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MINISTRY OF LOCAL GOVERNMENT, RURAL DEVELOPMENT AND COOPERATIVES
GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

REPORT
ON
IRRIGATION MANAGEMENT
PILOT PROGRAMME
(1979-1980)

Bangladesh Rural Development-I Project
Integrated Rural Development Programme
September, 1980.

PREFACE

The Irrigation Management Pilot Project (IMPP), 1979-80 was an innovative venture in cooperative irrigated intensive agriculture. The aims were 'Command area improvement' and 'increased crop-yields'.

Our arable land is cultivated almost to the full extent. Cropping intensity is already quite high at around 145%. So there is little scope for increasing the crop or cropped acreage. The only possible way for increasing crop-production is through intensive irrigated cultural practices. Rapid expansion of irrigation is also restricted, amongst others, due to high investment—intensity. On the other hand, existing irrigation facilities especially minor irrigation equipment, *i.e.*, DTW/LLP/STW are not being used anywhere near their potential/capacity. And whatever irrigation is available it hardly gives the optimum produce due to non-availability of package of complementary inputs and services.

The main reason for all these is absence of farmers' organisation to inspire confidence and commitment in them as well as to channel support services and supplies. Through IMPP, the field functionaries of IRDP, BADC and DEM joined hands to avail of the farmers' organisation, *i.e.*, TCCA-KSS system to motivate farmers of 20 KSS with DTW's in Seven RD-I Project Thanas to increase both Command Area and yields. The results are spectacular and depicted in the page below.

IMPP has far-reaching implications for the Government's Mid-term Food Production Plan and beyond. If, for instance, Irrigation Management Project is expanded to cover existing 10,000 DTW's, the increase in yields, at the IMPP rate, would be around 1.3 million tons in one dry season. If it could be extended to the existing LLP's and STW's also, the total additional increase will be closer to the projected increase of 5 million tons targetted for 1984-85. This is enough to justify nation-wide expansion of Irrigation Management Project forthwith.

(ii)

This report is an evaluative study of IMPP, 1979-80 and lays bare what happened in the programme and how. It may be worth the priceless efforts of those hard-working cooperators and dedicated officials who sweated blood to make this innovative programme a thundering success, only if it can inspire replication of Irrigation Management Programme nation-wide as a matter of conscious policy for cooperative irrigated intensive agriculture.

DACCA ;
Sept. 28, 1980.

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**INTEGRATED RURAL DEVELOPMENT PROGRAMME
BANGLADESH RURAL DEVELOPMENT-I PROJECT**

AT A GLANCE

IRRIGATION MANAGEMENT PILOT PROGRAMME (IMPP), 1979-80.

Comparative performance of 20 Deep Tube-wells (DTW) before and after introduction of IMPP in seven RD-I Project farms of Bogra and Mymensingh.

Sl. No.	Key Indicators.	Unit	Comparative Performance		
			1978-79 (Before IMPP)	1979-80 (After IMPP)	Percentage (+) increase (-) decrease.
1	2	3	4	5	6
1 Command Area of DTWs:					
(a)	Total area covered	Acres	1,031	1,879	(+) 82%
(b)	Net Average area covered per DTW ..	..	52	94	(+) 82%
2 Yield of DTWs:					
(a)	Total yield	Mauuds	38,147	1,08,982	(+) 186%
(b)	Yield per DTW .. ..	..	1,907	5,449	(+) 186%
(c)	Yield per acre .. ..	..	37	58	(+) 57%
3 Participation:					
(a)	Total beneficiaries	Nos.	1,664	2,690	(+) 62%
(i)	KSS Members .. ..	..	898	1,361	(+) 52%
(ii)	Non-members .. ..	..	766	1,329	(+) 73%
(b)	KSS Members per DTW .. ..	..	45	68	(+) 51%
(c)	Non-members per DTW .. ..	..	38	66	(+) 74%
4 Cost of Operation:					
(a)	Total cost	Tk.	4,16,524	5,36,757	(+) 28%
(b)	Cost per DTW	Tk.	20,826	26,837	(+) 28%
(c)	Cost per acre .. ..	..	404	283	(-) 30%
5 Credit Utilized:					
(a)	Total Credit	Tk.	2,26,584	6,05,300	(+) 167%
(b)	Credit per DTW	Tk.	11,329	30,265	(+) 167%
(c)	Credit per member	Tk.	252	445	(+) 77%
(d)	Credit per acre	Tk.	120	322	(+) 46%
6 Employment Generation					
		Nos.	80	120	(+) 50%

IRRIGATION MANAGEMENT PILOT PROJECT (IMPP)

1. Background :

1.1 The Rural Development-I Project is a Pilot multicomponent area development project. The 5-year project is under implementation since July 1976 in 4 thanas (Kotwali/Gabtali/Sherpur/Sariakandi) of Bogra and 3 thanas (Muktagacha/Trishal/Gaffargaon) of Mymensingh districts. Its major objective is to increase production and generate employment by promoting 'Comilla-type' Cooperative, *i.e.*, the TCCA-KSS system and strengthening them by channelling through them production-inputs and services. The main strategy was to realise these twin objectives of increasing production and employment mainly through irrigated intensive cultural practices by making available to the farmers' organisations (*i.e.*, KSS's) some minor irrigation equipment—Shallow Tube-wells (STW)/Low Lift Pumps (LLP)—alongwith assured supply of complementary inputs like credit, fuel, fertilizer, seeds, plant protection materials and extension services.

1.2 Unfortunately the programmed irrigation equipments could be procured and fielded during the first three years of the project. This not only delayed the realisation of irrigation based production/employment targets but also thwarted the programmed strengthening/expansion of farmers' Cooperative, distribution of credit and other complementary inputs, because irrigation water is the prime input on the availability of which depends farmers' cooperative productive efforts and use of other inputs. This also disappointed the prospective beneficiaries and disheartened the field functionaries of the component agencies. This hopeless situation, however, aroused a yearning amongst some committed officials to innovate and initiate some productive efforts around some existing Deep Tube-well (DTW) with the inspired support of some relatively advanced Krishi Samabaya Samities (KSS).

2. The Constraints to Command Area Improvement (CAI)

There already existed some 393 installed and 358 operating DTW's 921 installed/877 operating STW's and 674 LLP's in the seven RD-I Project thanas. These were being operated at much below their rated/optimum capacity resulting in under-utilisation of expensive imported irrigation equipments, wastage of scarce irrigation water, high cost of irrigation per acre and low productivity and employment per equipment. This inspired the IRDP officials supported by local IDA consultants and the field officers of BADC and DEM to have a field survey of the DTW's in the area to find out the constraints to command area improvement and irrigated cultural practices. Based

on the analysis of the survey, the following major constraints were identified:—

2.1 Absence of necessary institutional arrangements in the field for—

- (i) motivating the individual farmers for active participation in, and effective management of, water groups/cooperatives. This happened mainly because while siting these equipment, due attention was not given to the motivation and willingness of the prospective beneficiaries for group action, nor much efforts followed subsequently to organize them into viable users' groups.
- (ii) Irrigation and water use management—there is hardly any field agency entrusted exclusively with the task of irrigation-and-water-use management, *i.e.*, for field survey, preparation of land maps, layout of field channels, water distribution and rotation system, etc.
- (iii) **Coordination of Component agencies:** A number of agencies, *viz.*, IRDP in organizing the users, groups and channeling credit and other complementary inputs to such groups, BADC in operating and maintaining the tubewells and supplying seeds, fertilizer, etc., and the Department of Extension and Management giving extension services, provide integral inputs for the optimum use of the tube-wells. But these inputs must be ensured in a concerted way as a package and for this purpose, there is no arrangement in the field to ensure coordination amongst these agencies.

2.2 Inadequacy of technical management due to—

- (i) frequent break down of the equipment;
- (ii) non-availability of spares on time;
- (iii) irregular repair and maintenance;
- (iv) lack of users' knowledge on efficient operation and maintenance of the equipment; and
- (v) uncertain supply of fuel, lubricant, etc.

2.3 Lack of definite arrangement for training and extension on irrigated cultural practices including irrigated cropping pattern, water use, etc., for the group.

2.4 Uncertain and irregular supply of complementary inputs like credit, seed, fertilizer, plant protection materials, etc. Lack of adequate funds for purchased inputs and non-availability of other inputs on time depressed farmers' participation and lowered the irrigated area per DTW.

2.5 In-efficient management of KSS-with-Irrigation due to—

- (i) dearth of motivated cooperative leadership;
- (ii) absence of required production plan, irrigation budget, etc;
- (iii) poor collection of irrigation costs and maintenance of proper accounts thereof;
- (iv) lack of training of KSS members;
- (v) inadequate supervision/support from the concerned officials;
- (vi) risks of crop failures due to various constraints;
- (vii) high water rates resulting from sub-optimum use of DTW's;
- (viii) domination of some KSS by rich farmers—In some cases the rich farmers managed the DTW's by investing their own funds and exploited the poorer farmers by extracting high water-rates. They were even unwilling to expand the command area often due to scarcity of funds.

2.6 Having identified these constraints, IRDP Officers of RD-I Project joined hands with field officials of BADC and DEM to overcome some of these bottlenecks and increase command area of some selected DTWs on a pilot basis. The outcome was the introduction of IMPP.

3. The Irrigation Management Pilot Project (IMPP)

3.1 The thrust of the Pilot Project was to improve the management system and in the process the command area of some selected DTWs belonging to the KSS's which have achieved some measure of management-efficiency. The officers of IRDP, BADC and DEM at district and thana levels had series of meetings through their local initiative, amongst themselves as also with selected KSS members well before the commencement of the 1979-80 irrigation session. These officers selected 20 DTW's belonging to A & B class KSS (which by definition have better cooperative management) in 7 thanas @ 3 in each thana (with one having been dropped in Gabtali due to mechanical failure) based on certain criteria, say, response of KSS members to the motivation campaign, level of management efficiency of the KSS, potentials for expansion of command area, etc.

3.2 The IMPP aimed at—

- (i) resolving the identified management, institutional, technical and economic constraints to CAI through the KSS by adopting indigenous, appropriate and adapting means; and
- (ii) maximising utilisation of irrigation equipment and increasing irrigated crop-yields.

3.3 The salient features of the programme:—

- (i) **Action Plan:** An Action Plan highlighting the successive steps to be taken and fixing the time-schedule thereof from inception to the completion of the programme was drawn up.
- (ii) **Selection of DTW :** The success of the programme depended on the existence of a disciplined group. Therefore DTWs located in villages with 'A' and 'B' category Krishi Samabaya Samity(KSS) were selected as there was already a base to work on. The other criteria of selection was the potential for increasing the command area by at least 50%.
- (iii) **Presentation of Programme in KSS Meeting :** Meetings were organised in the KSS and the irrigation team explained the utility of water management, and farmers welcomed and agreed to implement the scheme after receiving assurances that timely and adequate fuel, oil, spare parts and other inputs will be made available. In these meetings the lists of potential participants—both members and non-members were prepared.
- (iv) **Training :** The Managers, Model Farmers, and Chairmen of KSS, TCCA Inspectors, Village Accountants (VA's), Block Leaders, Field-Men, and Tubewell Operators were imparted training by the Irrigation Team (TPO, SO, TED).
- (v) **Preparation of Land Map and Land Register :** Land maps showing the plots of the KSS members and also their elevations as 'high', 'medium' and 'low' in the command area were prepared and land owned by each member was recorded in the land register. Areas irrigated in the previous year and additional areas to be covered under the programme were marked on the maps in different colours. These Maps/Registers were prepared by the KSS Managers with the help of TCCA Inspectors and Village Accountants.

- (vi) **Block Concept and Demarcation of Block:** The entire command area was divided into six blocks and a 'Water Rotation System' introduced. Each block was to receive irrigation water on a fixed day of the week with the seventh day reserved for repairs and maintenance. The seventh day was also used to supply water to a block which might have failed to receive water on its fixed day due to some break-down. Thus each farmer noted exactly the day of the week when he would get water for his plot.
- (vii) **Block Priority List:** A priority list was prepared with the names of the farmers and their plot numbers. The land farthest with highest elevation in the block should receive water first to minimize water wastage. The block priority list was posted in the pump house for the information of all the members.
- (viii) **Selection of Block Leaders:** Block leaders were selected by the cooperative member for each block through consensus. Their duties to ensure the supply of water according to the priority list and help the manager in the overall management of the well, such as collection of irrigation charges and proper distribution of water.
- (ix) **Laying of Irrigation Channels:** Once the Block was tentatively demarcated, the Section Officer, BADC, worked with the managers and block leaders and other farmers in laying out the field channels as well as excavation and improvement of existing channels. The channels were laid so that each block could be served by the main channel and branch channels were laid out to serve all the plots in the block. Construction of channels were done through voluntary labour as well as by spending money from the common fund, by hiring labour from the village.
- (x) **Irrigation budget:** Members of the KSS prepared a budget for running the DTW with the help of the Thana Irrigation Team based on the area to be irrigated and crops to be grown. Two rates are being applied at present, one for paddy (rice) and another for other crops like wheat and vegetables which need less water. The irrigation rate was worked out on the basis of Taka per decimal of land to be irrigated and each farmer had to pay his water charge in advance. Payment in advance was required as some farmers had earlier refused payment if it rained when crops did not need irrigation which resulted in stoppage of wells due to lack of sufficient funds

for the entire season. In case there was saving, due to rain, the savings would be carried forward to the next years budget. In some KSS there were two rates, one for member and a little higher rate for non-member.

- (xi) **Irrigation Ledger**: An irrigation Ledger with detailed particulars of water-use was maintained by each KSS.
- (xii) **Ensuring Funds for Running the DTW**: Funds were collected on the basis of the budget, from each farmer requiring water, and deposited with the Thana Central Cooperative Association (TCCA). Managers required the approval of KSS committee to withdraw money from the TCCA and had to present expenditure statements for approval at the weekly KSS Meeting. KSS, through resolution, authorised manager to keep certain, amount not more than Tk. 500 as imprest fund to meet up emergency expenditure.
- (xiii) **Loan applications for Production Inputs**: KSS members were eligible for loans to pay for the cost of irrigation, fertilizers, pesticides, etc. Each KSS member requiring credit prepared a production plan and required credit for water and other inputs were mobilised according to the relative needs of the members through TCCA. Members not requiring loan was to pay water charges in advance.
- (xiv) **Maintenance of Accounts**: The managers were responsible for maintaining accounts and other books. Members of the society could inspect the books which created confidence among them. The books were periodically checked by the irrigation team member on their visits to the DTW.
- (xv) **Visits**: Frequent visits by the team of officials and on-the-spot decision/action on the problem faced by the KSS helped inspired confidence and commitment amongst the farmers for increasing command area.

4. The Achievement :

The results obtained in IMPP are extremely encouraging. They are tabulated in Appendix A. Spectacular achievements have been made on a number of key indicators:

4.1 **Area Per DTW** increased, on the average, by 82% from 32 acres to 94 acres. A number of DTW's, viz., the ones at Dobaria (Bogra) and Simla and Suhila (Mymensingh) KSS's irrigated 125 acres or more each.

4.2 Average yield per DTW increased by 186% from 1907 mds. in 1978-79 to 5449 mds. in 1979-80, a net increase of 3542 mds. or 129 tons per DTW. There has been a net increase in average yield per acre from 37 mds. to 58 mds. an increase of 57%.

4.3 Cost of Irrigation per acre decreased on the average by 30% from Tk. 404 to Tk. 283.

4.4 Participation of farmers—both KSS members and non-members-increased considerably. KSS membership per DTW increased by 51% from 45 to 68 members. Average No. of non-members increased by 74% from 38 to 66 per DTW.

4.5 Utilisation of production credit—increased by 167% from Tk. 11,329.00 to Tk. 30,265.00 per DTW. Use of credit per KSS member also rose by 77% from Tk. 252.00 in 1978-79 to Tk. 445.00 in 1979-80.

4.6 Other attendant beneficial effects include spread of HYV crops, increased use of fertilizers, pesticides, seeds, etc., farmers education through training, increased employment of un-employed or under-employed peasants as Block leaders, field-men, agricultural workers, fast dissemination of irrigation management technology, more efficient, if not, optimum use of available resources/equipment, creation of team-spirit amongst the officials of different agencies and of fellowship between them and the farmers and so on.

5. The distinctive features of the programme are that—

5.1 It is institution-oriented—KSS members are motivated to voluntarily participate. Farmer-to-farmer communication/education is enriched through weekly meetings, planning and execution by users are inspired and ensured under the umbrella of the farmers' organisation *i.e.*, the TCCA-KSS system.

5.2 It is low-cost—due to use of locally adapted and appropriate technology and local materials like wood, bamboo, straw, etc. and economic use of water through blockwise rotation system. By increasing coverage, it reduces requirement of equipment thereby saves investment and foreign exchange cost on equipment and fuel.

5.3 It helps in creating confidence—among the users as accounts are properly maintained and presented to the groups weekly for their approval. Manager has to seek approval of the managing committee for expenses beyond a certain limit.

5.4 It is simple and easily replicable—because it is based on users' available resources knowledge and skill, promotes systematic improvement of users' cultural practices, and extendable to all types of irrigation equipment through all seasons.

5.5 It ensures cooperative/group actions in use of credit, inputs and services as well as in training of, and dissemination of knowledge to, users through TTDC—Model farmer system.

5.6 It generates locally responsible and knowledgeable leadership and expertise amongst salaried managers, block-leaders, fieldmen and guards, especially in the preparation and maintenance of Land Register/Map, irrigation ledger/budget, project Account Book/etc., which provide a forum for generating sound information and data.

5.7 It helps resource mobilisation through increased savings in kind for Irrigation-Fund, induced savings for getting increased credit and more expansive benefits of irrigation technology.

5.8 It creates positive demonstration effect by inspiring voluntary adoption by other groups/users in the neighbourhood of IMP technology. In fact one KSS in Bogra, inspired by IMPP attained commendable success through their own efforts. Their irrigated area increased by 100%. membership by 47% and utilisation of credit by 108%.

5.9 It reduces irrigation-cost per acre substantially in some cases by more than 50% and almost eliminates risks/leakages in irrigation through assured supply of water.

5.10 It is appropriate for conditions in Bangladesh, because it is easy for farmers to understand and implement without any extra cost.

5.11 It reduces continued dependence on bureaucracy in the long run.

5.12 Last but not the least it can be planned and executed by the KSS with the help of Inspectors and VA's who happen to be their own employees.

6. Lessons learnt :

6.1 The need for institution building for command area improvement—Given the characteristic features of land-use and ownership structure as evident in large number of farmers, small size and fragmented holdings, small individual input requirements, etc., and related socio-economic realities, irrigated agriculture is essentially

dependent on group-action. Command Area Improvement (CAI) as also intensified cultural practices for increasing crop-yields will obviously depend on motivation, and active participation of the individual farmers interacting within the discipline of their own local organisation especially for mobilisation/sharing of support inputs including water and credit, production functions and marketing of the surpluses out of the increased yields. Solution to technical and other constraints to CAI must also be, and can better be, sought and found under the umbrella of the users' institution that must be nurtured first. Hence rural local institution building is the first task in CAI efforts. The TCCA-KSS system that has been the pioneer and prime mover for the spread of HYV technology can be the most dependable vehicle for CAI as has been demonstrated in the IMPP. The system also proved to be equitable in terms of benefit sharing particularly in use of the highly subsidised and imported inputs/technology package. The system thus fits appropriately well to the SFYP's declared objective of increasing production with distributive justice.

6.2 Coordination is a must for Command Area Improvement—
Command Area Improvement involves a number of inter-linked functions :

- (i) institution-building for—
 - ensuring optimum participation;
 - having disciplined group-action;
 - self-management of irrigation system and the group organisation;
 - channelling of complementary inputs; and
 - marketing of surplus produce.
- (ii) installation, running and maintenance of irrigation equipment;
- (iii) planning, design and laying of water distribution system;
- (iv) training and extension on irrigated cropping pattern and water management;
- (v) applied research for optimum use of irrigation water in diverse soil, topographic, cropping and socio-economic conditions.

These functions, entrusted to almost as many agencies and to be performed with required simultaneity/sequentiality, need coordination amongst—

- (i) individual farmers and their organisations like KSS or TIP Groups;
- (ii) IRDP and Cooperative Department;
- (iii) BADC; and
- (iv) DEM.

Without continuous coordination of these interrelated functions, irrigated crop-production, not to speak of CAI, is an impossibility. Since users' institutions, *i.e.*, TCCA-KSS's are to progressively take over, and selfmanage, CAI efforts and IRDP shall continue to promote such institutions, IRDP can coordinate the CAI functions until such functions are, eventually and ideally, taken over by TCCA's or Thana Sarkers.

6.3 Mobilization and channelling of required increased volume of complementary inputs/services—Irrigated cropping cannot give increased yields without, and in fact, require, increased doses of complementary inputs/services, which are not always available automatically. Estimates for such increased requirements must be worked out at the users' level, their delivery programmed in advance by the concerned agencies, and mechanism for channelling these inputs/services must also be determined.

Here again, the TCCA-KSS system through their micro-level and bottom-upward planning are in a better position to estimate, programme and channel these requirements including credit and extension. The regularly trained KSS-Manager/Chairmen and model farmers serve as effective extension agents. Moreover TCCA-KSS system also proved to be more responsive to inputs delivery/sale programmes, more efficient in input-use and more effective in credit disbursement and recovery. This adds more justification for entrusting CAI efforts with TCCA-KSS system.

6.4 Individual ownership of irrigation equipment—

- (a) will not necessarily lead to optimisation of command area—because,
 - profit-motive, not command area improvement shall be the prime consideration, and profit can be and will be, given the objective realities, maximised even by withdrawing water.

- irrigation being dependent on group-action, T.W. owner, to be perceived as a profiteer, may not be able to secure participation of command area farmers.
 - small/marginal farmers shall be prevented due to high cash rates.
 - water-management esp. field channel construction may be extremely difficult.
 - non-agriculturist and non-cultivating land-rich who would be the potential buyers of T.W.'s may not like to have the required training and discipline for optimum T.W. utilisation.
- (b) may lead to a new type of 'Zaladari' or 'water lordism'—because,
- water, being the scarcest input, will be sold at the monopolist's exorbitant price.
 - marginal farmers may be forced to sell out land to water-owner leading to further marginalisation and landlessness.
- (c) may not help the projected massive expansion of T.W.'s because,
- most of the big farmers (who would be the first generation buyers of T.W.'s, with records of credit defaults being the highest among them, will start defaulting credit repayment, may be, from the second year of the programme thereby restricting credit institutions' loan-operations, which will result in slowing down of T. W. sale.

Besides, an elastic demand for T.W.'s cannot be presumed in the face of limited entrepreneurial ability in a predominantly subsistence farming system.

7. Replication of IMPP :

7.1 **The Irrigation Management Programme (IMP), under RD-I Project during 1980-81**—Encouraged by the spectacular success of IMPP, backed by the lessons learnt therefrom and banking on the excellent cooperative team spirit of BADC, DEM and IRDP field officers both at district and thana levels in RD-I Project area, it has been decided in the recently held evaluation workshop on IMPP to expand the programme to cover not only KSS's with DTW's but also those having STW's and LLP's and to non-RD-I thanas in Bogra and

Mymensingh districts. An Action Plan (Appendix B) for the IMPP—1980-81 is already under implementation. The programme for the next dry season is as follows:—

	DTW .	STW	LLP
Bogra: (a) RD-I Thanas	40	14	47
(b) Non-RD-I Thanas	36	..	..
Mymensingh: (a) RD-I Thanas	44	6	10
(b) Non-RD-I Thanas	25	..	..
Total ..	145	20	57

7.2 IMP to other Area Development Projects and IRDP thanas—

The Ministry of LG, RD & Coops. has issued instructions (Appendix C) to expand the IMPP to cover as many DTW/STW/LLP's as possible, on a pilot basis, in all the Area Development Projects like SIRD, NIRD, KIRD, BIP and CIP as well as to each of the IRDP thanas. The Ministry also directed BARD Bogra to organise an irrigation Management Faculty (i) to carry on adaptive research on irrigation management, (ii) to develop training materials on irrigation and group management and (iii) impart training to trainers/core persons as well as to cooperative managers, model farmers, TCCA Inspectors, Village Accountants, Block leaders, Operators/mechanics, etc. The RD-I Project management has been assigned the task to coordinate, monitor and evaluate the nation-wide programme during the next season.

8. Some Suggestions :

For rapid replication of the Programme :

- (a) The maintenance wing of BADC should be geared up so that spares and mechanical services are available in time to avoid any fatal break-down and ensure smooth running of the equipment.
- (b) The complementary inputs especially Credit, Oil-fuel fertiliser, Plant Protection materials, seeds and extension services are made available as a package in time and in required quantities, as far as possible through the TCCA-KSS system.
- (c) A system of incentives and rewards must be introduced to motivate the front-line staff of BADC, DEM and IRDP to put in the intensive/additional efforts required even beyond the call of duty.

Appendix A.

Statement showing the comparative performance of 20 DTW's under IMPP during 1979-80 in seven RD-I Project Thanas of Bogra and Mymensingh District.

Thana.	Name of		Area Irrigated (in acres).			Production per acre (in mds).			Irrigation Cost, per acre.		
	KSS.		1978-79.	1979-80.	Increase %	1978-79.	1979-80.	Increase %	1978-79.	1979-80.	Decrease %
1	2		3	4	5	6	7	8	9	10	11
Bogra :											
Kotwali	..	Kochira ..	50.00	85.00	70	40	57	42	450.00	288.00	35
		Bidpara ..	51.00	92.00	80	39	59	52	425.00	325.00	24
		Dobaria ..	44.00	116.00	164	38	42	10	500.00	342.00	42
		Thana Total ..	145.00	293.50	102	39	53	34	458.00	318.00	31
Sherpur	..	Atail ..	..	76.00	76	..	41	..	..	219.00	..
		Mandail ..	35.00	39.00	11	32	44	37	225.00	220.00	02
		Simla-satbaria ..	15.00	42.20	180	33	45	36	350.00	221.00	36
		Thana Total ..	50.00	137.20	109	32	43	34	287.00	220.00	23
Gabtali	..	Madhayamar Cheo	55.00	74.00	34	42	50	19	415.00	386.00	7
		Agarkandi ..	55.00	81.00	47	39	37	(-)-5	450.00	390.00	13
		Thana Total ..	110.00	155.00	41	40	43	7	432.00	388.00	10
Sariakandi	..	Khordobalai ..	60.00	86.00	43	30	80	43	500.00	384.00	23
		Awalakandi ..	31.00	66.00	113	30	74	163	500.00	400.00	20
		Bohali ..	15.00	68.00	353	28	50	79	550.00	512.00	7
		Thana Total ..	106.00	220.00	108	29	68	134	517.00	432.00	16
	District Total ..	411.00	825.70	100	35	53	51	424.00	339.00	21	

Name of		Loan Investment (in Taka)			Farmer's participation.						
Thana.	KSS.	1978-79.	1979-80.	Increase %	1978-79.			1979-80.			
					Member.	Non-member.	Member.	Increase %	Non-Member.	Increase %	
		12	13	14	15	16	17	18	19	20	
Bogra :											
	Kochira ..	..	11,437·00	..	25	35	62	148	127	262	
	Bidpara ..	..	46,190·00	..	48	48	109	127	115	139	
	Dabaria ..	..	29,500·00	..	67	67	95	42	102	52	
	Thana Total ..	..	87,127·00	100	140	150	266	90	344	129	
Sherpur											
..	Atail ..	..	20,561·00	13,665·00	54	56	..	66	18	50	..
	Mandail ..	..	2,350·00	40,208·00	161	62	30	90	45	39	30
	Simala-satbaria ..	..	3,000·00	23,346·00	678	40	48	48	20	48	..
	Thana Total ..	..	25,911·00	95,219·00	367	158	78	204	29	137	76
Gabtali											
..	Madhayamar Cheo	..	12,000·00	21,500·00	79	52	72	72	38	135	88
	Agarkandi ..	..	9,000·00	36,600·00	307	51	65	63	23	98	50
	Thana Total ..	..	21,000·00	58,100·00	177	103	137	135	31	233	70
Sariakandi											
..	Khordobalai	..	..	17,632·00	..	60	115	72	20	115	..
	Awalakandi ..	..	8,000·00	23,763·00	197	31	80	102	229	98	22
	Bohali ..	..	..	28,648·00	..	42	40	85	102	99	147
	Thana Total ..	..	8,000·00	70,043·00	775	133	235	259	95	312	33
	District Total ..	..	54,911·00	3,10,489·00	465	534	600	864	62	1,026	71

Statement showing the comparative performance of 20 DFW's under IMPP during 1979-80 in seven RD-I Project Thanas of Bogra and Mymensingh District.

Name of—		Area Irrigated (in acres).			Production per acre (in mds).			Irrigation Cost, per acres.		
Thana.	KSS.	1978-79.	1979-80.	Increase %	1978-79.	1979-80.	Increase %	1978-79.	1979-80.	Decrease %
1	2	3	4	5	6	7	8	9	10	11
Mymensingh :										
Muktagacha	Simulia east para ..	70.00	127.00	81	41	55	59	200.00	94.00	53
	Suhila-Uttar para..	70.00	126.00	80	39	61	56	400.00	325.75	19
	Rajbari panchamar da	65.00	105.00	62	45	63	40	400.00	325.00	19
	Thana Total ..	205.00	358.00	75	42	63	50	333.00	248.00	26
Trishal	Haddarvita ..	64.00	100.00	56	42	64	52	455.50	251.00	45
	Noapara Khan Pally	55.91	104.00	86	42	63	50	450.00	311.00	31
	Samania para ..	55.00	111.00	102	45	62	38	425.00	259.00	39
	Thana Total ..	174.91	315.00	81	43	63	47	443.00	274.00	38
Gaffargaon	Gagrapachim ..	90.00	137.00	52	39	61	56	376.00	214.00	43
	Pachua-Modhyapara	85.00	128.00	51	44	71	61	323.00	122.00	62
	Malmalgatipara ..	65.00	115.00	77	45	66	47	330.00	179.00	46
	Thana Total ..	240.00	380.00	58	43	66	53	343.00	172.00	50
	District Total ..	619.91	1,053.00	70	42	64	52	373.00	231.00	38
	Grand Total ..	1,030.91	1,878.70	82	39	58	49	386.00	288.00	25

Name of		Loan Investment (in Ta'ka)			Farmers participation.					
Thana.	KSS.	1978-79.	1979-80.	Increase %	1978-79.			1979-80.		
					Member.	Non-member.	Member.	Increased %	Non-Member.	Increase %
		12	13	14	15	16	17	18	19	20
Mymensingh. :										
Muktagacha ..	Simulia East para ..	11,400.00	9,500.00	(-) 17	28	22	51	82	4	(-) 80
	Sahila-Uttar para ..	32,900.00	29,000.00	(-) 21	58	54	69	19	54	..
	Rajbari panchamanda ..	25,000.00	27,050.00	8	26	40	40	53	60	50
	Thana Total ..	69,300.00	62,550.00	(-) 10	112	116	160	43	118	3
Trishal ..										
Trishal ..	Haddarvita ..	4,134.00	30,453.40	637	42	14	64	52	12	(-) 14
	Noopara Khan Pally ..	27,240.00	58,790.00	116	41	10	77	88	17	70
	Samania para ..	26,596.00	35,142.35	32	27	14	40	48	55	292
	Thana Total ..	57,970.00	1,24,385.75	115	110	38	181	65	84	121
Gaffargaon ..										
Gaffargaon ..	Gagrapachin ..	26,426.00	65,250.00	147	62	..	64	3	7	..
	Pachua-Modhyapara ..	14,790.00	41,675.00	209	50	5	50	..	30	30
	Malmalgatipara ..	2,827.00	22,950.00	712	30	7	42	40	64	67
	Thana Total ..	44,043.00	1,33,875.00	204	142	12	156	11	101	742
District Total ..	1,71,313.00	3,20,810.75	87	364	166	497	37	303	83	
District Grand Total ..	2,26,224.00	6,31,299.75	179	898	766	1,361	51	1,329	74	

**INTEGRATED RURAL DEVELOPMENT PROGRAMME
BANGLADESH RURAL DEVELOPMENT-I PROJECT**

**Action Time Table for Irrigation Management Programme (IMP) During
1980-81.**

Actions.	Target Date.	Responsibility.
A. Management :		
1. To complete Survey of existing IMPP and submit report on the survey data.	30th June, 1980 ..	PD, Mymensingh/ Bogra.
2. To circulate report to all concerned for eliciting comments suggestions for replication.	7th July, 1980 ..	ED/L.O., IRDP.
3. To arrange workshop on the experience of IMPP.	15th July, 1980 ..	ED/L.O.
4. To select KSSs and DTWs/STWS/LLPs for 1980-81.	30th June, 1980 ..	PD/L.O.
5. To prepare detailed IMP for 1980-81.	7th July, 1980 ..	L.O./IRDP.
6. To circulate Training Manual to all concerned.	20th July, 1980 ..	L.O./IRDP & BADC.
7. To arrange orientation course for SO/TPO/TEO/AE/XEN/ PD/LOs.	25th July, 1980 ..	ED.
8. To arrange research and extension for IMP, 1980-81.	30th July, 1980 ..	ED/L.O./IRDP.
9. To complete collection of outstanding loan from concerned KSS's.	15th August, 1980	PD/TPO.
10. To arrange job oriented course at thana for Inspectors, Managers, Model Farmers, Village Acctt., Chairmen and Operators.	15th August, 1980	TPO/SO.
11. Members education	.. 30th August, 1980	TPO/SO/DPO.
12. Completion of Audit	.. 30th July, 1980 ..	TCO.
13. Completion of AGM.	.. 30th July 1980 ..	TPO/SO/DPO.

Appendix B.

Actions.	Target Date.	Responsibility.
14. Preparation of production plan and loan papers for IMP, 1980-81.	15th September, 1980.	.. TPO/DPO.
15. Updating of land register, Land Map and other documents and classification of members.	15th September, 1980	Inspector/VA.
B. Technical:		
1. To submit Indent for spares/POL, complementary inputs like fertilizer, seeds, pesticide, etc.	15th July, 1980	.. TI/SO/BADC.
2. Completion of overhauling DTW's, STW's and LLP's to be brought under IMP, 1980-81.	30th August, 1980	TI/SO, BADC.
3. Construction and repairs of Irrigation Channel.	15th November, to 15th December, 1980	DPO's/SO, BADC/ UO/TIP/Overseer.
4. Training of Manager's on Channel Lay-out design construction, etc., and water management.	15th November, to 15th December, 1980	DPO's/SO/BADC/ TIP/Overseer.
C. Agronomical :		
1. To arrange HYV seed according to demands.	30th September, 1980 (Wheat 15th October).	TEO/TPO.
2. Preparation of community seed bed.	30th September, 1980 (Wheat 15th October).	UAA/KSS-Manager
3. Memberwise yield variation analysis and to place the finding before members of the KSS.	1st Week of August, 1980.	TEO/TPO

MD. IRSHADUL HAQ

Executive Director,
RD-I Project, IRDP, Dacca..
19-6-1980.

Appendix C.

**GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH
MINISTRY OF LOCAL GOVERNMENT, RURAL DEVELOPMENT AND
COOPERATIVES**

ORDER

No. LGRDC/Secy/263/80(4), dated the 28th August, 1980.

SUB: Irrigation Management Programme.

The results of the Irrigation Management Programme (IMP), designed to increase command area and improve efficiency of the existing Irrigation equipment, which have since been experimented on 20 DTW's in seven RD-I Project Thanas through the active cooperation of IRDP/BADC/DEM field staff and under the umbrella of TCCA-KSS system, have been very encouraging. Lessons learnt from this pilot experiment have provided answers to many constraints to, and problems of, command area improvement.

2. Continuous research and further experimentation is required to be undertaken for future and wider replication of the Programme (IMP) for all types of Irrigation equipment throughout the country. IRDP cooperatives can be a reliable vehicle for the command area improvement and at the same time, the large number of irrigation equipment that are being installed/fielded offer tremendous scope for intensive/expanded cooperative activities, say, increased societies/membership, credit transactions, input-utilisation, increased production, etc. On the other hand, BARD, Bogra, which has the N. W. Region with largest concentration of irrigation equipment as its research—hinterland can provide adequate back-up support to the cooperative based Command Area Improvement (CAI) programme by way of adaptive research in CAI, development of training materials on Irrigation Management and training of resource persons/trainers.

3. It is, therefore, decided that—

(a) BARD, Bogra will immediately set up an Irrigation Management cell for carrying out:

- (i) Adaptive research on Irrigation Management in respect of
- technical management,
 - water use management,
 - institutional management,
 - extension and training,
 - input delivery system.

(ii) Development of training materials based on applied/action/observation research for the training of—

- Managers/Chairmen,
- Model Farmers,
- Village Accountants,
- Block Leaders,
- Fieldmen,
- Irrigation Inspectors,
- Operators/Mechanics.

- (iii) Training of Core personnel/Trainers belonging to IRDP, DEM, BADC and TIP.
- (b) IRDP should immediately expand with the cooperation of the field staff of DEM/BADC/TIP, as was done in IMP, the Irrigation Management Programme since launched by RD-I Project to the SIRDP/NIRDP/KIRDP/BIP/CIP Thanas with at least five Irrigation equipment (DTW/STW/LLP) in each of the IRDP Thanas where such equipments are already in use.
- (c) IRDP should organise training on IMP through TTDC based on the training materials developed by Rural Development Academy, Bogra for TIP groups.
4. The IRDP's IMP for 1980-81 should be coordinated/monitored/evaluated by RD-I Project.

A. M. ANISUZZAMAN,
Secretary.

Distribution :

1. Director-General, IRDP, Dacca.
2. Director, RDA, Bogra.
3. Executive Director, RD-I Project.
4. Joint Secretary-III.