

# ROLE OF ENGINEERS IN THE MANAGEMENT OF IRRIGATED AGRICULTURE AND SETTLEMENT PROJECTS IN SRI LANKA

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Early in the next century irrigation potential in Sri Lanka will be essentially complete. In order to achieve the optimum benefits from the massive investments made on irrigated agriculture developments, effective operation and management of those development projects will become a vital part of the future economy of this country. In this context professional engineers will have a major role to play, for the irrigation system to be managed in keeping with modern scientific developments in irrigation and water management sciences.

However it seems that the engineers responsible for planning, designing and constructing those agricultural projects, are not taking an effective role at the management stage of these projects, especially at the farm level. The limited role they play is normally restricted only to the operation of head works of those projects.

Engineers have traditionally chosen to measure success in an irrigation system in terms of a technically adequate hydraulic system, rather than be concerned with the utilization of water in production of crops. However, there can be many modern "hydraulically perfect" irrigation systems with dams, lined canals and sophisticated appurtenances but with very primitive water application and management techniques. Therefore the "modern" features could be only monuments of latest hydraulic engineering skills if the same level of expertise is not made use of in the management of those engineers achievements. It has now been accepted in most parts of the world that dams and canals are only necessary but not sufficient conditions in a successful irrigation system.

On the other hand On Farm Irrigation Engineering and

Management techniques have improved tremendously during the last two decades. It is now possible to estimate water requirements accurately based on crops, soil and climatic data. Researches are being carried out all over the world on different types of water application methods, canal operation strategies etc. with the objectives of optimum usage of limited water resources. Therefore it is very necessary to find ways and means of incorporating these new developments to the management of irrigation systems. In this context engineers will have to play very important roles, because these new developments are always related to engineering sciences.

In the light of the above facts, there is a need to re-examine the present approach in placing engineers in the management roles of irrigation systems. In most of the irrigation projects the important requirement of utilization of the water on the farm with other inputs have been left to the farmer who has neither the capital nor the technical know how to do the job. There can be many irrigation engineers responsible for planning, designing and constructing irrigation systems, who have never seen how those projects operate after construction. May be the irrigation system could be the only engineering design which places the engineer who designed it, at least in a position responsible for its properfunctioning. One reason for this paradoxical situation is that there is always the user, the farmer, to blame for the mistakes and mismanagement in the system at the farm level. Another reason is that there is a misconception, that the role of engineers ceases to function once the construction phase of an irrigation system is over. The limited management function they play is restricted only to opera-

tion and maintenance of major head works in irrigation systems.

Engineers themselves should also be blamed for this situation because of their general reluctance to actively participate in the management role needed at farm level after construction. One reason for this may be that these management functions seem to be outside their scope. In the process of managing irrigated agriculture and settlement projects the importance of multidisciplinary approach to management problems has been emphasised all over the world. In this approach aspects like agriculture, social and political conditions are also given the same level of priority as engineering. Therefore the knowledge of engineering will become an essential but not a sufficient condition as other economic and social factors are also given the same level of priority as engineering.

Irrigation water management is a complex combination of art and science. The type of environment that existed in irrigated agriculture projects after the construction phase presents special challenges for engineers who are called upon to manage the projects. Even though a knowledge of engineering will become only a necessary condition but not a sufficient qualification for such managers, proper exposure of engineers to such environments can give them a chance to fill what is lacking in their experience. Engineers with broad experience in all aspects of irrigation developments, including social and economic aspects, and agriculture in addition to operation and maintenance aspects of irrigation systems, will automatically assume an advantageous position in the management exercise. This type of broad experience could also be used to improve the design of future projects in the country.

There can be other factors which inhibit the effective involvement of professional engineering skills in the management of irrigation systems.

For example the place and importance of the professionally trained engineers may not be clearly recognized and properly es-

timated by management organizations responsible for the operation of irrigation systems. This is because the routine maintenance works in an already functioning irrigation system that could be handled by a relatively low level of technical expertise. Therefore the tendency would be to involve professionally qualified engineers only at the level of operation and maintenance of head works of irrigation system and at a relatively low level of engineering involvement close to the farm boundary. However as described earlier the same level of technical knowledge is needed at all phases in the operation in an irrigation system if it is to be managed efficiently and economically. Hence the function of the professional engineers will undoubtedly become a vital part in irrigation system management, from top to bottom level of the operation.

It is also relevant to note that engineers through their academic and professional training, have also acquired the management skills necessary for the multidisciplinary approach essential in water management. Engineering skills are also needed in maintaining the social structure in irrigation projects such roads, public buildings, township, industries, drinking water supply schemes, sanitary facilities etc. and for their continuous improvement necessary for the progress of the project.

## CONCLUSION

With the completion of the construction phase of irrigation and settlement projects presently undertaken by the Government, our country will produce large numbers of professional engineers with the right background necessary for future management of the irrigation systems. Their capabilities will also be geared to the management functions needed in systems operations compatible to the latest developments in irrigation sciences. However, there is a need to motivate engineers, to train themselves for this future challenge by promoting the importance of their role not only by the management authorities concerned, but also by professional Institutions and Universities which produce engineers.

## Tea: India Takes the Lid Off

There's good news for connoisseurs of Indian tea, distinguished by its honey color and rich aroma. Last week the Indian government lifted all export restrictions on tea, ensuring an easy flow of various Indian brands, including the famous Darjeeling tea grown on the windswept Himalayan plains. India is the world's largest producer, exporter and consumer of tea. In December of 1983, in a move to satisfy surging internal demand and hold down prices, India banned all exports of the commodity. Five months later the ban was withdrawn, replaced by a tea export limit of 474 million pounds annually. Despite a record production of 1.4 billion pounds last year, India's export cap caused international prices to soar—and created a big surplus inside India. The oversupply, not to mention the risk of emasculating a major foreign-exchange earner (\$744 million last year), presumably prompted the removal of the restrictions. Increased Indian exports are expected to reach 484 million pounds this year and should stabilize if not reduce international tea prices. Tea consumption will also grow in the years ahead (especially in India), promising brisk activity in India's myriad tea gardens.