

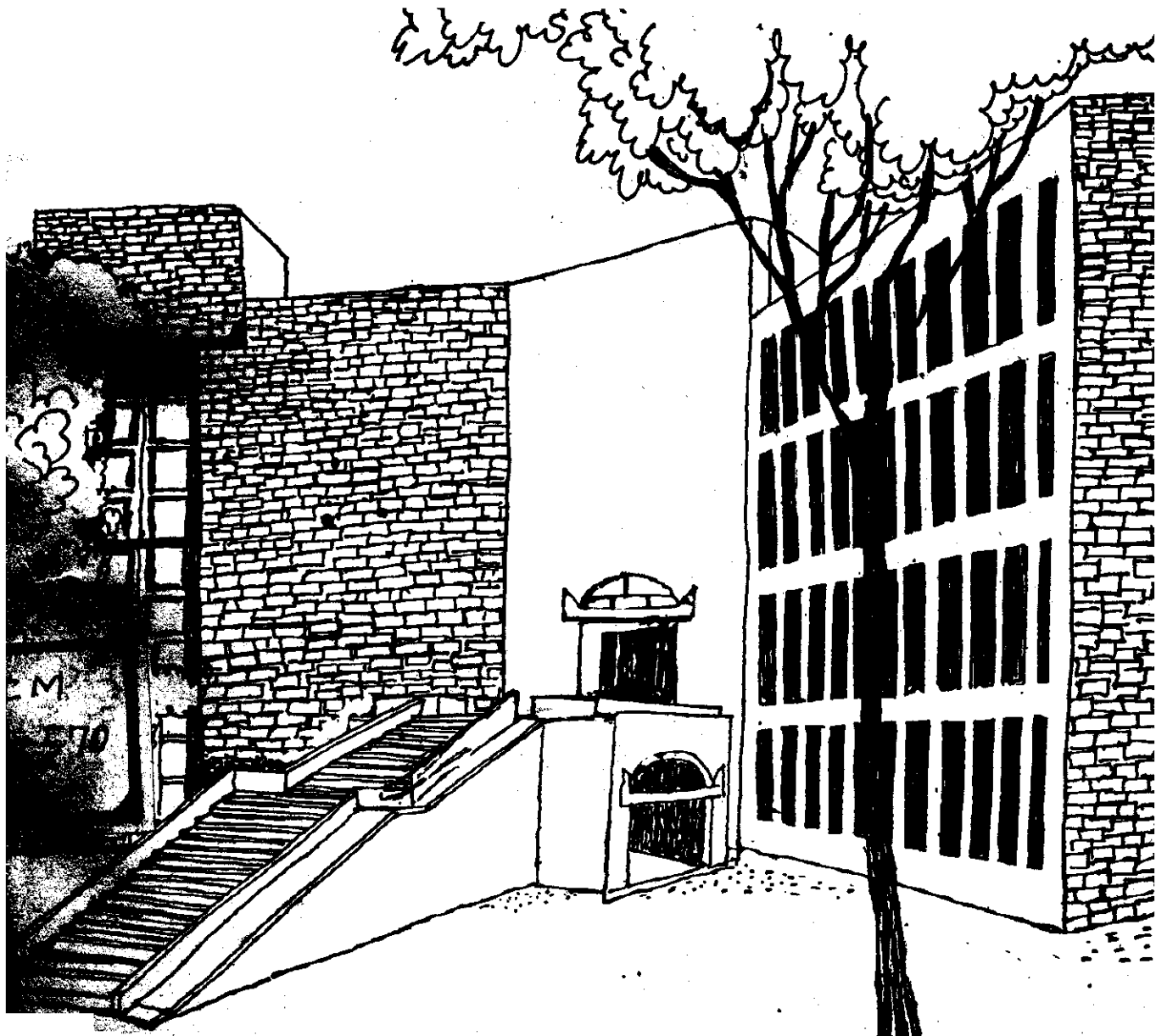


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MANPOWER PLANNING FOR IRRIGATION
SECTOR IN THE SEVENTH PLAN

By

U.K. Srivastava

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MANPOWER PLANNING FOR IRRIGATION SECTOR IN THE SEVENTH PLAN*

U.K. Srivastava

The approach paper to the Seventh Five Year Plan indicates the following policy with respect to this irrigation projects :

"New starts will be restricted as possible to minor irrigation projects and to irrigation projects in drought-prone and tribal and backward areas. The utilization of the existing irrigation potential will receive the highest priority through the construction of field channels and quick completion of ongoing Command Area Development Projects. Modernization of old irrigation systems should also receive immediate attention, and for this purpose, will have to be undertaken. Consideration of productivity stability and equity require that in regions where irrigation is scarce, attempts should be made, through appropriate policies, to maximize outputs per unit of water by discouraging highly water-intensive crops and by ensuring equitable distribution of water to farmers of different sized holdings."¹

This implies a shift of the main focus from the pre-occupation with the construction of new irrigation projects in earlier Plans to better management for optimum utilization of already created potential. This has implications for the nature of task to be handled by the irrigation and other related personnel and their training requirements. This paper aims to review the nature of manpower planning efforts to cope with the requirements of the Seventh Plan. Manpower planning is defined "as a set of inter-related plans to ensure the right number of employees of right types (skilled and motivated) are available from within or outside at right times for right jobs/roles to achieve short and long term goals of the organizations and individuals".² This

* This paper was initially presented at the XV National Convention of Indian Society for Training and Development on Human Resources Development and the Seventh Plan (Organized by ISTD & Planning Commission), held at Vigyan Bhavan, New Delhi on January 22-23, 1984.

¹ Government of India, "The Approach to the Seventh Five Year Plan (1985-90)", (Planning Commission), New Delhi, June 1984, p. 4.

² See B.G. Shah, M.S. Saiyadain, and N.R. Sheth, Human Resource Management in Banking Industry, (New Delhi : South Asian Publishers, pp. 1-2.

paper discusses the need to impart requisite training to irrigation personnel and staff of other related departments involved in promoting the optimal use of already created irrigation potential.

Irrigation Development in Various Plans

Irrigation being a crucial input in raising agricultural production, has been given high priority in our Five Year Plans. Over a period of more than 30 years, since planned development activity began in 1951 the average annual creation of potential every year in the country from major, medium and minor irrigation projects was about 1.2 million hectares.

Development of irrigation potential since 1951 is given in Table-1 alongwith investments made. A progressive investment of about Rs. 11,000 crores has been made during the Five Year Plans and annual plans upto 1979-80, in creating a potential of 56.6 million hectare. The Sixth Plan envisages an investment of Rs. 1,810 crores and Rs. 856 crores for command area development programmes and bring in an additional area of 5.7 million ha. from major and medium schemes and 8 million ha. from minor schemes. The total investment at the end of Sixth Plan would be to the tune of about Rs. 22,000 crores and create a total potential of 70.3 million ha.³

Over the years, the capital cost per hectare of major/medium irrigation schemes has increased speedily from Rs. 2,770 in the First Plan to about Rs. 10,000 in the current Sixth Plan period. This rising costs reflects the onerimity of capital costs that have to be incurred in creating additional potential.

Utilization Gap

Having made such huge investments and in view of raising cost for creating new potential, substantial under-utilization of already created potential has emerged as a major concern on the part of

³ Government of India, Sixth Five Year Plan (1980-85), (New Delhi : Planning Commission), 1980.

Table-1 : Development of Irrigation Potential and Investment Made

Plan	Irrigation Potential cumulating (million ha.)			Utiliza- tion (million ha.)	Investment (Rs. in crores)		
	Major/ Medium	Minor	Total		Major/ Medium	Minor	Total
Pre-Plan	0.7	12.0	22.6	22.6	-	-	-
First Plan	12.2	14.0	26.2	25.0	380	76	456
Second Plan	14.3	14.7	29.0	27.9	380	142	522
Third Plan	16.6	17.0	33.6	32.2	581	328	909
Annual Plan	18.1	19.0	37.1	35.8	434	326	760
Fourth Plan	20.7	23.5	44.2	42.9	1237	513	1750
Fifth Plan	24.8	27.3	52.1	48.5	2442	631	3073
Annual Plan (1978-79)	25.9	28.6	54.5	50.4	977	237	1214
Annual Plan	26.5	30.0	56.5	52.2	1079	260	1339
Sixth Plan :							
1980-81	27.3	31.4	58.7	54.1	-	-	-
1981-82	28.2	32.7	60.9	55.9	-	-	-
1982-83	29.0	34.2	63.2	58.2	-	-	-
1983-84	30.0	35.6	65.6	60.5	-	-	-
1984-85 (estimated)	30.8	38.0	68.8	63.8	8848	1810	11114
Country's Ultimate Potential	58.5	55.0	113.50	-	-	-	-

Source: Compiled from Plan Documents and Economic Survey, 1984.

policy makers, agricultural planners and the farmers. When the economic planning began in 1950-51 there was no gap between the created potential and its utilization. Slowly, but steadily, the utilization process began to fall behind the creation of potential. The gap between the created and actual utilization of potential upto June 1983 was 4.8 million ha. Even if one goes by conservative estimates, taking the cost estimates of the Sixth Plan of 800 crores per million ha. of additional creation, one can see that cost of under-utilization of potential is enormous. It means that for 4.8 million ha. of under-utilized potential, involving an investment of Rs. 2,800 crores, is not serving the farmers.

Furthermore, the potential considered as utilized is also debatable in the sense whether it is merely the access to the farms or also an optimal use of water of raising agricultural production and incomes.

Efforts to Bridge the Gap

Command Area Development Programme (CADP) was evolved with basic objectives of bridging the gap between the creation of irrigation potential and its utilization, to promote higher water use efficiencies, to ensure timely and adequate supply of water to every holding and to coordinate the supply of inputs. These objectives of the CADP do not merely limit to bridging of utilization gap, but extent to the optimum realization area. The ultimate objective of the programme is to increase agriculture production and yields and farm incomes in the command area.

Since the inception of this programme in 1974, 102 Command Area Development Authorities (CADA) have been set up covering 17 states and one union territory, of which 29 were created in 1983 alone. A decade has passed since the setting up of these CADP authorities and their functioning. One does not, however, find encouraging results in the utilization of potential under CAD programme. Table-2

⁴ Shailaja Bapat, Irrigation in India : Potential and Use by various States, II : Need for Scientific Management, Economic Times, 25th and 26th January, 1984.

Table-2 : State-wise Created Potential and Its Utilization under CAD Programme for 1982-83

('000 ha.)

Sr. No.	State	1982-83		
		Potential created	Actual Utilization	Percentage of Utilization
1.	Andhra Pradesh	956.38	837.98	87.60
2.	Assam	63.26	46.80	73.98
3.	Bihar	1875.08	1387.83	73.97
4.	Gujarat	832.90	342.27	41.09
5.	Haryana	160.00	45.00	28.12
6.	Jammu & Kashmir	20.08	12.31	61.30
7.	Karnataka	766.90	615.71	80.28
8.	Kerala	72.66	72.66	100.00
9.	Madhya Pradesh	846.78	535.02	63.18
10.	Maharashtra	811.44	331.63	40.86
11.	Orissa	873.83	1128.52	99.01
12.	Rajasthan	1139.82	1139.82	100.00
13.	Tamil Nadu	2390.86	1281.50	53.60
14.	Uttar Pradesh	2374.39	787.64	68.52
15.	West Bengal	1149.30	NA	NA
Total		12058.85	8392.32	-

Source: Ministry of Irrigation, Government of India.

gives the statewise details of the utilization of potential under the CADA for the year 1982-83. The data indicates that inspite of changes at policy level resulting adaption of new strategies in the form of CAD programme, the problem of under-utilization of a created potential is yet to be resolved.

Many studies that were conducted in examining this particular aspect of irrigation development have identified a multiple of casual factors for the under-utilization of the potential. By their nature, the factors that were identified can be broadly classified as technical and institutional. These problems are inherent in the process of development of irrigation potential in an area and hence require comprehensive understanding of the process itself. One can view development of irrigation as comprising two intermediate phases within the total process: construction phase, and intensive development phase. In the first phase of the development, physical construction of project work is completed. The second phase of intensive development is the most crucial one and it involves the utilization of the created potential. Development of irrigated agriculture, as stated earlier, is a comprehensive and continuous process that required dextrous orchestration of the available resources, physical as well as human, to increase production to the fullest possible extent. As nature of development tasks in each of the development phases are bound to differ and as they are crucial and diverse during intensive development phase, it calls for an indepth understanding of the situation by all the people involved in the concerned phase of project implementation.

Till now the basic problems of irrigation development are based on a technical diagnosis of the situation and have neglected institutional considerations such as operational procedures of irrigation bureaucracy, farmers' participation, agricultural planning and

understanding of farmers behaviour.⁵

The neglect of institutional factors has not been an intended one but was a resultant of the pre-occupation of the irrigation department personnel with spatial and physical resource aspects overlooking in the process, human, social and institutional tasks required in tapping the full potential of irrigation for area development.

Problems which are institutional in nature have solutions in human and social aspects of the project management. Such a perspective requires asking of an all important question: who are the people involved in this second phase of intensive development and are they sufficiently equipped with required skills to tackle the problems that arise during the course of implementation? The irrigation personnel drawn for CADA activities have by and large the training and background of construction activities and they are now required to promote optimal utilization of water in the farmers' fields in the command areas.

Changing Role of Irrigation Personnel

The change in situation (with the construction part being completed) requires the engineers, who are trained in physical aspects of project execution, to suddenly perform an altogether different role. Here they are expected to concentrate and divert their efforts to project management involving human, social and economic, for which they are insufficiently trained and equipped. In addition to these, the supplementary tasks of physical completion of works during second phase like the construction of field channels, land levelling,

⁵ See, S.M. Thavaraj, "Management of Irrigation Projects - The Link Between Engineering Concepts and Institution Building", A Paper Presented at the International Commission on Irrigation and Drainage, Second Regional Afro-Asian Conference, Manila, 1978; Niranjan Pant, "Issues in Irrigation Development", Economic and Political Weekly, Vol. 18, July 1983; Robert Wade, "On Substituting Management for Water in Canal Irrigation: A South Indian Case", Economic and Political Weekly, Vol. 15, December 27, 1980; Niranjan Pant, "Utilization of Canal Water Below the Outlet in Kosi Irrigation Project: Administrative and Community-Level Solutions", Economic and Political Weekly, Vol. 16, September, 1981.

consolidation of holdings for assured water supply to each farmer at right time and quantity ^{are} crucial but their success is determined by complex social factors, i.e. farmers involvement and participation in various activities.

One conclusion for such stand point would be that the dichotomous situation resulting from the demands that present situation makes and the nature of skills the personnel from irrigation department possess, can be said to be a major factor hindering maximum utilization of the created potential. Hence with the changing role of irrigation personnel within the perspective outlined above, there is an urgent need for development of required skills.

Need and Scope for Training

In such a complex situation, a general tendency amongst project implementation machinery has been to emphasize and monitor the physical completion of works almost as an end in itself. To come out of this situation, there is an urgent need to evolve and implement systematic training programmes to the existing personnel at various levels.

Scope of training of irrigation department personnel is determined by the needs resulting from the context situations in which they operate. Their nature of assigned tasks demand for creation and organization of a suitable climatic that could successfully bring about irrigated agricultural practices in the project area.⁶

Success of project is depended on the nature of interventions by these personnel, and in the absence of any well orchestrated designed interventions due to absence of required skills, it is bound to be poor.

The above analysis brings out that personnel of irrigation department as agents of intervention during the period of intensive development phase of the project should develop sufficient skills

⁶ See, A.F. Bortall, "Comparative Study of the Management and Organization of Irrigation Projects", World Bank Staff Working Paper No. 358, 1981.

to handle the demands that the new environment makes. The new role to be performed by these personnel requires the understanding of inter-relationships that exist amongst the relevant variables for drawing out best possible combination of variables that would influence the performance appropriate to the context and conditions.

The general picture that arises from the present need is to train these personnel in 'strategic management' of the project execution. Strategic management involves set of top as well as grass-root interventions which are to be made that will influence the design and orchastration of the action plans, organizational structure and process of the plans in relation to its contextual environment. Environment here refers to the forces that operate upon the organization and the personnel in it creating constraints as well as the opportunities.⁷ The variables involved in strategic management are bound to determine the nature of training required for the personnel in project execution. These are: a) decentralization, b) local organization, c) farmers' participation, d) organizational design and project context, and content, and e) planning, control and motivation processes.

In the field of irrigation, the strategic management would involve the following key aspects :

- 1) Appropriate Organization at the Micro-level: Instead of treating the entire command area as one entity, it would most appropriate to demacrate the total area in terms of small manageable entities looked after by a management team, coordinated by a manager who would be responsible for various functions in an integrated manner. Farmers groups and organizations also need to be activated to perform these tasks.
- 2) Clear Demarcation of Functions and Responsibilities: The functions assigned to the management team would be (a) land development, (b) assuring water to farmers in the area demarcated to them, (c) seeking farmers involvement in maintenance of the system (maintenance of field channels and field drains and structures), (d) management of input, and (e) management of outputs including marketing and processing.

⁷ Samuel Paul, "Strategic Management of Development Programmes : Evidence from an International Study IARS 1/1983 (UDC 35.06:338 982.2 (100-88) and also Samuel Paul, Strategic Management of Public Programmes, P56 Monograph (Mimco), Indian Institute of Management, Ahmedabad, 1981.

- 3) Activating the Farmers for Farmers' Participation: The management team responsible for managing the smaller manageable entities would be responsible for seeking the participation of farmers in the optimum utilization of the irrigation input. Such a participation is necessary to promote the desired warabandi/rotational water supply and maintenance of the system below the outlet, and optimum income to farmers which would be main motivating factor in the optimum use of the resources as well as participation.
- 4) Vertical and Horizontal Linkages: Following the above, a large command area would have a number of small manageable entities. It would be necessary to have a coordinating management at the overall command area level which would be the first order management system to perform the function of overall planning, control and support services. Thus, all the small manageable entities would be vertically linked with the overall command area development authorities. Towards this the existing CADA administration would require appropriate modification.

Each of the small manageable entities would also be linked by various organizational and administrative processes with the adjoining entities for a better coordination.

Thus, there would be need of a team of trained managerial personnel a) at the overall command area level, and b) at the smaller entities at operating level. These managerial personnel should have technical competence (irrigation engineers, etc.) as well as managerial skills. In other words, managerial competence has to be added to the technical competence. For the development of existing technical manpower resources as managers of the modified form of existing CADA would require appropriate training programmes.

Training Efforts Needed

The efforts for training these personnel should be aimed at developing skills and techniques that will assist to design management intervention, make long term choices, concepts of service policies and help in drawing from these required action plans. Such a systematic set of integrated execution plans constitute the core of strategic management.

Training that imparts such skills will provide the irrigation personnel to function as managers and hence opportunities to make decisive choices out of diverse and conflicting requirements of unrelated multiple service demands that are generally made in field situations.

A best suitable form of training, from the perspective of the need situation, would be three-tier approach. This adopts a differential approach to content and training for various levels and it takes into account the diverse nature of demands that project management makes on different levels of the organization. As nature of tasks assigned and accordingly the contextual situations in their execution are bound to differ between top, middle and grass-root level of the organization, their training needs are bound to differ which is taken care of in this three-tier approach.

In the present structure of organization of irrigation department of project execution stage we have senior level engineers (superintendent engineers and executive engineers) who draw up action plans and chalk out/implementation strategy. In the second level, we have middle level engineers (SDO's, Sub-engineers) who control and monitor the execution of various activities and sub-activities and at the bottom level we have personnel who do the actual execution of works and are in direct contact with the farmers (canal inspectors, Amins and Chowkidars). As the provision of development services is a complex effort, it requires an environment where the implementors are innovative, sensitive to client needs and are motivated enough to work together as a well knit team.

This three-tier approach of training will provide opportunity for such an understanding amongst the implementors involved in the project. It does not treat in isolation the training needs of a strata of personnel involved but treats their contextual needs in relation to the divergent functions that they are required to perform through individual as well as team efforts.

Concluding Remarks

The paper indicates that while the sound training and experience in technology of construction of irrigation projects is a necessary condition, a sufficiency condition is the understanding of institutional factors and strategies to deal with these. It has also been brought out that the task of human resource development in irrigation sector requires information on the magnitude of personnel involved at various levels of project operation and precise inventory of job contents expected from them in relation to assuring the availability of water at right time and quantity to farmers and use of other complementary inputs to promote optimal utilization of water for increasing agricultural production.

It is, therefore, strongly recommended that a working group be constituted by the Planning Commission/Ministry of Irrigation, Government of India to assess the magnitude of personnel trained, content of training programme appropriate for various levels of personnel and appropriate institutions in the country to design and implement such training programmes in as short a period of time as possible. The group should also be asked to work on performance appraisal systems for these personnel, keeping in view the emphasis on utilization of already created potential rather than merely on construction of the in systems.

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