



**Sustaining rice production in a changing climate:  
Testing climate uncertainties and validating selected  
adaptation techniques on farmers fields**

**- CLIMARICE II -**

**Project Inception Report  
November 2009**

Project Report Nr.1



Bioforsk - the Norwegian Institute for Agricultural and Environmental Research,  
Ås, Norway



TNAU - Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu, India



IWMI - International Water Management Institute, Hyderabad, India



IPRC - International Pacific Research Center, University of Hawaii, USA



Title: Project Inception Report
Author(s): Udaya Sekhar Nagothu (Bioforsk, Norway); Krishna Reddy (IWMI); GeethaLakshmi, V. (TNAU, Coimbatore) ; Annamalai, H. (IPRC, Hawaii)
Report No. 1
ISBN
Organisation name of lead contractor for this deliverable: Bioforsk
No. of pages: 11
Dissemination level: Open
Key words: Climate, Rice, Adaptation, Andhra Pradesh, Tamil Nadu,

Title of project:

Instrument: SUSTDEV-2005-3.II.3.6: Twinning European/third countries river basins.

Contract number:

Start date of project: November 2009

Duration: 36 months

Project funded by the Ministry of Foreign Affairs, Norway/The Royal Norwegian Embassy, New Delhi (2009-2012)

Disclaimer

The information provided and the opinions given in this publication are those of the authors. The authors and publisher assume no liability for any loss resulting from the use of this report.

## Climarice II inception workshop



*Figure 1. Inauguration of Climarice II project in the inception workshop*

On 23 November, 2009, the Climarice II inception workshop was held at the ICRISAT Campus, Hyderabad, India. The inauguration address was held by Sri S. K. Joshi, Principal Secretary (Projects) of the government of Andhra Pradesh who expressed full support and co-operation from the AP government. There after, Ms. Inger Sangnes, Counselor at the Royal Norwegian Embassy, New Delhi, explained the Indo-Norwegian co-operation on Climate Change and Adaptation. Together they lighted the candles (Fig 1.)

Dr. Yella Reddy, Principal Scientist & Project Manager, Andhra Pradesh Water Management Project (APWMP) and K.V. Rao, Senior Scientist, Central Research Institute for Dry land Agriculture (CRIDA), working on projects related to adaptation and mitigation to climate change in Andhra Pradesh also shared their learning and expressed solidarity to be associated with such timely projects and collectively address the challenge faced by humanity - Climate Change.

Participants of the kick-off meeting were:

Inger Sangnes, Counsellor (the Royal Norwegian Embassy, India)  
Loganathan Vijayanathan, Senior Advisor (Royal Norwegian Embassy, India)  
Mr.S.K Joshi, Principal Secretary (Projects), Dept. Of Irrigation, Govt. Of AP, Hyd.  
Mr.Sanjay Gupta, Special Commissioner, CADA/Dept. Of Irrigation, Govt. Of AP, Hyd.  
Nagothu Udaya Sekhar, Senior Researcher (Bioforsk, Norway)  
Nils-Otto Kitterød (Bioforsk, Norway)  
Jannes Stolte (Bioforsk, Norway)  
Geetha Lakshmi. (TNAU, India)  
Laksmanan (TNAU, India)  
H. Annamalai (IPRC, Hawaii)  
K. Palanisami (IWMI, India)  
Krishna Reddy (IWMI, India)



Figure 2. Project team at the Nagarjuna Sagar Dam, Andhra Pradesh, India



Figure 3 Discussions at the Inception workshop, Hyderabad

## Field visits

### Krishna basin

On 21 and 22 November the project team visited two villages in the Krishna basin to understand the farming systems, water related issues and discuss the main problems with the farmers. On 21<sup>st</sup> November 2009, the project team visited Veerapuram and Rentala



*Figure 3. Meeting between the Climarice II project team and farmers in Veerapuram village,*

villages in the Krishna basin. In the Veerapuram village (Piduguralla mandal, Guntur district), a farmers meeting was held at a local farm (Figure 3). Local farmers explained their farming management, irrigation strategies and problems they encounter. A total of about 30 farmers participated in this meeting. The main problem they expressed was the lack of insurance policies. The farmers stated that the crop insurance is not released at the time it is needed. Another issue is the release of irrigation water from the major dam in periods of droughts.

After this visit, the project team had a visit at the Rentala village (Rentachintala mandal, Guntur district) to communicate with the farmers (Figure 4). This meeting included totally about 25 farmers.



*Figure 4. Farmers meeting in the Rentala village, Rentachintala mandal, Guntur Dt. AP.*

After the farmer meetings, the team visited the main Nagarjuna Sagar Dam. Nagarjuna Sagar is an important irrigation dam on river Krishna. It creates the third largest man-made lake in the world. It has mainly 2 canals - right canal and left canal. The length of right canal is 203 km and length of the left canal is 179 km. Agricultural Irrigation is the main purpose of these two canals, with drinking water, hydro power and fisheries the others. Prioritizing the water is based on the level in the lake, and is decided by the board. Farmers can, through their local

representatives, indicate when and how much irrigation water they need. This causes occasionally some friction, like this year when the rain season started later than normal. The water was not released for irrigation, but priority was given to drinking water.

## Cauvery basin

The team visited the Agricultural Research Station at Bhavanisagar and were apprised of the various research activities in the region, the on farm research based activities. It was interesting to note that intense researches are being carried out in ARS, Bhavanisagar on maximizing water use efficiency in rice cultivation. Moreover research on aerobic and SRI are also carried out that would be more related to Climarice objectives. The ARS will be involved in CLIMARICE II to validate certain adaptation technologies on farmers fields in the Bhavani Basin.



*Figure 4. Women and farmers meeting in the Erankatoor village*

Later, the project team visited the village Erankatoor in the Cauvery basin and had lively discussion with the farmers consisting significant women participants. (Fig. 4). Around 65 farmers participated in the discussion and the encouraging news was the participation of more women farmers in the deliberations. The farmers were asked to comment on their views on Climate change impact on their agriculture. They were also questioned on the problems being faced in agriculture. Major problem encountered by this village was the non availability of labours during

agricultural season. They were of the opinion that the wages minimum guarantee programme introduced by the Government still aggravated the labour problem. This may become a bottle neck in future, and the farmers suggested that community farming and community nurseries could solve the problem to some extent. Also, the possibilities for mechanizing the rice crop are investigated. The farmers in this village have good rapport with the ARS, Bhavanisagar and Department of Agriculture and the farmers are highly satisfied with the technical help extended by these institutions. The team later visited the Bhavanisagar Dam and observed the catchment areas and storage structures and interacted with the site engineers.

## Climarice planning workshop

The project team made a detailed working plan for the first year of the Climarice II project (2010). The working plan is based on the project proposal. All activities are discussed in detail, and some slight deviations from the global project working plan are indicated and discussed. Next pages present the work plan for 2010. Deviations from the original plan are indicated.

Tasks	Activities	Partners		Time schedule	Outcomes
		Krishna	Cauvery		
WP1. Testing uncertainty in regional monsoon precipitation projections	1.1. Perform ensemble (multiple) integrations with IPRC_RegCM. The period of integrations covers the decades 1980-2010 (current climate) and 2020-2050 (near-term future climate), and focus areas are Cauvery and Krishna river basins.	IPRC, Hawaii	IPRC, Hawaii	Q1,2,3,4	D1.1 Very high resolution (~25 Km) climate model solutions as input to various application models (e.g., crop, ground water, surface water).
	1.2 Identify appropriate tools for post-processing IPRC_RegCM solutions.	IPRC, IWMI	IPRC, TNAU	Q4	Initiated in Q4
WP2. Development, demonstration and implementation of adaptation measures	2.1 Assesing the impacts of IPRC_RegCM on the hydrology and rice production	IWMI, TNAU Bioforsk	IWMI, TNAU Bioforsk	Q3,4 .. end	D2.1. Hydrological (surface and groundwater) scenarios/ Report on " Impact assessment on crop phenology, river basin hydrology, change in crop water requirement and rice productivity for the present scenarios for Cauvery and Krishna river basins"

2.2 Evaluate water use efficiency of selected rice production systems (modelling)	IWMI (Hyderabad, ANGRAU, NGO, AP), TNAU	TNAU partners (ACRC,Coimbatore, TRRI, Aduthurai; KVK, Trichy centres), IWMI	Q3-Q8	D2.2. A tool box of adaptation techniques for sustaining rice productivity in Cauvery and Krishna River basins
2.3 Field testing of water management practices in selected regions (initially CLIMARICE I experiences for Cauvery, for Krishna based on existing knowledge).	IWMI (Hyderabad, ANGRAU, NGO, AP), TNAU	TNAU partners (ACRC,Coimbatore, TRRI, Aduthurai; KVK, Trichy centres), IWMI	Q3-Q8	D2.2. A tool box of adaptation techniques for sustaining rice productivity in Cauvery and Krishna River basins
2.4 Validating different rice growing techniques for increasing nutrient use efficiencies Blue green algae in supplementing urea in rice cultivation	IWMI (Hyderabad, ANGRAU, NGO, AP), TNAU	TNAU partners (ACRC,Coimbatore, TRRI, Aduthurai; KVK, Trichy centres), IWMI	Q3-Q8	D2.2. A tool box of adaptation techniques for sustaining rice productivity in Cauvery and Krishna River basins
2.5 Evaluate the rice-pest – predator dynamics.	IWMI (Hyderabad, ANGRAU, NGO, AP), TNAU	TNAU partners (ACRC,Coimbatore, TRRI, Aduthurai; KVK, Trichy centres), IWMI	Q3-Q8	D2.2. A tool box of adaptation techniques for sustaining rice productivity in Cauvery and Krishna River basins



	<p>2.6 Validation of microbial technologies and developing suitable bio inoculants</p> <ul style="list-style-type: none"> <li>• Role of Phosphate and potash Solubilizers in minimizing the usage of chemical fertilizers</li> <li>• Impact of blue green algae and Azolla in soil aeration and methane emission reduction in paddy fields</li> </ul> <p>2.1 TNAU, Bioforsk</p>	IWMI (Hyderabad, ANGRAU, NGO, AP), TNAU	TNAU partners (ACRC, Coimbatore, TRRI, Aduthurai; KVK, Trichy centres), IWMI	Q6 - end	D2.xx Field (Q8) and lab (Q4) experiments
WP3. Mainstreaming adaptation into regional climate change adaptation programs and strengthening institutional capacity	3.1. Stakeholder integration. Stakeholder panels will be actively involved in developing technical and policy recommendations	IWMI, Bioforsk	TNAU, Bioforsk	Q 1- end	D3.1. A series of stakeholder workshops (at least 3 in each basin) in the two river basins (starts in 2010)
	3.2. Institutional and policy framework and challenges in the implementation policies.	Bioforsk, IWMI TNAU	Bioforsk IWMI TNAU	Q 1-6	D3.5. Technical and Policy Briefs (throughout the project)
WP4. Integration of various project components	4.2. Developing a data and knowledge framework, for the selected case basins.  TNAU, Bioforsk, IWMI	TNAU, Bioforsk IWMI	IWMI, Bioforsk, TNAU	Q1-end	D4.4. A tool box of options for adaptation strategies, ranked for socio-economic and hydrological effects (starts in 2010)

	4.3. Livelihood assessment as a consequence of the identified land use adaptation changes towards climate change scenarios to quantify the socio-economic implications of the proposed changes with the help of choice experiments and crop insurance activity.	IWMI, Bioforsk	TNAU, Bioforsk IWMI	Q1,2 and 2011	D.4.xx Methodology report activity 4.3
WP5. Dissemination and Project Management	5.1. Promotion of an efficient and integrative approach to addressing issues related to management through organisation of regular communication, information exchange and a collective learning process among participants and stakeholders.	All	All	Q1...	
	5.2. Promotion of networking with similar international projects, experts and organisations in the region, as well as organisation of the dissemination of the project findings and results, and to ensure utilisation of the project outcomes by relevant end-user institutions and the public .	All	All	Q1...	D5.xx Database structure

	5.4. Carrying out of all other tasks related to efficient project management, including preparation of meetings and workshops to ensure maximum efficiency of these, and ensure a sound economic and administrative project management.	All	All	Q1...	Annual project meeting  D.5.4 Project Annual meetings and progress reports
	5.5. Developing brochures for local farmers and stakeholders in local languages (Telugu and Tamil)	All	All	Q1	The format and contents will be agreed upon and the first set of brochures will be launched in October 2010
	5.6. Developing and maintenance of an interactive website; stakeholders website forum	All			D 5.1 The website for CLIMARICE II will be launched in January 2010.