Strategies to enhance adaptive capacity to climate change in vulnerable regions

(Proponent: IARI, New Delhi)

Environmental and Social Safeguards Management

No. of consortium partners: 4

- Indian Agricultural Research Institute, new Delhi – Lead Centre
- Central Marine Fisheries Research Institute (CMFRI), Bombay, ICAR
- Orissa University of Agriculture and Technology (OUAT), Bhubaneswar, SAU
- Central Rice Research Institute (CRRI), ICAR , Cuttack

No. of States/UT covered: Four (Haryana, Madhya Pradesh, Orissa and Maharastra)
No. of Districts covered: 4 (One in each state)
No of families: 2300
Duration: 4 Years (2008-09 to 2011-12)
Budget: Rs. 1163.34 lakhs
Estimated number of participating families - 2300

Project Objectives:

- Identification of current and future risks to livelihoods due to climatic variability
- Development of drought indices to facilitate Early Warning System (EWS) for Drought & promoting it's use in adaptation by farmers and other stakeholders
- Develop community based sustainable rural livelihoods strategies to minimize adverse climatic impact in droughts as well as floods prone vulnerable districts
- Capacity building of the stakeholders on strategies for alternate livelihoods strategies in future climate change.

Brief Project Description:

India like many other countries recognizes adaptation as an important component of its climate change response strategy and is exploring adaptation options in several sectors leading to livelihoods security of the people. Considering the significance of the emerging challenge of climate change for livelihoods security, a multidisciplinary project in consortium mode was envisaged. The project objectives will be achieved through a knowledge based integrated natural resources management approach. The current project will build resilience to climate impacts into resource-based livelihoods in drought affected districts of Madhya Pradesh and Haryana and floods affected districts of Orissa and Maharashtra.

Major interventions

- Introduction of drought and high temperature tolerant crop varieties
- Crop Diversification including horticultural and agro-forestry intervention
- Introduce innovative techniques such as Laser land levelling, low cost farm mechanization, poly tunnel production system, Sprinkler / drip irrigation system,
- Research involving Resources conservation tillage(RCT), INM, IMP
- Practice of water harvesting and efficient water use
- Non-farm interventions like value addition to agricultural produces, marketing and vocational activities
- Potential Fishing Zone (PFZ) delineation and forecasting
- Strengthening of local institutions

B. Environmental Category: B

2. Major issues in the subproject:

The project is likely to have a positive impact on both social and environment domains. The aim of the project is to identify ways and means to adapt to climate related changes, and to bring about a transformation towards more productive and sustainable agricultural systems in future.

Social:
The major social issues likely to arise in terms of implementations of the project are,

- Whether the project activities will lead to participation, community action and social inclusion
- Reduce vulnerability to economic loss
- Enhance competition for natural resources and social conflicts
- On poverty reduction through demonstrable economic benefits of the interventions
- Capacity of farmers to adapt and sustain the productivity gains.

Environmental:
The major environmental implications which could be anticipated to include the issues such as:

- biodiversity and its conservation arrangements in the local areas;
- Technological intervention involving agro-chemicals that may cause detrimental impact on production base like land, water, ecology.

3. Safeguard Policies Triggered (World Bank Policies)

Safeguard Policies Triggered (World Bank Policies)		
	Yes	**No**
Environmental Assessment (OP/BP 4.01)	[X]	[ ]
[1] Natural Habitats (OP/BP 4.04)	[ ]	[X]
Pest Management (OP 4.09)	[X]	[ ]
Cultural Physical Property (draft OP 4.11)	[ ]	[X]
[2]Involuntary Resettlement (OP/BP 4.12)	[ ]	[X]
[3]Indigenous Peoples (OP 4.10)	[X]	[ ]
Forests (OP/BP 4.36)	[ ]	[X]
Safety of Dams (OP/BP 4.37)	[ ]	[X]
Projects in Disputed Areas (OP/BP 7.60)	[ ]	[X]
Projects on International Waterways (OP/BP 7.50)	[ ]	[X]

Note: 1. The area of individual sites are very small and all proposed interventions are within farm lines
2. No involuntary settlement is expected in this project.
Measures to address these issues are given in (8a)

4. Risk related Issues (not covered under 3 above but perceived to be important in the sub-project):

- Another important issue is to involve key stakeholders in designing and implementation of adaptation strategies that would help to reduce vulnerability to climate change, specifically to women and poor communities. Issue is to mobilizing the local communities and interface with the community.
- Training and capacity building among loosely organized and lower-level of education of the farming community may be a complex in perceiving the need of climate change adaptation issues.

Measures to address these issues are given in (8b)

5. Impact Assessment (Enclosures- I and II):

The subproject initiatives will facilitate the increase in total productivity in terms of farm outputs as crops, fishes and animal products of the area. It will generate more employment opportunities. The subproject will also assist the income generation for women farmers and will reduce their drudgery. The capacity building of the farmers and other stakeholders envisaged will further increase the livelihood security of the rural people and productivity of the areas as a whole even under changed climate condition. By and large the project will open up the opportunities to have positive impacts.

6. Potential indirect and / or long-term Impacts due to anticipated future activities in the project areas (assessment of anticipated conflict / complimentarily with the current as well as those proposed for the next five years) in the areas of activities of the sub-Project):

The project will target the development of small and marginal farmers focusing on technically appropriate, institutionally feasible, economically viable, environmentally sound and sustainable transfer of agriculture and allied technologies. The impact of the selected technologies when demonstrated in the identified clusters will trigger horizontal adoption of technology and also employment generation in agriculture and allied sectors by making available opportunities of value addition and marketing access. Besides the direct impact the project will have indirect impact on the socio-economic up-liftment of the rural poor which in turn will increase the technical knowledge improvement of the local people, officials and NGO partners.

7. Identify the key stakeholders and describe mechanisms for consultation with and to them done / disclosure so far done including pre-project consultations with the stake holders, stakeholders' workshop before formulating the full proposal, discussing the full proposal with some stakeholders before submission to the PIU

Pachayat Raj Institutions, Govt. Departments, Agricultural Universities and Research Institutes of central and state Govt., NGO/CBOs, Farmers, and other voluntary organizations etc. who are engaged in rural livelihoods transactions are the key stakeholders for this project.

The lead organization and their partners collated and collected important socio-economic data of the targeted 4 districts. They had discussed about the project with local development agencies and Panchayat Raj Institutions. Lead institute-IARI organised project inception workshop after preparation of initial draft proposal. There were several rounds of discussion, exchange visits, field visits, group discussions organized by the partners during the project formulation.

8. (a) Measures to address the environmental and social issues

In the subproject the viable adaptation technologies and options will be discussed and selected in consultation with the beneficiaries. The interventions will be demonstrated and monitored in cooperation with the extension staffs involving local communities. The benefit of interventions and best practices will be disseminated through several farmers' friendly tools like orientation meetings, field day, melas & exhibitions etc.

i. Environmental issues

An environmental screening has been done for environmental impacts and appropriate mitigation measures have been prepared as indicated in the Enclosure 1.

ii. Pest Management

Traditionally rate of pesticides application are used as proxy indicator of environmental risk especially in terms of pollution and pest resistant (insect, weeds& harmful bio-agents etc.). But by knowing the environment cost of totaling each pesticide's off-target impact costs (i.e. aquatic, avian, honey bee, groundwater, farm worker, beneficial insect and consumer) of each kg /ha of active ingredient of pesticide, one must think of minimizing its impact by using alternate techniques. IPM is one of the important mitigation measures towards that direction. IPM systems for the various crops included practices that involved management of soil and nutrients, weeds, insects, and diseases as well as a farmers' education component.

iii) Indigenous people:

In the current climate change adaptation programme two backward districts are selected from the list of the districts chosen from planning commission's list. Mewat district of Haryana, Ganjam in Orissa, Raigad in Maharastra and Dhar district of Madhya Pradesh are the selected districts.

The SC & ST population of the Ganjam and Raigad district was around 20-22 % while it was less than 10% in Mewat and more than 50% in Dhar. The selection of the partners in development will be designed in such a way that these SC & ST groups are represented sufficiently. In Dhar district more than 52% population is under ST category. In fact most of the interventions are for the tribal people. Since the activities have to be carried out with cluster area approach; community participation is the hallmark of implementation approach of this sub-project to ensure attainment of the objectives.

The proposed sub-project interventions planned here are unlikely to have any adverse impact on the livelihoods of the tribal, however, planned efforts have been made to ensure that the tribals are included and they derive full benefits from these interventions.

8B) Risk related issues

i. The interface with the community**:**

The selection of the beneficiaries will be done through involvement of local institutions and communities as well as the Panchayats in consultation with development departments of the government. Project partners at local level will be drawn from various socio-economic strata while priority will be given to poor families and women headed families, and emphasis will be laid upon the spirit of solidarity and willingness to spread aims and benefits of the project to other farmers.

Local adaptation practices were identified by involving the community in participatory dialogue.
The village specific intervention plans are to be prepared in consultation with the participating partners and the collaborating institutes and finally agreed implementation plans will be shared with the beneficiaries as well as the communities.

To enhance the transparency each beneficiary will be provided with some sort of "identification cards/slips", and at community level 'transparency board' indicating the project details will be displayed at prominent places.

Gender sensitivity: Women specific approach and plans will be stressed upon to facilitate inclusion of women in project implementation and assessment processes. Activities (training, demonstration and visits) have been designed for capacity building of women in technological and entrepreneurial uptake. Women SHGs will be mobilized for micro-finance and income generating activities at household levels. The project beneficiary households will be sensitized through group meetings for involving women in decision making regarding project activities. Drudgery reduction in agricultural operations will be one of the important considerations of the project.

ii. Training and capacity building among loosely organized and lower-level of education of the farming community may be a complex in perceiving the need of climate change adaptation issues. Persistent motivation, participatory approach, customized training programmes will help.

9. Consultation / disclosures to be done in future: Local disclosure through mechanisms such as launch workshop, interfaces during the implementation stage of the sub-project for sharing the results and soliciting feedback, circulating project brochures and implementation progress from time to time, putting up annual reports on the web site and annual stakeholder workshops wherever feasible
The project envisaged the high level of involvement of the stakeholders at local level during implementation of the project. There will be launch workshops, regular community level meetings, interaction with financial institutions, use of display boards and stakeholders field visit & exchange programme for sharing experiences and ideas. Information will also be disseminated through web sites, e media, popular articles etc.

(S.K.Bandyopadhyay)
Consortia PI **National Coordinator** **National Director**

Enclosure I

Safeguards Template for NAIP Projects

A: Environmental Safeguard: Activities, Issues, Impact and Mitigation Measures

Table 1: Environmental Safeguard: Activities, Issues, Impact and mitigation Measures

Activities[1]	**Issues**[2]	**Anticipated level of Impacts**[3]		**Mitigation measures**
		Positive	**Negative**	(negative impact)[4]
Introduction of improved droughts/heat/ floods tolerant varieties of crop(s), diversification of crops	Nutritional security through food chain	3		
	Preservation of local biodiversity in natural habitat		1	1.Subproject will use the farmers' knowledge for identifying suitable the local land races for documentation. 2. Germ plasm collected and deposited with related institutions.
	Energy saving, environment friendly through demonstration of RCT practices	3		
	Impact of use of agro-chemicals on environment		1	Balanced us of chemicals and fertilizers through adoption of INM and IPM practices, Demonstration and training of the stakeholders on INM and IPM is an integral part of the subprojects,
	Stress on water		1	Improved availability of water resources through rain water harvesting and ground water recharge, improved water use efficiency
Land shaping & Micro-leveling of Land	Soil & water degradation, Loss of soil nutrient, soil water holding capacity	3		
Watershed like approaches will be delineated and catchments management will be practiced. Watershed activities in village area will be introduced	Effect on availability of water resources through rain water harvesting and ground water recharge	3		.
	Loss of soil nutrient and water through run off		1	The subproject will take soil conservation measures to arrest the run off and facilitate the ground water recharge

Improved health care for livestock.	Nutrition and disease management of livestock.	2		
	Availability of feed and Fodder shortage		1	Using mangers, supplementation with locally available material, using byproducts
PFZ Forecasting	Conservation of fuel and emissions.	4		.
	Exploitation of fish resources		1	Training of farmers on use of GPS/ related technologies in operational decision making in fishing zone

Enclosure II

B. Social Safeguard : Activities, Issues, Impact and mitigation Measures

Activities[1]	**Issues**[2]	**Anticipated level of Impacts**[3]		**Mitigation Measures (Negative Impact)** [4]
		Positive	**Negative**	
Introduction of improved floods/droughts/heat tolerant varieties of crop(s), crop diversification	Sustainable crop performance and farm income in the probable changed climate.	4		.
	Reduced vulnerability to economic loss through crop diversification	4		
	More dependence on external resources		1	The project intends to support through village resource centre and linkage with external institutions and service centres
	Reduce vulnerability to health, risk particularly of women through introduction of low cost farm machines.	2		
Low plastic tunnel & Protective cultivation, etc.	More income& employment, enhanced livelihoods through off season cultivation of vegetables and flowers	3		
Watershed like approaches will be delineated and catchments management	Effect on community ownership of natural resources		1	CPR Interventions within the watershed areas will be discussed with the pachayts and community beforehand and on agreed workplan
	Community participation and conflict		1	Panchayats/ opinion leaders will be involved to resolve social conflicts, if any
Vermi-compost/Bee Keeping, Post harvest and value addition, Low cost cereal /Dal processing, activities around adolescent & home maker women etc.	Employment and income for farm women.	2		The project intends for capacity building of farm women through training.

Potential Fishing Zone (PFZ) delineation and Forecasting	Increased availability and opportunity for enhanced catch.	3		.
	Competition and social conflict		1	1.Formation of Common Interest Groups 2. Training of local folks for community based information and benefit sharing mechanism
Mobilization of SHGs & Market linkages through Training of farmers and farm women for entrepreneurship development	Enhanced Social capital & Networking , Gender empowerment by women SHGs	4		
	Sharing and social conflict		1	Demonstration and training of the stakeholders is an integral part of the subprojects, participatory approach