Analysis of PINS (Pressurized Irrigation Network Systems) Implementation & Suggestions for Improvement

[1]Ishan Thakkar, [2]Avinash Ganpatye
[1]PG Student, [2]Assistant Professor
[1]Department of Civil Engineering,
[1]U. V. Patel College of Engineering, Kherva, India

***Abstract*— As we all know that the population of India is increasing rapidly and in order to keep a pace with food grain demand, we require ample of water supply; but water is limited. To maximize water use efficiency, Government of Gujarat took an initiative for scaling MIS (Micro Irrigation System) by introducing PINS (Pressurized irrigation network system) which facilitates the adoption of drip system by a group of farmers. Here it is proposed to take up a case study to examine the PINS as a system and the possible reasons of its failure. Further, feasible suggestions have been worked out for its expeditious adoption/acceptance. Failure of the PINS project is due to socio-economic reasons rather than technical reasons. PINS concept needs to be more flexible, that is, the beneficiaries should have options to adopt it initially or at the later stage. A nation-wide campaign is necessary for large scale propagation of MIS. Initially this should be in 'Mission' mode.**

***Key words* —PINS, MIS, socio-economic.**

I. INTRODUCTION

As we all know that the population of India is increasing rapidly and in order to keep a pace with food grain demand, we require ample of water supply; but water is limited. After independence we have almost tapped the surface water resources, therefore it is very essential for us to use this available water with maximum efficiency by promoting drip irrigation system. It is to be mentioned that even after rigorous efforts by the Central and state Govts. And NGOs [including substantial subsidies], the scaling of MIS (Micro irrigation system) is still far from the expectations.

Government of Gujarat took an initiative for scaling MIS by introducing PINS (Pressurized irrigation network system) which facilitates the adoption of drip system by a group of farmers. PINS projects have been attempted at 25 different sites having variety of agro-climatic conditions. However, even after such promising opportunity, the success rate is found to be too poor. The system did not yield accepted results and was not adopted by the farmers.

Here a case study to examine the PINS as a system and the possible reasons for its failure have been explored. Further, feasible suggestions have been worked out for its expeditious adoption/acceptance.

II. NEED FOR STUDY

PINS is being a promising system facilitating adoption of MIS on community basis. However, even after creating this facility, expected acceptance by the farmers could not be achieved. It is felt prudent to analyze the reasons of failure and thereby some amicable solution can be worked out/ visualized. Being an urgent need, this exploration could be beneficial to Gujarat state as well as for our country, may evolve some effective strategy/means for agricultural and for the over-stressed water sector.

III. OBJECTIVES OF STUDY

- To study the PINS concept in detail with respect to planning, designing including cost-economics.
- To study the reasons of failure of the PINS implementation.
- To improve/modify the PINS concept by analyzing the drawbacks for better implementations.

IV. SCOPE OF RESEARCH

Government of Gujarat attempted PINS system on 25 projects on pilot basis to examine their performance and effectiveness. This is not done till date on account of many reasons. Therefore, this very subject is selected as a case study with following objectives:

1) To study the PINS concept in detail.
2) To examine its adaptability.
3) Visits to PINS pilot projects and interactions with the beneficiaries and the authorities.
4) To draw inferences leading to the causes of possible reasons of failure.
5) To suggest modifications for effective acceptance of the system.

PRESSURIZED IRRIGATION NETWORK SYSTEM (PINS): AN INTERFACE BETWEEN THE GRAVITY WATER SOURCE AND THE MIS

Responding to the State Government's campaign to introduce Micro Irrigation Systems (MIS) in the irrigated command area, SSNNL (Sardar Sarovar Narmada Nigam Ltd.) had conceptualized PINS. PINS acts as an interface between gravity based canal flow and MIS at the farm level and in turn would lead to savings of water and electricity (as compared to groundwater utilization). Irrigation block of about 50 ha works out to be an economical proposition. PINS envisages lifting of canal water, pressurizing it and eventually supplying it to MIS coupled with it. Such PINS interalia calls for implementation of an inlet structure, a storage structure, pumps, filters, conveyance pipes and pressurized pipe network to deliver water with approximately 20 m head at the sub-chak level. This being an innovative concept, Government has decided to undertake about 50 numbers of Pilot projects in different agro-climatic zones of SSP command area and execution of 25 projects is under progress in different agro-climate zones of the command of SSP. These Pilot Projects after completion were proposed to be handed over to the respective Water User Associations (WUAs) for Operation & Maintenance.

V. DATA COLLECTION

As a part of data collection it is gathered that 25 PINS Projects have been attempted in 8 districts and 19 taluka. From that projects I have visited 2 pilot projects which are installed by SSNNL and one private project which is located at Harij taluka in Patan district.

Project: 1

Name of Project	Taluka	District
Govna	Harij	Patan

In this Govna project I had meet with Ex. Sarpanch of the Govna Village.
The key points of our interaction is mentioned below.

- Farmers have no capital investment to adopt MIS.
- Farmers are not interested to adopt the new method in place of traditional flooding method.
- Farmers apprehended that joint venture with government may cost their land.
- Installation of MIS is not a big problem but its operation and maintenance is an issue for farmers. This is based on their bitter experiences.
- Company which are supposed to provide O & M do not provide service as required.
- If any farmers want to adopt MIS in their farms then rest of all farmers discourage them due to less knowledge of MIS. He felt that farmers generally follow the others and as such, only success story can change their trend.

Project: 2

Name of Project	Taluka	District
Kalana	Harij	Patan

In this Kalana project I had meet with Sarpanch of the Kalana Village.
The key points of our interaction is mentioned below.

- Mr. Kiran is the only beneficiary of the Govna PINS project.
- Only part of his farm is irrigated with PINS project and rest of all area is irrigated with traditional method.
- Farmers are ready to adopt MIS as they know that this is the cheapest and efficient method of irrigation but they are not adopt MIS because operation & maintenance of MIS is tedious task for them.
- Farmers get ample amount of water with minimum cost therefor they do not understand main purpose of MIS i.e to save the water.
- Farmers are keen to adopt the MIS but they do not have labor force who are ready to operate & maintain the same.
- Farmers have limited resources for initial investment to adopt MIS.
- Due to the lack of availability of farm labourers, much of the agricultural land can't be used for agriculture/farming.

Project: 3

Name of Project	Taluka	District
Jalaram Farm	Harij	Patan

This is the Gujarat's first private farm which adopt PINS concept for irrigation purpose. I had meet with concern person of the entire project.
Here are the key points of our interactions.

- One of the main reason for failure of PINS project is government introduce PINS and then try to convince farmers for MIS. Instead of this, it is necessary to introduce MIS initially and thereafter convince them to use pressurized water.
- It is only possible to get benefits from PINS concept where large area of field is covered.
- Such project can be successfully implemented on community basis rather singular.

- Government and other bodies are failed to convince the farmers in non-technical areas. In other words, social engineering part needs to be explored and executed.

VI. ANALYSIS

- Farmers have knowledge of MIS system and PINS project.
- They also know that MIS is beneficial for their agricultural.
- Only few farmers have that much of capital to adopt the MIS.
- Farmers are less aware with O & M of MIS therefore they deny to adopt MIS.
- Due to urbanization, people are less interested in agricultural.
- Labor problems occur in the village because they don't want to work in villages, they are lured with city life.
- We are in that agricultural era in which we have land, water for irrigation but we don't have human resources particularly, labourers.
- People don't value the thing which is available free / negligible cost. In other words we can say that "what get measured, get done".
- Promotion of PINS project were done in wrong manner in past. Do not tell farmers to adopt MIS because it saves water, no one is interested in that concept, tell them about benefits which will occur after adopting MIS.
- Introduce MIS first and then try to convince farmers for PINS.
- Questionnaire & Beneficial survey should be done before beginning of any project which is directly deal with peoples.
- PINS concept is a revolutionary step towards agriculture, its promotion should be done on large scale.
- Implementation is one side of coin & O&M is another side of coin. Both fact should be kept in mind during planning of this project.
- One help center should be provided between 2-3 villages for the solution of farmer's difficulty.
- Government should also provide easy loan facility for those farmers who want to adopt MIS.
- India is an agricultural country and it is a land of farmers. Government should take care of importance of farmers and they also get same importance as rest of all profession.
- In PINS, it is presumed that all the farmers under a chak will adopt PINS initially and simultaneously. In reality, this is too optimistic. Hence, PINS as per its present form needs modification.
- Considering the limited resources of the farmers, upfront MIS adoption is not feasible.
- Therefore, PINS should be made flexible, so that the beneficiary can join the PINS at later stage. Initially, they may go for surface irrigation and after being comfortable with the irrigated agriculture and some resources can be diverted for advanced agro-practices.
- It is to be mentioned here that, the saving of irrigation water may save us in future. Hence, adoption of MIS is pragmatic. Therefore, the infrastructure being developed shall be compliant with the PINS, as this could be the ultimate means for MIS implementation.
- Planning and implementation of PINS projects shall be coupled with MIS, that is, both of these shall be installed simultaneously.
- Abnormal meager water cess and subsidies to the electrical power are the main obstacles in the MIS implementation. This needs to be resolved.

VII. CONCLUSION

- Failure of the PINS project is due to socio-economic reasons rather than technical reasons.
- PINS is the one of the best interface between the MIS and the water source. Being conceptualized on community basis, the major cost is shared amongst beneficiaries.
- PINS and MIS shall be implemented simultaneously.
- The irrigation infrastructure shall be developed which is compliant with the PINS.
- MIS supplier companies should be compelled to provide appropriate and prompt O & M services so that farmers will have faith in this new system.
- PINS concept needs to be more flexible, that is, the beneficiaries should have options to adopt it initially or at the later stage.
- While implementing the PINS and MIS, the beneficiaries should be trained properly so that they can internalize it comfortably.
- Education also play a vital role in this project, due to less education, farmers have distracted with MIS.
- A nation-wide campaign is necessary for large scale propagation of MIS. Initially this should be in 'Mission' mode.