

Assured irrigation for Increasing Cropping Intensity in Assam



Members of a water user association in Kamrup district maintaining a small scale flow irrigation project funded under RKVY. The project is currently covering a command area of 130 ha benefiting 174 families.

Background & Objectives

Assam has bountiful rainfall, yet very large fallow lands in post monsoon period. The state, with 32.24 lakh hectares of cultivable area and net area sown of only 27.53 lakh hectares in 2006-07, had cropping intensity of 135.7%. Assam's monsoon-based rice production system sprawls in the Brahmaputra and the Barak valleys. The state receives high rainfall of over 2000 mm on an average per annum. Erratic spreads of monsoons, in many years, also do not match the water requirement of crops. If water shortage occurs early in crop development, maturity gets delayed and impacts yields negatively. Similarly, moisture shortage in the late growing season affects quality of produce to a great extent. The twin challenges of large fallow lands and lower productivity on account of

erratic rainfall, if addressed, can convert Assam into rice bowl of India taking green revolution to the East.

The intensity of rainfall in the state is very high from April to October and it is scanty between December and February. Assured irrigation during post monsoon period is, therefore, highly essential in the context of Assam for farmers to engage in double cropping. Alluvial tracts of the Brahmaputra plains are rich in groundwater with multiple aquifer systems. Assam is also endowed with vast surface water resources. In spite of all these natural advantages, although providing assured irrigation to farmers has been the priority of the state government for years, only a fraction of the full potential had been realized by the time RKVY was ushered in the State.

Public investment for ensuring assured irrigation by minor irrigation projects in Assam received first major boost during 2001-2005 through the World Bank aided Assam Rural Infrastructure and Agriculture Services Project (ARISP). The project provided subsidized Shallow Tube Wells with pump sets to individual or small groups of farmers for utilizing the available ground water.

Subsequent to ARISP, irrigation investments in Assam were also channelized through a number of projects such as Shamridha Krishak Yojana (Aided by NABARD), Technology Mission on Horticulture, National Food Security Mission (NFSM), Assam Agricultural Competitiveness Project (AACP –World Bank Aided), Assam Bikash Yojana (ABY), and State Priority Sector Scheme (SPS). The Assam Agricultural Competitiveness Project (AACP) launched in the year 2005 also provided Low Lift Pump sets (LLP) to tap the surface water resources. Irrigation potential in the state increased from 214500 hectares in 2000-01 to 367592 hectares in 2007-08 due to the above interventions.

RKVY Intervention

Department of agriculture, government of Assam decided to scale up minor irrigation related interventions under RKVY to boost

ongoing efforts during 2008-2009. These interventions were prioritized as RKVY flagship scheme with a total outlay of Rs.7.90 Cr, Rs.17.22 Cr and Rs.130.26 Cr during the years 2008-09, 2009-10 and 2010-2011 respectively.

Minor irrigation interventions under RKVY included private Shallow Tube Wells (STW) with diesel / electrical pump sets to pump ground water, installing Low Lift Pumps (LLP) for lifting flowing surface water, Deep Tube Wells (DTW) both on individual and community basis and constructing minor check dams on permanently flowing streams for providing irrigation facilities. All these interventions provide irrigation facilities during Rabi and Boro seasons and thereby bring additional area under cultivation raising cropping intensity. These interventions also enable farmers to address intra-seasonal stress during periods of erratic monsoons.

In the case of STW and LLP subsidy assistance was earmarked at a maximum of 60 percent subject to an amount of Rs. 20400 for STW and Rs.15000 for LLP, whereas 90 percent assistance was provided for flow irrigation. On an average, a minor flow irrigation project received subsidy assistance at Rs.5400 per hectare. For DTW, assistance was provided with normative cost of Rs. 5 lakh and subsidy assistance of Rs. 3.5 lakh per DTW.



A Shallow Tube Well with diesel pump set supported under RKVY is being used to irrigate paddy in Nagoan District of Assam

Outcome

Substantial progress has been made in the creation of irrigation related assets by RKVY during the last three years.

During the period from 2008 to 2011, a total of 39189 STWs with pump sets and 7207 LLPs were installed. Government had planned to install 59815 STWs and 20694 LLPs during this period. Therefore, there is still a lot of catching up to do. State has realized flow irrigation potential of 5000 ha with these interventions and assured irrigation capacity created through STWs and LLPs under RKVY so far is 91000 hectares and 40700 hectares respectively. Upon completion of RKVY projects taken up during the 11th plan, the state would have added an additional irrigation potential of 141700 hectares in all.

As per recent available statistics (December'2011), the department of Agriculture created assured irrigation facility (under utilization) for 4.70 lakh hectare which is 16.8 % of Net cropped area. Together with intervention of state irrigation department the current area under assured irrigation in the State is 7.73 lakh hectares which is 27.5% of Net cropped area against national average of 39%. In comparison to situation in 2006-07 mentioned above, the current Net shown area in the State is 28.10 lakh hectares and average cropping intensity is 142% against national average of 139%.

Continuing the policy thrust, the department of Agriculture, intends to bring in an additional 200000 ha area under assured irrigation through installation of 75,000 STWs and 50000 LLPs by the end of 2015. The planning includes measures to monitor and ensure sustainable use / safe yield of ground water.



A Deep Tube Well at Hebeda Village supported under RKVY. The beneficiary Farm Management Society later on also received assistance under NFSM for rice demonstration.

Assured irrigation together with coordinated intervention in the field of mechanization, marketing and farm extension helped the state in achieving accelerated growth with a significant shift in cropping patterns and enhanced production. Today the cropping intensity in majority of STW areas is crossing 200 percent. The state achieved record rice production of 50.86 LMT during 2010-11 against local requirement of 41 LMT. The impact of STW / LLP distribution on equity and poverty is quite positive as all attempts are being made to select beneficiaries for small and marginal

farmers in close association with *panchayat* level institutions. The growing intensification of agriculture resulting in greater number of working days has also directly benefitted landless agricultural laborers.

Building on the need for convergence for greater impact, the department is trying to dovetail RKVY irrigation related intervention with other concurrent central sector projects like National Food Security Mission (NFSM). For example, *Pathar Parichalana Samity* (Farm Management Society) in Hebeda Village, Makum, Tinsukia District received assistance both for deep tube well and scientific rice demonstration under RKVY and NFSM respectively.

The intervention of STW /LLP distribution is more likely to be sustainable as beneficiaries are fully responsible for their operation and maintenance. It has been observed that though electrical pump sets are more economical than diesel sets, farmers could not fully utilize the benefits of electrical pump sets. This is due to the fact that power lines with required load bearing capacities hardly reach interiors of farm fields; there is shortage of voltage and power supply. This drawback is being tackled by the department.

*Shallow tube-wells have done to Indian irrigation what personal computers have done to computing globally; they have democratized irrigation, taking it out of command areas to every nook and corner of the country. In other words it brought about greater spatial equality in irrigation unlike canal projects which have created concentrated pockets of agrarian prosperity in canal commands. In flood prone eastern India, tube-well irrigation has helped mitigate the rapacity of floods and water logging by reducing 'rejected recharge'. **Excerpt of essay by Tushaar Shah, IWMI***

A STW helps irrigate 2 hectares of land for a small farmer providing him opportunity to take one/two additional crops from the same piece of land. Small and marginal farmers have on an average been able to earn a minimum of Rs 50000/- extra per year per hectare with this intervention. Similar gains have been reaped by farmers benefitting from other minor irrigation interventions.



Mr. Nurul Haque, RKVY Beneficiary Vill Adhiar Para, Hajo, Kamrup (R) District

“Government subsidy under RKVY on STW and pump sets is a gift for my family. We tried to purchase one earlier also but high cost of installation of tube wells and pump sets prevented us from doing so. ”



Christian Basti Flow irrigation project (Local Name: *Kritupal Bheta*), *Chirstian Basti, Sonitpur*
(Right: Happy faces of a minority farm family at the backdrop of their newly constructed pucca home”

“Our Samity covers 132 minority farm families. It was a long cherished dream to have a permanent structure in order to continuously tap a known perennial source of water in our area for irrigation. For decades we used earthen structures that were damaged frequently. Under RKVY a flow irrigation structure was erected at the cost of 2.7 lakh. Our Samity could also manage some support under MNEGS for land development work. The structure which is of high quality is now ensuring irrigation for around 1500 bighas of land in the area”

Sri Lawrence Bhengra
 Christian Basti Pathar Parichalana Samity (PPS)
 Sonitpur, Assam



Members of Salaguri Krishak Gut, Solaguri, Dhing, Nagoan (Right: Mr.Pradip Kr Das “Dhan Samrat”)

“Ours is a 70 member progressive group of farmers with total land holding of around 700 bighas (280 ha). We received assistance under RKVY in the form of installation of Shallow Tube Wells

(STWs) with 27 Electrical and 5 Diesel pump sets. With assured irrigation our production and productivity have gone up many fold. One member of our group Mr.Pradip Kumar Das was recently awarded with '*Dhan Samrat*' (*Paddy Monarch*) award by a private company for producing 51 mun (2040 Kg) of paddy per bighas or per 0.4 ha”