SYNOPSIS OF THE MAJOR RESEARCH PROJECT·

"FARMERS' PARTICIPATION IN IRRIGATION MANAGEMENT OF AGRARIAN SECTOR IN COASTAL ODISHA"

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INTRODUCTION:

Agricultural growth is a pre-requisite for the economic development of our country. It is the primary source of livelihood in rural area which account for 68.8 % of India's population. It contributes 13.9% of GNP and 56% of employment. Though the development of agriculture depends on many inputs like seed, fertilizer, pesticides, credit and marketing but among them irrigation is the most vital one for accelerating its progress. The irrigated agriculture contributes nearly 56% agricultural out-put. The ultimate irrigation potential is presently put at 113.5 million ha. Comprising 58.5 million ha.under Major and Medium irrigation and 55 million ha. in Minor irrigation. As re-assessed by the Ministry of Water Resources the ultimate minor irrigation potential is now tentatively estimated at 81.43 million ha.. The National Perspective Plan would increase the irrigation potential by 35 million ha. Thus the ultimate irrigation potential of the country could reach upto 174.93 million ha.[-1]

Similarly in Odisha 85% of its population live in the rural areas and mostly depend on agriculture and allied activities. Agriculture and Animal Husbandry contributed 17.5 % of the Net State Domestic Product in 2012-13 and provided employment directly and indirectly to around 60% of the population . Agriculture which is the main stay of Odishan economy is a perpetual gamble of monsoon. So creation of additional irrigation facilities is vital not only for achieving higher agricultural poduction but also stabilizing production under certain weather conditions.[-2]

As per the 1997 status, out of total water use, which is estimated at 605 Cu. Kilometers in the country, agriculture's share is 83%. The projected requirement of irrigation in 2025 will be 770 Cu.KM against 501 cu.KM. in 1997. But the share of agriculture is likely to come down to 73% by the year 2025 due to competitive demands on water use from other

sectors. Hence the most effective long term strategies for dealing with water scarcity include conservation and more efficient water use.

On the other hand, water use efficiency in the existing irrigation projects is put at 40% which means bulk of the water diverted for agriculture never benefits a crop, rather this surplus amount causes water lodging and salinity of the soil.

To-day Indian irrigation as well as state irrigation is facing an unprecedented situation in which the user farmers are concerned for high level of service quality of irrigation, on one hand and financial constraint on public sector caused due to rapid expansion and high cost construction for both ongoing projects as well as new projects and steeply declining financial performance of irrigation projects already in service on the other. The sector broader management has not been given due attention. Financial resources have now been scarcer and scarcer and has made decision making process for new capital investment not only more cautious and vigilant but also to explore other lesser capital intensive option like modernization or rehabilitation of existing irrigation projects for improving water use efficiency. As an effective tool to improve the quality of service as well as water use efficiency in irrigation modernization / rehabilitation of irrigation projects / schemes prior to turn over will better motivate farmers and enable them to take over irrigation management . On the other Govt. facing financial crunch will get the opportunity to reduce financial burden entrusting the same on the water user to shoulder themselves.

Besides the above, the small and marginal farmers form 70% of the farming community find it difficult to go for irrigation on their own as the cost is beyond their reach which is around Rs.1.5 lakh for an irrigation well usually. Another option is to arrange co-operative irrigation system for the small and marginal farmers or to form association of water users' by partial intervention of either government agency.

In an irrigation system generally three distinct regions-head, middle and tail are visualised in a surface flow and the flow of water is from head to tail. The farmers in the head region normally receive adequate quantities of water and hence there is no reason why the farmers in the head region as irrigators organise themselves in to a society. The problem of

inadequate or no water supply emerges in the tail end. Hence there is a genuine necessity on the part of the farmers in the tail end regions to organise and co-operate among themselves to confront the authorities for an assured supply of water. The Department introduced in some pockets of the country what is commonly referred to as "rotational water supply (RWS) as a means of tackling the problem of tail farmers. For RWS to be implemented effectively the head and middle region farmers need to co-operate. This can happen only when they are convinced that RWS shall in no way affect their interests.

So from several angles it is realised that farmers' organisation or Water Users' Association is essential for providing irrigation facilities for individual farmer and reducing the burden of the government[-3]. Reality can be investigated after going deep into the field study.

OBJECTIVES OF THE STUDY:

Considering the importance of farmers participation in irrigation management the study was planned to be undertaken in coastal Odisha, where majority of rivers and water resources concentrated. The objectives were as follows:

- To study the manner of management of water resource and type of works undertaken by the Farmer's Association in the study area.
- To find out the impact of irrigation by Water Users' Association on the cropping pattern, income generation and standard of living of the beneficiaries.
- To find out the problems of Water Users' Association and to suggest suitable policy measures.

HYPOTHESES:

On the basis of objectives outlined, the following hypotheses have been developed.

- Scientific management with judicious allocation and feeling of brotherhood among member of Farmers' Association (Water User's Association) helps for operation, maintenance and

management of system and decides about cropping pattern and determines water fees and settles disputes etc.

- Better managed Irrigation system diverts lands for income generating crops using less water , increases income and standard of living of the beneficiaries.
- The nature of problems faced by the members of Water Users' Association prescribes necessary suggestions to be undertaken.

METHOD OF STUDY:

The study had been undertaken in multi-stage sampling method. Out of 30 districts of the state 10 districts e.g. Balasore ,Bhadrak, Kendrapara, Jajpur, Jagatsinghpur, Cuttack, Puri, Ganjam, Gajapati and Khurda are located in coastal belt. Out of these 10 districts 4 districts namely Bhadrak, Jajpur, Kendrapara and Puri had been selected for study on random sampling method

In Bhadrak district there are 7 blocks out of them Bhandaripokhari block had been selected on random sampling method for study. Similarly in Jajpur district there are 10 blocks.

Out of these 10 blocks the Barchana block was selected on random sampling basis for study In Kendrapara district there are 9 blocks

Out of these 9 blocks, Aul block had been selected on random sampling method for undertaking the study on Pani Panchayats. In Puri district there are 11 blocks

Out of the above 11 blocks the Pipili block was selected on the same random basis for the study

From each of the selected blocks e.g. Bhandaripokhari, Barchana, Aul and Pipili again 75 farmers of Water Users' Association per block were selected as given below. Besides this 20 officials concerned with Water Users' Association were taken to collect their opinion through interview schedule.

a) Sample of the study:

TABLE-1.1

Sl.No.	Name of the Block(s)	Members of WUA (S)	No. of Officials
1	Bhandaripokhari	75	20
2	Barchana	75	
3	Aul	75	
4	Pipili	75	
	Total	300	20

In the state there were as many as 21,259 Water Users' Associations or Pani Panchayats by 31st July,2012. In 10 districts approximately there were 7086 Pani Panchayats. Out of the above numbers the present research work had studied about 300 farmers of Pani Panchayats located in 4 districts.

b) **The investigator had developed the following tools**.

1. Questionnaire for the members of Water Users' Association or farmers.
2. Interview schedules for the officials involved in Water Users' Association and collected data.

c) Technique:

The simple percentage calculation had been used in data processing. Data had been analysed and interpreted separately in the light of the objectives, hypothesis and design of the study. On the basis of analysis and interpretation, finding had been outlined and suggestions prescribed.

d) **Design of the Study**:

For the sake of convenience the study has been designed with the following chapters. The chapter one is the Introduction and Conceptual Frame. Chapter two reviews the Related Literature. Chapter three focused on Water Users' Association for Development of Irrigation. This portion focuses on development of Irrigation by Farmers' Participation across

the country and state of Odisha. Chapter four has analysed the data and interpreted. Chapter five has been devoted towards findings and conclusion.

FINDINGS OF THE STUDY:

While the researchers were studying the manner of management of water resources the researchers could found out that most of the Water Users' Associations were registered and they had been registered during the period form 2002-03 to 2011-12. The owners of land were the members of Water Users' Associations. While the farmers of ayacut area had formed Pani Panchayat or Water Users' Associations, under Lift Irrigation, the members of chak committee had formed WUAs under Major , Medium and Minor Irrigation Projects. While the Presidents, Secretaries, Treasurers and members of WUAs were executive members and had voting power the Govt. officers, members of NGO and representatives of any other body were not the members of excutive body and had no power to cast their vote for taking any decision. 98.33% members of WUAs had responded that election was completed in their Associations. While the Major Irrigation Projects had distributory Committee and all the Major, Medium and Minor Irrigation Projects had project committees there was no such committee in Lift Irrigation Project,but there was a state level committee of all such projects. The members of Water Users' Associations, of the area under study were paying membership fee from rupees ten to hundred. Majority of them had paid rupees ten towards membership fee while very few of Pipili block had paid Rs.100/- towards membership fee. The WUAs under Major, Medium and Minor Irrigation Projects purchase water from the Department of Water Resources, while this was not happening under Lift Irrigation projects. The water tariff was paid on Area Basis and the rate of tariff was rupees one hundred eighty only per acre, which was the approved rate of the Government. There was no remarkable increase in water fee collection as far as the opinions of officials are concerned. The farmers and officials were of the view that the equity in distribution of water and timeliness in supply of water had increased after the formation of WUAs. Form the responses of both farmers and officials it was known that due to formation of Water Users' Associations the cost of irrigation had decreased both for the farmers and the Government. 96.67 percent farmers and 60% of officials replied that

water was reaching the field of tail end farmers. Sixty percent of farmers and cent percent officials said that Department of Water Resources was extending financial help to the Water Users' Associations. Only 3.67 percent farmers had opined that their Association had received grant from Local MP or MLAs from their LAD fund for construction of office room of their WUAs. Seventy percent of officials were of view that Water Users' Associations used water judiciously. Sixty percent of officials said that after the formation of Pani Panchayats the wastage of water in transporting and leakage were checked. There was political pressure on the department in the matter of WUAs but it was very less.

The researchers had collected in formation regarding the types of work undertaken by the WUAs. 83.33 percent of farmers opined regarding development of operation and maintenance fund by their WUAs. 81.67 percent of farmers said that they were removing silt from water courses / field channels and field drains. 95 percent farmers were repairing and maintaining the inspection path and service road to keep them in good condition. 93.33 percent of farmers were removing grass, shrubs and bushes from canal / channel, embankments and its bed. 96.67 percent farmers' of WUAs and sixty percent of officials said that WUAs repair and maintain all structures in distribution system to keep them in good working condition. Further 68.33 percent farmers were undetaking earth work. 68.33 percent farmers of WUAs and 80 percent of officials replied that they were undertaking repair to lining painting plastering , replacing demaged portion repairing to masonry and other structures by WUAs. The water Users' Associations were taking masonary work to level the channel surface for smooth flow of water to tail-end in the opinion of 93.33 percent farmers. 80 percent officials were of the view that condition of canal maintenance had improved after the formation of WUAs. The percent of farmers who were seeking the advice of the Department for planned operation and maintenance activities was 81.67. 88.33 percent farmers were of the opinion that their WUAs had not taken the permission of Department of Water Resources at any time to utilise the unutilised land in their locality 98.33 percent farmers had said that their WUAs were taking the steps to notify the project authorities promptly for any damage to the structures due to unforeseen natural calamities like earth quake, heavy rain etc. From the responses of 31.67 percent farmers and 70 percent officials, it was known that conflicts were

arising among farmers, but the frequency was very few. But cent percent farmers and 70 percent officials said that the conflicts among farmers were being solved in the general body meeting of Associations with the help of the Departmental officials. The irrigation facilities developed by the WUAs had its impact on cropping. 71.67 percent farmers opined that there was change in cropping due to formation of WUAs. The farmers were cultivating new crops like summer paddy, rainy pulses , jute, brinjal, tomato winter paddy , til and adopted pisci-culture while 80 percent officials said that after formation of WUAs, the crop area had increased,70 percent were of the opinion that the crop yield had increased. From the above findings the Hypothesis No. 1-"Scientific Management with judicious allocation and feeling of brotherhood among members of Farmers Association (Water Users' Association) helps for operation, maintenance and management system and decides about cropping pattern and determines water fees and settles disputes etc." was accepted.

The irrigation facilities developed by the WUAs had its impact on income generating crops, increase in income and standard of living of the beneficiaries. 71.67 percent farmers opined that there was change in cropping due to fromation of WUAs. Farmers were cultivationg new income generating crops like summer paddy,rainy pulses, jute, vegetables like brinjal ,tomato, winter paddy, til and adopted pisci-culture. After the introduction of WUAs and new cropping the income of the farmers had increased, salinity had decreased and water logging had been checked. Ninety percent officials were of the opinion that after the introduction of WUAs in agriculture the efficiency of irrigation had increased. But their was no remarkable increase in the collection of water tax. On the other hand there was reduction in the expenditure of the Department due to involvement of farmers in irrigation management in place of employees. Seventy five percent of farmers were of opinion that they were not cultivating water resistant crops. Majority of the farmers said that their standard of living had increased. The nature of indicators which had reflected the improvement in the standard of living of farmers were increase in income, increase in number of children in family getting higher education, higher yield in cultivation, construction of buildings, purchase of moped or two wheeler vehicles in case of small farmers, purchase of modern household appliances like television, refrigerator , new land, agricultural implements like tractor, power tillers, milky cow,

improvement in animal husbandry, digging of well, extension of medical facility to children and more spending in marriage and family functions. Hence the Hypothesis No.2-" Better managed irrigation system diverts lands for income generating crops using less water, increases income and standard of living of the beneficiaries" was partially accepted. The portion "Better Managed irrigation system diverts land for income generating crops, increases income and standard of living of the beneficiaries" was accepted and the portion,-"Better managed irrigation system diverts land for crops using less water" was rejected.

The researchers had studied the problems of WUAs themselves making field study in coastal area. They had invited responses from farmers or members of Water Users' Associations and officials involved with the Associations. The problems of WUAs were varied and far flung. More over, the problems were also of different nature in different parts. The problems faced by the WUAs were enumerated below:

i) Some of the Water Users' Associations were un-registered.

ii) As there was provision that land owners would be the members of WUAs, hence absentee landlords who were not cultivating the land were the members of WUAs, on the otherhand the landless labourers and the share croppers directly involved in agricultural operations but having no land, are devoid of membership of WUAs.

iii) Water was not reaching the tail-end of the fields of farmers in some areas and the department was not extending pipe lines up to the end of ayacut area.

iv) Extension of financial help of the Department of Water Resources was not adequate.

v) The Local MPs and MLAs were not allocating financial assistance from their LAD fund for constructing Office room of WUAs though there was provision for the above.

vi) Members of WUAs were not utilising the un-utilised land of the department to raise their operation & maintenance fund.

vii) There was conflict among farmers and they were lacking in co-operation

viii) Farmers were cultivating income generating crops but of less variety.

ix) Collection of water tax was veryless.

x) The farmers were not cultivating water resistant crops.

xi) The Department of Water Resources was neither supplying qualitative pipes, nor repairing the broken pipes.

xii) Irregular payment of energy charges by the farmers with a view that their economic position is low.

xiii) There was no proper co-operation of officials with farmers and higher authorities.

xiv) There was political interference in the affairs of WUAs which hampers the smooth functioning of this body of farmers at bottom level.

xv) There was no provision of financial assistance by the department to repair machines.

xvi) Non-repair of pump house by the department in Bhandari Pokhari block.

xvii) In Bhandari Pokahari blocks lift irrigation channels were below the level of land which indicated defective planning and manufacturing.

xviii) Sometimes the motors of lift irrigation projects undergone theft, which indicated lack of proper upkeep of things in the block.

xix) In Barchana block there was improper and late supply of water.

xx) Frequent changes of management of WUAs were seen in Barchana block which was an indication of political interference.

xxi) Unclean canal and lack of fair water supply was seen in Barchana block.'

xxii) Administration of DOWR was improper in Barchana block.

xxiii) In Aul block non-farmers were posing problems for the farmers when pipes were passing by the side of their home land.

xxiv) Most of the old farmers of Aul block were not interested to continue cultivation owing to low profit and higher cost of production because of hike in labour price.

xxv) In summer both in Aul and Pipili block farmers were facing problem as water was not available due to blockage of river bed by silt and water source of river. Daya in Pipili block was far away from lift point for which expenses were made for digging.

xxvi) There was Water logging in Pipili due to Gangua Nala of Bhubaneswar and pipes were floating in flood water.

xxvii) Farmers of WUAs were not able to pay energy charges due to failure of crops because of natural calamities and farmers had not done crop insurance which would have protected them from loss.

xxviii) Farmers were not maintaining the distributory system due to lack of their interest and income at hand.

xxix) The farmers were not able to attain their properties due to lack of technical knowhow.

xxx) Due to lack of co-operation among members water taxes were not collected. Some members of WUAs were not depositing dues of electricity bills knowingly as they were thinking that water was supplied by Government.

xxxi) Insufficient facilities for storage, food processing and marketing were faced by the farmers of WUAs.

xxxii) The WUAs were not functioning as corporate agency, rather as private agency. They were not preparing plans for new resource mobilisation through agri-business.

xxxiii) WUAs were not holding meeting to resolve issues and were not getting financial support from line departments like agriculture and irrigation to repair broken canals & structures.

xxxiv) WUAs lack group dynamics and there was lack of political will for the development of WUAs.

Considering the suggestions given by farmers and offIcials on the above problems the researchers had prescribed the following suggestions.

i) Every WUAs should be registered to avail of the Govt. grant.

ii) The absentee land lords should be prohibited to be the members of WUAs rather the persons who are directly involved with cultivation like share croppers and tenants should be allowed to be the members of WUAs passing suitable legislations.

iii) The Department of Water Resources should extend pipes as a consequences of which water can reach the tail-end of the field.

iv) The Department should extend financial assistance to the WUAs adequately in certain time intervals.

v) The MLAs and MPs should grant finance for the construction of office room of WUAs from their LAD fund.

vi) The members of WUAs should utilize the un-utilized land of Department in cashew plantation or in any other means to raise the operation and maintenance fund of their respective Associations.

vii) The conflicts of farmers should be solved in the General body meeting of WUAs in the presence of Departmental Officers if so warrants.

viii) Collection of water tax should be geared up in case of Major, Medium and Minor Irrigation Projects.

ix) Farmers should cultivate more and more of income generating crops which would strengthen their economic position.

x) Water resistant crops should be cultivated by the farmers to meet the water deficit in summer season.

xi) The DOWRs should be fervent enough to repair the broken pipes and supply qualitative pipes henceforth.

xii) As the farmers are the beneficiaries, and govt. have entrusted the responsibility to reduce the burden the farmers should pay the energy charges regularly. The Govt. should bear the charge in lean season when the motor is not working especially in rainy season.

xiii) The officers should change their mind set and be dedicated for the sake of poor farmers who are supplying food to the society.

xiv) Political interference in the affairs of WUAs should be checked and should not hamper its smooth functioning.

xv) Department should assist poor farmers for repairing or replace the machines when necessary as it is difficult on the part of the farmers to bear the heavy cost.

xvi) The Pump house should be repaired as pointed out by the farmers of Bhandari Pokhari block of coastal Odisha.'

xvii) The level of Lift Channel and land surface should synchronise with each others to facilitate smooth flow of water.

xviii) The motors and costly machines of Irrigation Project should be kept in safety places and members of WUAs should be made concious, other -wise they would suffer.

xix) The water should be supplied properly and in time, otherwise it would affect productivity.

xx) Frequent change of Management should be checked and political interference should be minimised as pointed out by the farmers of Barchana block.

xxi) Canals in Barchana block should be made clean and fair water supply should be ensured.

xxii) The administration of DOWRs in Barchana block should be congenial to the causes of members of WUAs.

xxiii) An understanding should be created with non-farmers for mutual settlement as a result of which they will allow the farmers to pass their pipes by their home , hearth and holdings.

xxiv) The farmers of Aul block should be activated to continue their cultivation. They may be advised to cultivate the crops where labour engagement would be less and cost of production would be low.

xxv) In place of lift point, permanent boring should be made to utilise under ground water for irrigation where problem of silt and water source will be at distant place like river Daya and branches of Brahmani in Aul block.

xxvi) Water of Gangua nala should be drained to river Daya to make permanent solution to the problem of water logging.

xxvii) The farmers should resort to crop insurance which will protect them from loss due to crop failure at the time of natural calamities and they would be able to pay energy charges from benefit derived from the insurance company.

xxviii) Attitude of the farmers should be changed. They should be encouraged to maintain distributary system. Money would not be a problem where there would be will.

xxix) Farmers should be sufficiently oriented and technical knowledge should be imparted to them through workshops, so that they would be able to attain their properties.

xxx) The NGOs should be involved, the mind set of members of WUAs should be changed to pay the energy charges. A spirit of co-operation should be created among them. The problem of load shading should be tackled installing transformers.

xxxi) Storage and processing facilities should be created by the Government establishing cold stores, warehouses and processing units at different places. Govt should purchase agricultural commodities as buffer stock paying minimum support price to tackle market situation at the time of scarcity.

xxxii) The WUAs should work as corporate agency starting agri-business.

xxxiii) The WUAs should solve their problems themselves through regular meetings. The Line dempartments like Agriculture, Co-operation, Irrigation should co-operate with each other and extend financial benefit to the poor farmers.

xxxiv) Group dynamics of WUAs will work a lot as 'Union is strength'. There should be sufficient political will to develop this organisation of farmers as development of the country depends on them.

From the above finding the Hypothesis No.3-"The nature of problems faced by the members of Water Users' Association prescribes necessary suggestions to be undertaken" was accepted.

CONCLUSION:

At last a concerted effort of farmers of WUAs, administrators and political representatives with sincerity, co-operation dedication and mutual understanding will go a long way in developing irrigation in the country. An irrigation system with the involvement of farmers will certainly increase agricultural productivity, make the country self-sufficient in food front and bring development at our door step.

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