage, Transportation, Processing, Packaging & Marketing	Laboratory research	Field research
Release of uncontrolled genetically modified organisms														√	√
Generation of hazardous bio wastes and its disposal										√			√	√	√

Table B
Activity-Impact Identification - Social

Impacts	Agriculture							Horticulture					Livestock Development							Fisheries								
	Production				Harvest, Storage & Transportation	Food processing up food processing units	Packaging and marketing	Production	Harvest, Storage, Transportation	Food processing up food processing units	Packaging and marketing	Production				Harvest, Storage, Transportation	Food processing up food processing units	Packaging and marketing	Production	Harvest, Storage, Transportation	Food processing up food processing units	Packaging and marketing						
	HYVs & High Value Crops	Crop diversification	Development of irrigation systems	Organic farming				HYVs & High Value Crops	Improved irrigation facilities				Breed Improvement	Introduction of exotic breeds	Artificial Insemination	Improved veterinary Health care facilities		Dairy	Meat Processing	Poultry		Inland	Coastal	Marine				
Unequal access to inputs	✓	✓	✓	✓				✓	✓				✓	✓	✓	✓							✓	✓				
Marginlisation and increasing disparities	✓	✓	✓			✓		✓	✓	✓			✓	✓				✓					✓	✓		✓		
Vulnerability to crop failure/animal diseases	✓	✓						✓					✓	✓														
Increased poverty and indebtedness	✓	✓	✓					✓		✓			✓	✓														

Impacts	Agriculture							Horticulture					Livestock Development							Fisheries							
	Production				Harvest, Storage & Transportation	Food processing-up food processing units	Packaging and marketing	Production	Harvest, Storage, Transportation	Food processing-up food processing units	Packaging and marketing	Production				Harvest, Storage, Transportation	Food processing-up food processing units	Packaging and marketing	Production	Harvest, Storage, Transportation	Food processing-up food processing units	Packaging and marketing					
	HYVs & High Value Crops	Crop diversification	Development of irrigation systems	Organic farming				HYVs & High Value Crops	Improved irrigation facilities				Breed Improvement	Introduction of exotic breeds	Artificial Insemination	Improved veterinary Health care facilities		Dairy	Meat Processing	Poultry		Inland	Coastal	Marine			
More dependence on external resources	✓	✓	✓					✓					✓	✓	✓		✓	✓	✓			✓	✓				
Increased workload for women and children	✓	✓	✓	✓	✓					✓			✓	✓				✓									
Greater competition for natural resources (water, forests, fodder)	✓	✓	✓			✓	✓	✓			✓	✓	✓	✓				✓	✓	✓			✓			✓	
Change in Landuse	✓	✓	✓		✓		✓	✓		✓	✓	✓				✓		✓	✓	✓		✓	✓		✓	✓	✓

Impacts	Agriculture							Horticulture				Livestock Development							Fisheries										
	Production				Harvest, Storage & Transportation	Food processing-up food processing units	Packaging and marketing	Production	Harvest, Storage, Transportation	Food processing-up food processing units	Packaging and marketing	Production				Harvest, Storage, Transportation	Food processing-up food processing units	Packaging and marketing											
	HYVs & High Value Crops	Crop diversification	Development of irrigation systems	Organic farming				HYVs & High Value Crops	Improved irrigation facilities				Breed Improvement	Introduction of exotic breeds	Artificial Insemination	Improved veterinary Health care facilities		Dairy	Meat Processing	Poultry		Inland	Coastal	Marine					
Change in occupational patterns	✓						✓				✓	✓																	
Increased incidence of diseases	✓		✓																										
Health and safety hazards	✓	✓	✓		✓	✓	✓	✓			✓	✓		✓				✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
Local communities deprived of benefits from IPR	✓						✓						✓																
Risk of biopiracy	✓						✓																						
In-migration						✓	✓		✓	✓	✓								✓	✓							✓	✓	

Impacts	Agriculture							Horticulture				Livestock Development							Fisheries								
	Production				Harvest, Storage & Transportation	Food processing-up food processing units	Packaging and marketing	Production	Harvest, Storage, Transportation	Food processing-up food processing units	Packaging and marketing	Production				Harvest, Storage, Transportation	Food processing-up food processing units	Packaging and marketing									
	HYVs & High Value Crops	Crop diversification	Development of irrigation systems	Organic farming				HYVs & High Value Crops	Improved irrigation facilities				Breed Improvement	Introduction of exotic breeds	Artificial Insemination	Improved veterinary Health care facilities		Dairy	Meat Processing	Poultry		Inland	Coastal	Marine			
Out-migration	✓	✓		✓																							
Land degradation and decline in productivity/returns	✓	✓	✓				✓																				
Land fragmentation			✓		✓			✓									✓								✓		
Unemployment	✓				✓							✓														✓	
Waste - nuisance impact					✓	✓				✓	✓							✓	✓	✓						✓	✓
Increased role of middlemen/contractors	✓			✓	✓	✓				✓	✓							✓	✓	✓	✓				✓	✓	✓

Impacts	Agriculture							Horticulture				Livestock Development							Fisheries									
	Production				Harvest, Storage & Transportation	Food processing-up food processing units	Packaging and marketing	Production	Harvest, Storage, Transportation	Food processing-up food processing units	Packaging and marketing	Production				Harvest, Storage, Transportation	Food processing-up food processing units	Packaging and marketing										
	HYVs & High Value Crops	Crop diversification	Development of irrigation systems	Organic farming				HYVs & High Value Crops	Improved irrigation facilities				Breed Improvement	Introduction of exotic breeds	Artificial Insemination	Improved veterinary Health care facilities		Dairy	Meat Processing	Poultry		Inland	Coastal	Marine				
Increase pressure on local infrastructure						✓	✓					✓	✓						✓	✓	✓	✓					✓	✓
Exotic varieties replace indigenous varieties	✓	✓						✓					✓	✓	✓			✓					✓	✓				
Cash crops displace food crops	✓	✓						✓																				
Fodder/grazing area shortage	✓	✓						✓					✓	✓														
Cultural impacts								✓					✓	✓						✓								
Gender discrimination						✓				✓								✓								✓	✓	✓

ICAR has a dedicated institutional arrangement in place to implement the NAIP project and the Environment and Social Framework within it. Within this arrangement, the following agencies will play a key role in overseeing the implementation of the environment and social management framework.

- **The National Steering Committee** will ensure that the projects that have been selected do not adversely impact the environment and social parameters in the project areas significantly.
- **Research Programme Committee (RPC)** will approve the proposals and workplans of the consortia, and will ensure that environment and social impacts have been adequately identified and addressed in the proposals that have been selected for implementation.
- **Technical Advisory Group (TAG)** will provide technical and quality guidance to the consortia to strengthen the Project Concept Note as well as the full proposal. It will evaluate the environmental and social risks as identified by the proposal and adequacy of the measures and management plans suggested. A field visit will include site observation, review and verification of key environmental and social baseline parameters and consultations with different stakeholders as a part of this review.
- **National Coordinators:** There is a national coordinator for each of the 4 components, who is primarily responsible for coordination between the consortia and the PIU. The coordinator has overall responsibility of ensuring that sub-component / projects are meeting their objectives and targets, that work is on schedule and all deliverables committed are being submitted with due technical and quality reviews.
- **Help Desk:** One of the national coordinators has been given the specific task of implementing the E & SMF. It will be his/her responsibility to ensure that the screening of projects is adequate, that the baseline, impact assessment and mitigation and management plans prepared are adequate and adhered to during implementation, and that the overall project environment and social risks are being managed, as per the laws of the country, the World Bank safeguards and the E & SM framework. This help desk will respond to any queries/issues raised by consortia on environmental and social issues and will be accessible through electronic mail system.
- **The Consortia Advisory Committee:** The CAC will guide the Consortia Implementation Committee and the Consortium on the baseline to be collected on environmental and social parameters, the impact identification process and in the preparation of a management plan. It will help the consortia to design strategies that are inclusive, participatory and innovative. It will also provide legal and technical advice on mitigation measures.

1.6.1

Project exclusion criteria

To ensure that the key project meets its overall objectives, and that the legal requirements and international safeguards are met, the following would be considered as criteria for exclusion in the project:

- Project requiring land acquisition and possible displacement of people.
- Activities likely to cause damage to wildlife and forests/other natural habitats.
- Projects that would adversely impact vulnerable groups like tribals, landless, marginal farmers and poor/BPL families.
- Projects that include building large dams and irrigation systems and can cause flooding.
- Projects that promote use, storage, manufacture and distribution of banned pesticides/agro-chemicals by WHO guidelines.
- Projects that plan to eliminating/replacing indigenous varieties of species.
- Projects that impact religious places and cultural sites.

Sub-projects that propose to bring in positive environmental and social benefits through mitigation measures as well as proactive conservation and management interventions, will become more attractive for funding within NAIP.

1.7

CAPACITY BUILDING

The capacities of the National Coordinators, members of the TAG and the Consortia to understand and monitor implementation of the E & SMF needs to be built through training on the following:

- Adequacy of baseline and management plans suitable for each agroclimatic zone and/or livelihood-based delineated areas.
- Tools and participatory methods to promote the strategies of inclusion, transparency and participation.
- Legal Framework and World Bank safeguards.
- Communication and IEC, specially to work in sensitive areas like tribal habitations/regions.
- Developing and Use of the Codes of Practice.
- Participatory M & E.

Wherever required (especially for sub-projects under components 2 and 3) project will include specific provision for capacity building of Panchayats, farmers and women, based on the type of project being designed. Local capacity building will be one of process to discuss impact of the project and will be monitored.

The capacity building initiative will include structured technical trainings as well as information generation exercises. The structured technical training programmes will cover:

- Environmental and social practices related to projects
- Good farming practices

- Value chain
- Soil moisture conservation
- Effective and multiple use of land

The information generation exercise will focus on generic issues related to innovative approaches like

- Techniques for water conservation and improvement of soil
- Veterinary health care and maintenance
- Gender- with special focus on their roles in agriculture, workload of women and means to reduce the drudgery

Specific programmes to sensitise children towards conservation of natural resources including social and environmental issues for sustainable development should be introduced. The capacity building suggested in E&SMF will feed into the larger Capacity Building programme (CBP) of the project. The CBP should be flexible enough to respond to gaps and issues identified by the M&E exercise and address those accordingly.

1.8 *MONITORING FRAMEWORK*

With so many projects and sub projects, led by large number of consortia being undertaken simultaneously, the monitoring process will be one of the most important tool the PIU and National Coordinators for project management.

The monitoring process will include:

- **Internal monitoring** which the consortia will be conducting at regular intervals and reporting to the PIU-NAIP. The internal monitoring will primarily report on the progress of work and the process related indicators. Some impact would also be included in the monitoring process, as identified in the proposal or project design stage.
- **External or third party independent monitoring and evaluation** that will once be undertaken when the project is half way through its time schedule and next at the end of the project (mid term and end term evaluation respectively). The third party monitoring process will focus on the impacts of the project as well the processes adopted in design, implementation and post implementation.

1.9 *MANAGEMENT FRAMEWORK FOR CONSORTIA*

The consortia will be required to following the process described below for environmental and social management at different stages of the project.

Project Concept Note

The concept note will include a note on the possible environmental and social issues and impacts, how these will be broadly managed and the local support and acceptance of the project idea.

Development of full proposal

- *Developing a Baseline*

To evaluate the environmental and social risks, there will be a brief baseline included in the proposal that captures the key social and environmental setting of the project, possible impacts and mitigation measures. At this stage the information can be gathered from secondary sources. The baseline should, at the minimum include the district level information on the key parameters provided in the baseline format provided in *Annex 1*.

- *Identification of Social and Environmental Impacts*

As a part of project preparation, a desk based environmental and social impact assessment should be conducted, using the checklist of impacts provided in *Annex 1*. To help this assessment for sub-projects, the detailed impact assessment tables in *section 6 of Volume I* can be used as a ready reference. The same table will also help identify the appropriate mitigation measures, though the consortia are free to suggest their own mitigation measures.

- *Regulatory Review*

The consortia will identify the environmental and social regulations that get triggered by the impacts. In a separate table (provided in Annex F of the Main document), the consortia will identify the key laws/policies and rules that would need to be complied with when the project starts getting implemented as well as check the permits and clearances that would be required. For this the regulatory framework in *Section 3* and a detailed regulatory review in *Annex B* of the main report can be used. In addition, for the state in which project is located, a state specific regulations/amendments that have implications for the project, will be reviewed.

- *Strategy for Project decommissioning/closure*

The proposal should include steps and measures for the decommissioning phase, outlining issues like dismantling of structures, if required, opportunities for secondary use of assets created, strategy for financial sustainability and local institution continuance etc,

Submission of full proposal with checklists

A full proposal, according to the NAIP format, should be submitted with the following:

- Baseline
- Checklist identifying impacts and mitigation measures
- List of regulations applicable
- Decommissioning/exit policy

1.9.2 Sub-Project Implementation (Component 2 and 3)

The project implementation will start with the formation of the Consortia Advisory Committees (CAC) and the Consortia Implementation Committees (CIC).

The project implementation will include the following:

Preparation of a detailed baseline for the project

A detailed baseline will be developed, following the format provided in *Annex E* of the main report. The baseline parameters will set the benchmarks for the project monitoring and evaluation process. The baseline will be developed on the basis of secondary literature as well as primary surveys/ studies/ consultations as recommended by the CAC and based on project specific and location specific requirements.

Setting up of an environment and social issues management system

A management system will be developed that will help the CAC/TAG to track project progress on social and environmental issues/impacts and mitigation measures.

Strategies for consultation and participation

Local participation and consultation would be a pre-requisite for project implementation as the project is built upon strategies like participation, inclusion and transparency. The consortia, with advice from the CAC, will prepare the following:

- A stakeholder analysis.
- A consultation and disclosure programme and
- A participation strategy, specially targeting women and other vulnerable groups.

Internal Monitoring Process

The CIC will undertake internal monitoring of the sub-project with a frequency as required by selected indicator. The CIC will provide monitoring report to the National Coordinator on a semi-annual (six monthly) basis. Any issues of concern that emerge during implementation will be flagged, and the

Help Desk would be available to provide support and suggestions, as well as access to experts/information as required by the consortia.

External Monitoring and Evaluation

In addition to CIC, CAC, TAG and RPC who will be monitoring and evaluating the projects annually, a third party, independent M & E expert will conduct mid term evaluation and end term evaluation in this 6 year project or as suggested by the CAC. The indicators provided will be used to develop the M & E framework, and both process and impact indicators will be monitored. An end term project impact evaluation will be conducted at the end of the project implementation period.

1.9.3 *Post Implementation*

The project decommissioning plan will be implemented, in consultation with the local authorities and local communities and institutions like the Panchayats. The objective would be to leave behind a restored environment, sustainable project processes and local institutions, and goodwill among the community about the project and the consortia.

The external evaluation will assess the effectiveness of this decommissioning programme and exit strategy.

1.10 *ENVIRONMENTAL CODES OF PRACTICE (ECPs)*

Projects that involve serious environmental as well as health and safety risks, will need to develop specific Environmental Codes of Practice for activities that are identified by the CAC and TAG. 4 ECPs have been provided in the E & SMF to guide the development of sub-projects specific ECPs at the implementation stages.

Annex I

Checklist

This checklist has been provided for the Consortia to enable them to check if the project they are proposing falls in any socially or environmentally vulnerable areas, and to guide them to change the project design if required, and include appropriate measures in the proposal accordingly.

The consortia needs to ensure that the project does not fall into any category indicated in the project exclusion criteria. The following would be considered as criteria for exclusion in the project:

- Project requiring land acquisition and possible displacement of people.
- Activities likely to cause damage to wildlife and forests/other natural habitats.
- Projects that would adversely impact vulnerable groups like tribals, landless, marginal farmers and poor/BPL families.
- Projects that include building large dams and irrigation systems and can cause flooding.
- Projects that promote use, storage, manufacture and distribution of banned pesticides/agro-chemicals by WHO guidelines.
- Projects that plan to eliminating/replacing indigenous varieties of species
- Projects that impact religious places and cultural sites.

1.1

CHECKLIST

Table 1.1 Checklist for consortia

Check	Response (If yes)*	Remarks (for the consortia to fill)
Agriculture		
Is the project water intensive, using ground water and located in watersheds identified as overexploited, dark or notified as critical?	Consult with the Ground Water Authority in the district and include an assessment of ground water resources availability in the project area <i>vis a vis</i> the project requirements and other multiple needs or conjunctive water use (ecological and human)	
Is the project water intensive, and proposing to use a surface water source which has downstream users?	Include an assessment of surface water resources availability in the project area <i>vis a vis</i> the project requirements and other multiple needs or conjunctive water use (ecological and human).	
Is the project water	Check options of using	

intensive and located in an area with water quality problem (heavy metals, fluoride, salinity etc.)	alternative water sources other than the water with quality problems, or assess the economic feasibility of prior treatment of water.	
Is the project located in area with land degradation problems (soil salinity in coastal areas, alkaline or sodic lands and areas impacted by wind erosion)?	Include land reclamation measures.	
Is the project proposing to use newly introduced high yielding varieties as a method to improve productivity?	Check a) that the project location is beyond 2 km away from forest land; b) the variety is recommended for the intended use; and c) follow all the do's and dont's specified by the institutions from where the varieties have been obtained.	
Is the project located in a tribal area (Schedule V and VI areas)?	Review the relevant state tribal laws and develop specific codes of conduct for working in a tribal area.	
Livestock		
Is the project introducing livestock in a community, which has not had livestock as a livelihood activity?	Ensure that the project is socially acceptable and does not hurt cultural/religious sensitivities of the community.	
Is the project promoting livestock in areas with severe land degradation, aridity and water shortage issues?	Ensure that the project does not increase pressures on existing livestock resources. Include a) an assessment of availability of fodder and grazing areas and their current status; and b) methods to augment existing fodder resources.	
Fisheries		
Is the project located in the Coastal Regulation Zone?	a) Ensure that it is not located in CRZ (1) or CRZ (1) (ii); and b) seek permission under the CRZ regulations.	
Is the project aquaculture based and located in areas where salinity ingress is already an issue?	Hydro-geological studies and assessments should be carried out to a) identify measures to ensure that the problem is not aggravated; and b) quality of water to be used for aquaculture is not contaminated.	
Does the project involve increasing capture fishing (marine and riverine)?	Prior ecological sustainability assessment needs to be undertaken in the project area.	
Research		
Is the project proposing research on transgenic	a) Ensure all the relevant guidelines related to such	

organisms/GEMS?	varieties are followed and required measures are in place; b) ensure all permits have been taken.	
Is the project proposing to import, export, transport, manufacture, process, use or sell any hazardous micro-organism of genetically Engineered organisms/substances/cells?	a) Ensure all the relevant guidelines related to such varieties are followed and required measures are in place; b) ensure all permits have been taken.	

** If no, then the project does not need a specific response.*

(This checklist is relevant for the consortia at the proposal stage. It is assumed that at the project implementation stage, the consortia will identify specific impacts and mitigation measures relevant for their projects and project areas, and comply with all governing rules and regulations. The E & SM framework will act as a guideline for this).

Table 1.1: Activity – Impact Identification Checklist- Environment

Impact	Agriculture					Horticulture				Livestock		Fisheries		Research	
	Cultivation of (HYVs, HV Crop, Diversification etc.)	Development of irrigation systems	Harvesting & Storage of Agriculture Produce	Transportation & Processing of Agriculture Produce	Packaging and Marketing	Horticulture farm production	Harvesting & Storage of Horticulture Produce	Transportation & Processing of Produce	Packaging and Marketing	Livestock Development & Production	Storage, Transportation, Processing, Packaging & Marketing	Aquaculture, Fishing (inland, riverine, coastal and marine)	Fish Storage, Transportation, Processing, Packaging & Marketing	Laboratory research	Field research
Stress on water resources															
Increased salinity/Land degradation															
Soil and ground water contamination (due to use of pesticides etc.)															
Eutrophication and impact on aquatic fauna															
Health and safety															
Pesticide/Insecticides residues in food chain.															
Disposal of Pesticide/fertilizer containers															
Bio diversity loss (Plant/ Animal)															
Increase in crop/plant vulnerabilities (crop failures)															

Impact	Agriculture					Horticulture				Livestock		Fisheries		Research	
	Cultivation of (HYVs, HV Crop, Diversification etc.)	Development of irrigation systems	Harvesting & Storage of Agriculture Produce	Transportation & Processing of Agriculture Produce	Packaging and Marketing	Horticulture farm production	Harvesting & Storage of Horticulture Produce	Transportation & Processing of Produce	Packaging and Marketing	Livestock Development & Production	Storage, Transportation, Processing, Packaging & Marketing	Aquaculture, Fishing (inland, riverine, coastal and marine)	Fish Storage, Transportation, Processing, Packaging & Marketing	Laboratory research	Field research
Uncontrolled cultivation of genetically engineered varieties															
Impacts on natural habitats															
Deforestation & Vegetation loss															
Loss of soil fertility															
Landuse change (Loss of agriculture land)															
Crop residue disposal															
Air quality (Construction/operation)															
Wastage of food products															
Waste generation and disposal															
Disposal of plastic/other non bio degradables															

Impact	Agriculture					Horticulture				Livestock		Fisheries		Research	
	Cultivation of (HYVs, HV Crop, Diversification etc.)	Development of irrigation systems	Harvesting & Storage of Agriculture Produce	Transportation & Processing of Agriculture Produce	Packaging and Marketing	Horticulture farm production	Harvesting & Storage of Horticulture Produce	Transportation & Processing of Produce	Packaging and Marketing	Livestock Development & Production	Storage, Transportation, Processing, Packaging & Marketing	Aquaculture, Fishing (inland, riverine, coastal and marine)	Fish Storage, Transportation, Processing, Packaging & Marketing	Laboratory research	Field research
Wastewater generation and treatment															
Surface water quality															
Release of uncontrolled genetically modified organisms															
Generation of hazardous bio wastes and its disposal															

Identification of Positive Impacts/Contributions (Environment)

Project Activity	Positive Impacts/Contribution

Activity-Impact Identification Checklist- Social

Project:

Component:

Impacts	Agriculture					Horticulture				Livestock Development						Fisheries									
	Production		Harvest, Storage & Transportation	Food processing- setting up food processing units	Packaging and marketing	Production		Harvest, Storage, Transportation	Food processing- setting up food processing units	Packaging and marketing	Production				Harvest, Storage, Transportation	Food processing- setting up food processing units	Packaging and marketing	Production	Harvest, Storage, Transportation	Food processing- setting up food processing units	Packaging and marketing				
	HYVs & High Value Crops	Crop diversification	Development of irrigation systems	Organic farming			HYVs & High Value Crops	Improved irrigation facilities			Breed Improvement	Introduction of HYVs	Artificial Insemination	Improved veterinary Health care facilities		Dairy	Meat Processing	Poultry		Inland	Coastal	Marine			
Unequal access to agricultural inputs																									
Marginlisation and increasing disparities																									
Vulnerability to crop failure/ animal diseases																									
Increased poverty and indebtedness																									
More dependent on external resources																									
Increased workload for women and children																									
Greater competition for natural resources (water, forests, fodder)																									
Change in Landuse																									

Impacts	Agriculture					Horticulture					Livestock Development							Fisheries													
	Production			Harvest, Storage & Transportation	Food processing & setting up food processing units	Packaging and marketing	Production		Harvest, Storage, Transportation	Food processing & setting up food processing units	Packaging and marketing	Production				Harvest, Storage, Transportation	Food processing- setting up food processing units	Packaging and marketing	Production	Harvest, Storage, Transportation	Food processing & setting up food processing units	Packaging and marketing									
	HYVs & High Value Crops	Crop diversification	Development of irrigation systems	Organic farming				HYVs & High Value Crops	Improved irrigation facilities						Breed Improvement	Introduction of HYVs	Artificial Insemination	Improved veterinary Health care facilities		Dairy	Meat Processing	Poultry			Inland	Coastal	Marine				
Increase pressure on local infrastructure																															
Exotic varieties replace indigenous varieties																															
Cash crops displace food crops																															
Fodder/ grazing area shortage																															
Cultural impacts																															
Gender discrimination																															
Social conflicts																															
Increased risk of encroachment																															
Risk to life																															
Local hostilities																															

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ERM India Private Limited

6th Floor, Block 4B,
DLF Corporate Park,
DLF City, Phase-III,
Gurgaon NCR – 122 002
India

Tel: 91-124-5170300

Fax: 91-124-5170301

Email: india@erm.com

www.erm.com