

A Financing Strategy for Community Based Climate Resilient Development

Indo-German Umbrella Programme for Natural Resource Management (UPNRM)

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“Nobody on this planet is going to be untouched by the impacts of climate change”, words from the IPCC fifth assessment report 2014 hammers on the fact that climate change is no more a theoretical concept but a reality. Increasingly variable and changing climate is among the major challenges faced by nations in implementing its food security and poverty reduction strategies. Agriculture and rural development with very close linkage with natural resources are the two major sectors affected the most. Developing countries such as India with its major share of population dependent on climate vulnerable sectors are prone to the adverse effects. It is foreseen that in the medium-term (2010–2039), climate change will have significant negative impacts. It is predicted that yields will fall by 4.5–9 per cent, depending on the magnitude and distribution of warming. This loss in yield roughly translates to 1.5 per cent of the GDP per year (NABARD AR-14-15) affecting the livelihoods of more than 50% population. Sustainable natural resource management with an eye on building climate resilience is the most effective solution to counteract the effect of climate change.

Although there is widespread agreement on the importance of adaptation measures to curtail the technical and financial risks, there is poor agreement on the scale of financing required and how it will be generated. For quite some time, the conventional response to the disasters and degradation had been large-scale, sponsored grant programmes. However, the financing needs of this sector are far greater than the resources available and grant based programme alone cannot meet this requirement. World Bank reported recently that “the price of adaptation in developing countries alone will be \$70-100 billion a year between 2010 and 2050” (Turn Down the Heat, 2013). With limited financial resources for adaptation coming from international sources like UNFCCC Adaptation Fund Board, Global Environmental Facility, and the Green Climate Fund (GCF) etc. gives us a clear indication that we need to increase the efficiency of our financial utilization. The recent Intended Nationally Determined Contribution (INDC) statement of India also emphasises that India needs around USD 206 billion between 2015 and 2030 for implementing adaptation actions in agriculture, forestry, fisheries infrastructure, water resources and ecosystem

Under the Indo-German bilateral cooperation the National Bank for Agriculture and Rural Development (NABARD¹) in association with GIZ and KFW is implementing projects under the Umbrella Programme for Natural Resources Management (UPNRM). The objective of UPNRM is to demonstrate the viability of loan-based, community owned approaches to natural resource management with strong capacity building support tailored to specific project needs. It is envisaged to achieve this by weaving holistic, participatory and financially sustainable livelihood solutions towards improving the adaptive capacity of the rural poor. The UPNRM loan combined with technical assistance in many areas of climate change adaptation and mitigation, including *land use change, farming systems management, forestry, energy, water/irrigation management, agriculture, fisheries, agro-processing, livestock, fisheries* etc. (Fig-1) adopts an integrated project mode of financing with holistic conservation of natural resources hitherto not financed by commercial financing institutions, rather than an activity based financing prevalent in these sectors from banks.

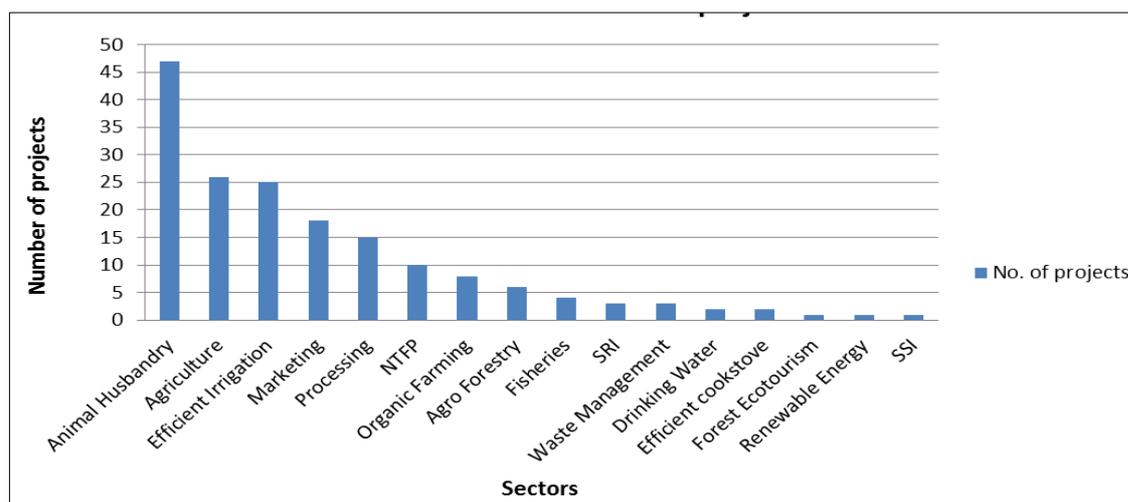


Fig-1- Sectorial Coverage of UPNRM

After seven years, over 270 projects and with almost 77.3 million Euros of sanctioned funds covering 21 most climate vulnerable states of India (Fig-2²), UPNRM is evolving as a successful financing mechanism to support climate smart business models, building the adaptive capacities of the most vulnerable sections of the rural society.

¹ National Bank for Agriculture and Rural Development (NABARD) is an apex development bank in India, having headquarters in Mumbai (Maharashtra) and other branches are all over the country. <https://www.nabard.org/>

² District vulnerability assessment of agriculture to climate change of India, CRIDA, 2013.

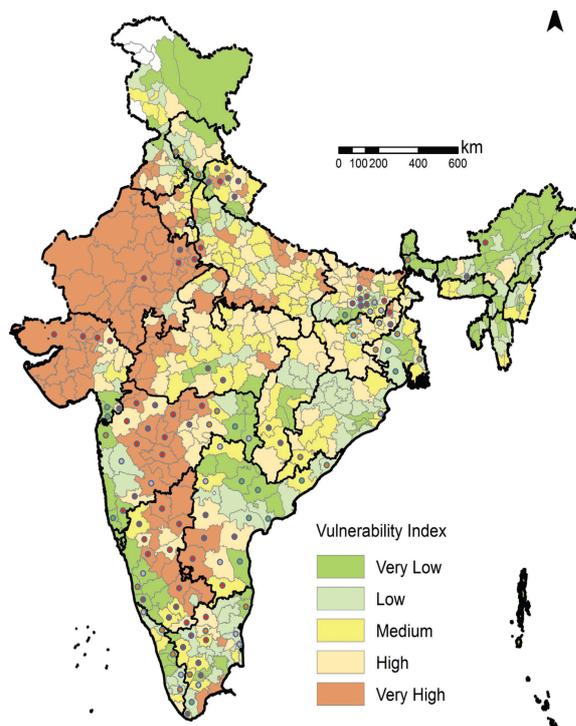


Fig-2- UPNRM Projects against vulnerability atlas

Of the total allocation only 6% was given as grant, clearly indicating the shift that the program has brought in, from grant based to loan based NRM financing. This grant is envisaged to develop capacities of channel partners/loan recipients to absorb loan and implement their project successfully. The financing model (**Fig- 3**) of UPNRM envisages a gradual shift from grant based to loan based NRM projects and funding will be through a corpus comprising Financial Cooperation from KfW and technical cooperation from GIZ as well as fund mobilized by NABARD from various sources. This blended finance will be extended to a wide range of channel partners including NGOs/Community Based Organisations (CBOs), Banks (Commercial Banks/ Regional Rural Banks/ Cooperative Banks/ Pvt. Sector banks), Micro Finance Institutions (MFIs), Corporates (including Producers Companies), Micro Finance Institutions (MFIs) and Micro Finance Institutions (MFIs), State Government- Line departments (e.g. Agriculture, Rural Development, Panchayati Raj, Tribal development, Environment and Forest, etc who are involved in implementation activities).

Also the pro-poor and gender sensitive outlook of UPNRM is exemplified by the fact that 80% of its beneficiaries are from the most backward category and 44% women who belong to the most vulnerable category to climate change.

Given below is an analysis of three credit/loan financed UPNRM projects from three most vulnerable sectors that has very strong elements of adaptation to climate change aiming to

boost rural livelihoods by supporting community-managed sustainable natural resource management projects.

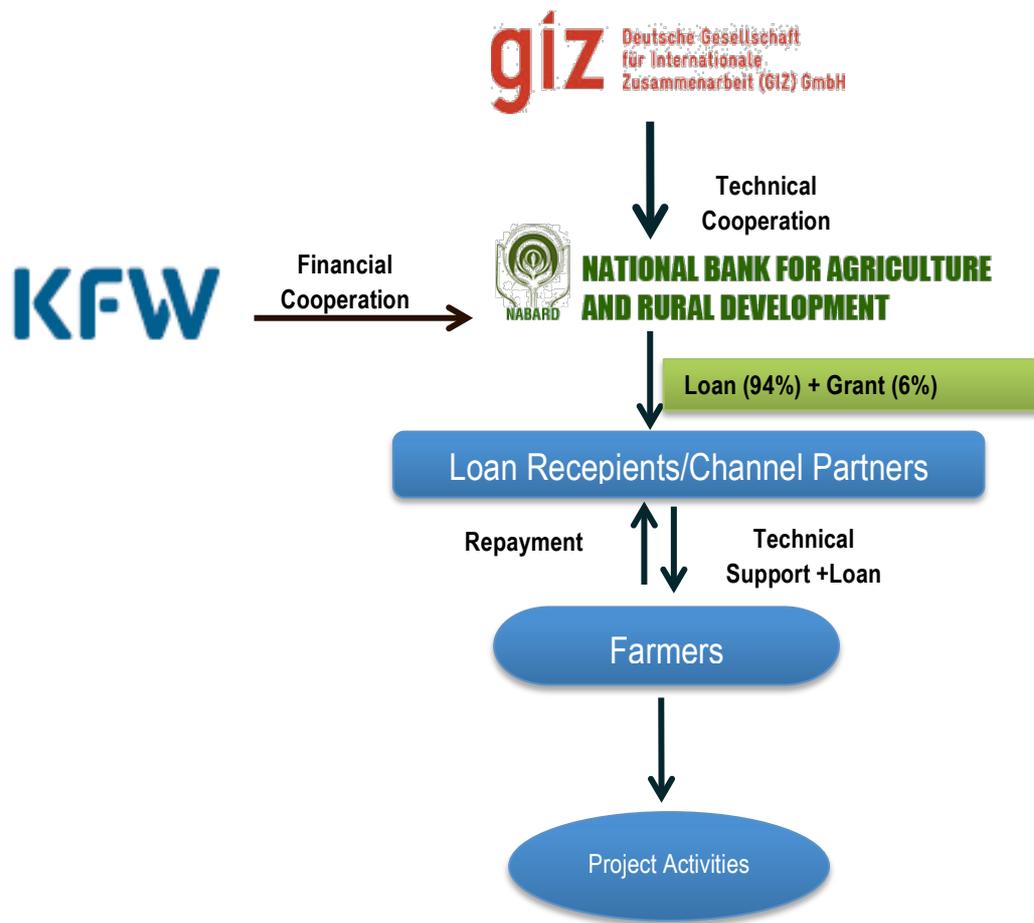


Figure 3: UPNRM Financing Model

I. Integrated Livestock Farming, Chittoor District, Andhra Pradesh, Duration-2009-15

UPNRM Loan INR 2.69 Crore (€ 0.36 million) & Grant INR 49.63 Lakh (€ 0.07 million)

The Climate Challenge/Vulnerability context for the region

Chittoor is one of the chronically drought affected district falling in the Southern Agro-climatic zone of Andhra Pradesh. This is also the most vulnerable district to climate change in the state followed by Anantapur and Mahabubnagar (CRIDA VA Report 2013). Farmers are mostly dependent on ground water for irrigation purpose. Ground water irrigates 84% of the total irrigated area, out of which 66 percent is by bore wells/filter point wells and 34 per cent by dug wells (CGWB, 2013). The high level of vulnerability is attributed to existing and projected decrease in July rainfall and with an overall reduction in the annual precipitation and a scenario. The district had below normal rainfall in 5 out of 10 years during the period

1995-2005, viz., 1995-96, 1999-00, 2000-01, 2002-03 and 2004-05. Dipping ground water level and exposure to persistent droughts adds to the problems. Groundwater table has reached critical levels in major parts of rain-fed areas of the state. Rayal-seema region, including Anantapur, Kurnool, Kadapa and Chittoor, is worst hit. With a rapidly changing climate scenario and with limited resources, rain fed agriculture is becoming more risky and highly vulnerable.

Adaptation Strategy

With this context of changing climates affecting rain fed agriculture in Chittoor, integrated farming system approach has been widely advocated as a means to harmonize use of scarce inputs so as to make the production system sustainable and climate smart. It has the potential for adaptation to climate change by way of promoting farming alongside cattle rearing supplementing each other. This project implemented by an NGO Mitra Association for Social Service (MASS), in addition to supporting scientific rearing of milch animals, also support allied activities that increase the productivity of the cattle, and ensure climate resilience by building the adaptive capacity of the communities living there. Some of the allied activities are biogas, vermicomposting, calf rearing and fodder farming including protein rich Azolla. As a forward linkage strategy the project has supported in feed mixing plants and mobile veterinary aid for supporting in the upkeep of animal health due to increasing temperature, untimely rainfall and resultant diseases.

Project coverage and Impact

The project support community based adaptation of 699 beneficiaries belonging to 200 Self Help Groups (SHGs) to climate change by integrated livestock farming system. These beneficiaries were otherwise subsistence farmers practicing rain fed agriculture now have improved incomes and living conditions.

This project also contributes to adapting farming communities to the consequences of global warming at the regional level at a long-term basis through;

- i) Enriched soil carbon status by way of increased application of vermicompost and biogas slurry on farmer's field.
- ii) Strengthening of adaptive capacities of the farmers by increasing milk yield and resultant economic returns from Rs 18,000 to 36,000 per animal per year against the effects of global warming.
- iii) Biogas units saves approximately 200 trees per year from becoming fire wood and reduces the drudgery of women

II. Drip Irrigated Cotton Cultivation, Aurangabad district, Maharashtra, Duration-2011-16

UPNRM Loan 4.4 Crore (€ 0.58 m) & Grant 35.9 Lakh (€ 0.05 m)

The Climate Challenge/Vulnerability context for the region

Aurangabad district is situated in the north central part of Maharashtra. Agriculture is the main occupation of the rural people. The average annual rainfall for the period 1998 to 2007 clearly indicates that the average rainfall in the district during the period has decreased as compared to normal rainfall. The major part of the district is covered by black cotton soil on which cotton and dry crops like Jowar, Bajra and Red gram etc flourish. Major parts of the district has falling water level trend and is observed mainly in southern, south western and central parts mainly due to the exploitation of ground water for irrigation at a faster rate. Ground water quality is adversely affected at many places due to high concentration of some parameters especially nitrate. Aurangabad district is highly vulnerable for agriculture mainly due to the projected rise in minimum temperature and low rainfall. Also the net irrigated area is low in Aurangabad which also narrows adaptive capacity of the people (CRIDA VA Report 2013). In this backdrop, conventional irrigation practices tend to waste water through flood irrigation, reducing the ground water table creating a drought like situation in cultivated patches. Also cotton's share of the global agricultural water footprint is estimated at 3% (Hoekstra and Chapagain, 2007).

Project Adaptation Strategy

At the production level, the cotton plant's genetic makeup allows it to make limited adjustments to changes in climatic conditions (ICAC, 2007). Following water stress, cotton responds to the loss of vegetation or fruiting parts (buds, flowers, bolls) through 'compensatory growth'.

The project supported by the NGO Dilasa demonstrates the shift from traditional flood irrigation to drip irrigation technology, as water needs for cotton have increased and available resources have diminished. In the project drip irrigation has been applied in arid and semi-arid zones as well as in areas with reducing rainfall and proportional fall in the ground water level. Drip irrigation helps conserve water by efficient application and reduced wastage, thus helping creating adaptive capacities of farmers in case of an unforeseen event of drought. The project has also trained farmers for improved and less water intensive

cultivation and irrigation management practices to optimize the water-use efficiency in the production of irrigated cotton.

The project also supports the Better Cotton Initiative (BCI) a global initiative aiming developing climate resilient practices around cotton cultivation, having strong elements of water use efficiency in cotton. This initiative reduces the environmental impact of cotton production improving the livelihoods and economic development in cotton producing areas.

Project coverage and Impact

The project support around 300 cotton farmers in practicing sustainable cotton cultivation with strong elements of climate change adaptation. These beneficiaries were otherwise subsistence farmers practicing irrigation cotton in a reducing rainfall and increasing temperature scenario.

Drip irrigation increases the adaptive capacity of the farmers by reducing the cotton crops irrigation from 298 hours to 105 hours per acre, using only 45% of the water compared to flood irrigated fields. This also saves the electricity equivalent to RS 4940/acre. The mitigation co-benefit of drip irrigation is by reducing 719Kg of CO₂ emissions annually per acre, translating into Rs 150 per acre of carbon emission savings. Hence the project has achieved a total carbon emission saving of about Rs 150,600 for the 1000 acres covered under the project.

III. Sustainable Livelihood Development through Pond Based Integrated Farming, Kendrapara District of Orissa, Duration 2011-15.

UPNRM Loan € 0.54 million

The Climate Challenge/Vulnerability context for the region

Coastal district of Kendrapara, in Orissa (Eastern Coast of India) is characterized by fragile environment prone to flood and cyclone. Low and highly variable rainfall with high water deficiency and frequent rainfall failure mark the climate vulnerability of the area. Off late the the district is also emerging as a drought prone district (Info Change, 2002;). The district falls in the high vulnerability category for agriculture (CRIDA VA Report 2013).

Project Adaptation Strategy

The adaptation or risk reduction strategy under the project supported by a leading NGO Gram Uttan is on integration of aquaculture with duckery, milch animals, fruits & vegetables. With shift in practices from traditional and risky fish farming to more climate resilient and scientific fish farming has increased the productivity from 500Kg/ha to 3000 Kg/ha thus

reducing the economic vulnerability of the marginal farmers. By design, the farm ponds / fish ponds drain excess water in the fields improving paddy productivity in the area. Cultivation of early season and drought tolerant fruits and vegetable in the pond catchment also increases the income of the farmers. Duck farming has the multiple benefits of egg, meat and the ducks act as agents of natural aeration to the pond keeping the fish healthy and the duck droppings also add to the biomass in the pond and enriching the feed value for the fish. Pond silt rich in rich organic content has very high organic manure value.

Project Coverage and Impact

The project under UPNRM covers five villages of Kendrapara district in Orissa and 100 women self help group members. Change in farmers' mindset via upgraded skills of scientific aquaculture and adoption of integrated fish, duck, livestock and vegetable cultivation has reduced the vulnerability of the farming from climate variabilities. Increasing household income from Rs 75,000 - 125,000 (€ 990-1650) has significantly increased the economic status of the farmers and thus contributing to reducing vulnerability of farmers.

Conclusion

The programme envisages a gradual shift from grant based to loan based natural resource management projects that build climate resilience. With more than 270 plus successful projects spread across more than 21 states of India, UPNRM model is a very encouraging outcome, even though it's a very small drop in the ocean considering the magnitude of financing requirement for rural India against the mounting climate stress on farming. The loan-plus-grant based blended financing product for climate resilient development has shown that, small grants for capacity building and technology upgradation when clubbed with loan can go a long way in making natural resource management based enterprises sustainable and financially viable. But what is needed is to identify more and more model projects for establishing climate change adaptation additionally in multiple sectors of natural resource management.

With climate finance gaining more and more prominence at national as well as international level, with a not so huge allocation, sustainable financing models like UPNRM that could trigger successful business models could go a long way in meeting the equitable financial allocation mandate of governments under the commercial banks lending portfolio. This model could also trigger with minimal grant support more and more complementary adaptation financing especially from sources like Adaptation Fund Board, Global Environmental Facility, private sector etc.

The green climate fund biggest financing mechanism under the UNFCCC is having options to offer grants, concessional loans, equity investments and guarantees, and work through a wholesale model in coordination with the national implementing entities and intermediaries. In this context also the blended financing model of UPNRM has a great scope in increasing the outreach of the financing support under Green Climate Fund at the same time develop sustainable, viable and climate resilient business models that could trigger co-financing at a larger scale.