(*Sri Lanka Journal of Agrarian Studies* 5 (2), 1984)

MAJOR IRRIGATION AND SETTLEMENT SYSTEMS IN SRI LANKA : SOME POLICY ISSUES IN OPERATION AND MAINTENANCE

MAHINDA SILVA AND ANURA S. VIDANAPATHIRANA

Abstract

Operation and maintenance of irrigation systems is of the highest importance. Although much publicity is not given to the major irrigation and settlement systems in Sri Lanka, they contribute substantially to employment generation and increasing production. In addition, there is a tremendous potential for further development of this sector. The authors argue that the viability of these systems depends largely on the operation and maintenance factor. Taking a longer time scale perspective, the authors maintain that the irrigation systems should be viewed as a special sector and the recoveries program not in isolation but within a larger policy framework in which income levels of farmers, availability of irrigation water in the schemes, establishment of a continuing dialogue with the farmers are taken into account.

There are said to be over 340 major irrigation systems in Sri Lanka outside the Mahaweli Development Project. At present an irrigation system with a "command area" of over 200 acres is considered a major irrigation system. By "command area" is meant the area for which irrigation water is said to be available according to technical specifications for the cultivation of paddy during the Maha and Yala seasons or for the Maha season only. This is an assessment based on engineering specifications applicable to each system. Whether irrigation water is in fact made available to the the farmers' fields at the right time and in the right quantities is of course another matter. Irrigation Schemes for paddy cultivation where the command area is less than 200 acres in extent are known as minor irrigation or more appropriately village irrigation schemes. One estimate places the total number of these village tanks in use and in an abandoned condition at over 12,000, while the irrigable extents under such schemes, have been placed at around 200,000 hectares and that this extent constitutes nearly 40 % of the total irrigable extent under both major and minor schemes. (Madduma Bandara 1985). We are, however, not concerned here with village irrigation schemes although they have their own problems and policy issues in regard to operation and maintenance because they do not fall within the scope of operation and maintenance collections introduced by the Government in January 1984 which will be discussed later and which is the central concern of this paper. We find that the Ministry of Lands and Land Development has by circular instructions dated 11th July 1986, instructed Government Agents to "Exclude irrigation Schemes in the 200—500 acres range from the levying of operation and maintenance contributions."

The total extent of paddy lands under major irrigation schemes outside Mahaweli is approximately 246,110 acres and the total extent of highland is approximately 135,000 acres. The total number of farm families settled in these systems is approximately 89,580 (Department of Land Commissioner, 1981). The massive Mahaweli Development Project in which irrigation and human settlement is a major component (generation of hydro-power for instance being another) aims at providing better irrigation facilities to about 246,000 acres which are already under cultivation and also new irrigation facilities for about 654,000 acres which will be brought under cultivation and has settled and is continuing to settle large number of families for livelihoods in agriculture. Within the Mahaweli Development Project approximately 60,000 families have already been given land and settled in system 'H' (Anuradhapura District) system 'C' (Mahiyangana), system 'B'(Eastern and Uva provinces) and system 'G' (Polonnaruwa). Some idea of the population now living in major irrigation systems both within and outside Mahaweli can be obtained if we take the average national family size according to the last population census of 1981 and multiplying this figure by the number of settlers. The farm families identified as direct settlers are naturally not the only population that has come to live in these areas. For instance, there are encroachers on crown land and there is a population that provides services not only for agricultural activities but also for the consumption needs of the settlers. There is also an army of officials serving government, semi-government and private organizations which are living in these areas. A large network of government sponsored infra-structure facilities such as schools, hospitals and public transport networks have been established to serve these areas with their own cadres. This demographic picture alone gives an indication of the importance and magnitude of major irrigation and settlement schemes in the island. But the demographic picture does not stand in isolation. Major irrigation schemes now contribute on the average about 56% to total national paddy production. The cultivation of other field crops, popularly known as subsidiary food crops, such as chillies, onions, green gram, cowpea, soya bean, etc. has expanded considerably in these schemes over the last few decades. Animal husbandry occupies a very insignificant place in these schemes due to factors which are outside the scope of this discussion. Nevertheless, the potential for dairy and poultry development in particular remains to be realized. The overall picture, therefore, that we wish to emphasize is that major irrigation and settlement systems in Sri Lanka are of the highest importance in socio-economic terms and important growth centres in and around which numerous avenues of meaningful on-farm, non-farm and agriculture-related services and industries can be developed.

At this point we would like to suggest that major irrigation and settlement schemes should be treated as a special sector within the overall national perspectives. The Department of Census and Statistics has for a long time been conducting two important national surveys, once in every ten years. These are the National Agricultural Census and the National Population Census. When these census surveys are conducted, the Department identifies some broad sectors, on different assumptions, for the purposes of these surveys. For a long time the three principal sectors iden-

tified were called the urban, rural and estate sectors. More recently a new area was added under the title "rural sector proper," in order perhaps to distinguish it from the estate sector. We think that long before the next agricultural census and population census take place, it will be necessary to completely re-examine these concepts of the urban, rural, rural proper and estate sectors in view of the far reaching changes that are taking place in the country and the speed at which they are taking place. One criterion that would be generally acceptable, the so called urban sector has penetrated into various nooks and corners of the traditional rural sector. Our perception of the rural sector must also undergo fundamental modifications in view of the dynamic changes taking place within the traditional rural sector through external and internal forces. Our earlier concepticns of the estate sector must also be modified now, especially after the nationalization of estates in 1974, the grant of citizenship to large numbers of estate workers of Indian origin and the policies of integration that have been launched to breakdown the separatist atmosphere in the plantation enclaves. It is surprising that the majcr colonisation schemes have not been treated as a special sector because it is neither urban nor rural nor estate. This may seem a marginal point tut we mention it here because this is one way in which the importance of major irrigation schemes can be brought within the main stream of national policy planning.

We are not unmindful of the fact that from around the 1950's commencing with the Agricultural Plan issued by the Ministry of Agriculture and Food in 1958, the problems and performance of major irrigation systems have been intensively studied and intensively criticized. The criticisms such as adverse cost-benefits, government pandered welfarism, reckless water management, design insufficiencies of the irrigation layout, etc. are all too well known to require elaboration here. For our part we are inclined to agree in various ways with all these adverse criticisms. But in the final analysis, we must face up to the question "What will Sri Lanka look like if major irrigation and settlement systems were not there ? Can Sri Lanka avoid such a catastrophie ?" Our categorial answer to this hypothetical question is in the negative and this undoubtedly will be virtually a unanimous view. It is on the basis of this cardinal presumption that we now proceed to examine some of the policy issues relating to Operation and Maintenance.

Sri Lanka has quite rightly taken national pride in the fact that we are the heir to one of the greatest hydraulic civilizations in the world. Some of the major irrigation systems such as the Gal Oya scheme and Rajangana were constructed after independence in 1948. But the vast majority of the major irrigation systems were constructed during the period of the ancient Sinhala kings. It is now well-known that this ancient hydraulic civilization with rice cultivation as its centre-piece fell into decay for a variety of reasons from about the 13th and 14th centuries. Their restoration was undertaken to a small extent by the Dutch, to a larger extent by the British while the thrust of restoration and settlement, particularly in the dry zone districts of the country, came into being after 1931 under the Donoughmore constitution and pursued with tremendous vigour after 1948. Surprisingly enough, in a

country which is said to be divisive and parochial on account of party politics and universal franchise, there has been a remarkable unanimity of policy between different governments since independence in 1948 with regard to irrigation development, land settlement and state support for settlers. The criticism, if at all, at the political level has been that too little has been done and not too much.

The ancient hydraulic civilization of Sri Lanka perished on account of a variety of reasons. But in the final analysis, it was on account of the inability to operate and maintain it. It will thus be seen that the current problem of operation and maintenance is really new wine in old bottles. For whatever reason, if we cannot properly maintain the established major irrigation systems, they will perish in much the same way as happened nearly seven hundred years ago. It is perhaps worth emphasising at this point that while considerable publicity is generally given in all countries to the establishment of large irrigation and settlement projects (e.g. the High Aswan Dam in Egypt, the Muda Project and the FELDA scheme in Malaysia) sufficient publicity has not been given to the fact that considerable extents of land provided with irrigation water cease to be irrigated land after a few years because of poor maintenance. The evidence from one of our neighbouring countries, namely Pakistan, provides sufficient testimony to this fact. It is a lesson that we should learn fast and take appropriate policy decisions and implementational measures without much delay.

An obvious question to ask about our ancient hydraulic civilization is "How were these large irrigation systems maintained and who paid for it ? " We do not think that in spite of some valuable research carried out on these aspects of the ancient hydraulic civilization, there is a complete answer to this question. But thanks to the work of a large number of research scholars we do have a reasonably good idea of how these systems were maintained and how the costs were met. The broad features of the system appear to be (*a*) that the maintenance of irrigation works by the beneficiaries of those reservoirs was a socially, morally and legally ordained requirements of a given agricultural community. No doubt, the more expensive and technically difficult aspects of irrigation maintenance would have been carried out by the king from general revenue using the services of a skilled irrigation bureaucracy. The late Dr. Paranavitana has written about an ancient irrigtion bureaucracy known as the "*kulinas*" who were supposed to have migrated to the South and South-Western parts of the island during times of civil strife in the Anuradhapura and Polonnaruwa kingdoms and thereby creating a vacuum in irrigation operation and maintenance. But there were numerous ways in which the farmer beneficiaries contributed their labour for the maintenance of irrigation works. The tanks and reservoirs provided the agricultural communities at the time with life-sustaining water, principally for paddy cultivation. It is 'therefore' not surprising that the tanks were often treated as benevolent deities. In the very homogenous farming communities dependent on these irrigation systems, the social and moral imperatives of tank maintenance were part of the generally accepted ethics. Where the ethic was violated or transgressed by an individualistic minded predator, the legal sanctions were also

ready at hand. In other words, the carrot and the stick were both available, and it would appear that the use of the stick was very much the exception. One of the specific ways in which this social cohesion and the accepted norms regarding irrigation maintenance from farmer beneficiaries was secured was through the system of *Rajakariya*. The system of Rajakariya and the manner of its implementation has received much discussion and there have been supporters and opponents of the system. During the British period on the whole the system of Rajakariya was thought of as something akin to medieval European serfdom.

They failed to appreciate that while the system of Rajakariya may on occasions have been operated in an unjust and harsh manner by the sovereign or members of his chosen bureaucracy, it functioned within a largely non-monetized economy where agriculture was almost the sole occupation and duties and obligations were encompassed within a system of land tenure. On the recommendation of the Colebrooke Cameron Commission, the British abolished Rajakariya by passing the Services Tenures Ordinance No. 4 of 1870 whereby services due by the tenants were defined and provision was made for the commutation of such services in money. Not all British officials of the time, for sure, viewed the system of Rajakariya as a form of compulsory service of labour akin to medieval European serfdom. For instance, Captain Sir John Keane in his report on Irrigation in Ceylon (Sessional Paper SLV, 1905) pointed out that the Colebrooke Commission made a serious mistake in recommending the abolition of Rajakariya because while recognizing the benefits accruing to the people through the restoration of irrigation works, the Commission proceeded to destroy the very machinery by which alone these works could be maintained. As a result, in the words of Keane, "..... thus what was everybody's business became nobody's business and the industrious majority were placed at the mercy of the indolent few".

We are no longer dealing with socially cohesive farming communities which subscribe to the socially or morally ordained ethics of irrigation maintenance as was the case in ancient times. We are also over a century away from the system of Rajakariya. In this objective situation, how should policy planners approach the subject of operation and maintenance of major irrigation schemes ? Before we get on to a discussion of this question, it is necessary to point out that the long standing traditions of a welfare state which came into being with universal franchise and the Donoughmore Constitution in 1931, and vigourously expanded after 1948, have not provided a climate conducive to the collection of any significant revenue for the state from land alienated to farmers or for irrigation water provided at great expense by the government. To be sure, if we look through the Administration Reports of the Land Commissioner, the Director of Irrigation and the reports of the Public Accounts Committee regarding non-collection of irrigation rates and land revenue, the matters have been very much highlighted. Invariably the general tenor of the observations is the need to collect land revenue and irrigation rates and the difficulties of doing so. On numerous occasions these collections were stopped on account of crop failure, drought and other causes of distress among settlers in the major irri-

gation schemes. An examination of the Parliamentary Hansards would also reveal that the opposition always wanted these recoveries stopped or waived and the Governments on their own part have generally accommodated these requests even while upholding the notion that the farmers should make even a nominal contribution in money by way of land taxes and irrigation rates. It would not be unfair to say that irrigation rates and accompanying tax on land were never seriously collected and the enforcement of relevant rules and regulations were purely ritualistic.

Irrigation water when provided free of charge does not appear to be a scarce resource. Itis something thatthe farmershave got accustomed to expect from a paternalistic Government which has provided free health services, free education, generous food subsidies, etc. In this context of populist politics, it is always a popular move to tell voters that they are getting something free rather than having to say that they have to pay for it. A charge on irrigation water has been as politically sensitive as the price of rationed rice distributed by the Government at the time when the scheme was in operation. A good example of the politics of irrigation water can be seen in some events that took place immediately before and after the General Election of 1970 when there was a change of Government. Some time before the general election of 1970 the then Government had agreed to the imposition of water charge of Rs. 40/-per acre of paddy land under the Mahaweli Scheme, the initial phase of which was to be funded by the World Bank. The proposed water charge was raised as an important election issue by the opposition especially in the dry zone districts where the majority of the major irrigation systems were located. The opposition held out the promise that in the event of their forming a Government the proposed water charge on paddy lands falling within the Mahaweli Development Scheme would not be imposed. It is significant that in the very first "Throne Speech" of the new Government, a policy announcement was made that irrigation rates and the *weva Rajakariya System* would be abolished and that the state would undertake the restoration and maintenance of all irrigation works including even the minor irrigation works. The loan agreement with the World Bank was thereafter renegotiated deleting the requirement of the collection of an irrigation rate.

Apart from the question of the philosophy of a welfare state and the rivalries of party politics, there has also been a strong tradition of policy thinking that the peasant small farmer engaged in food production should be given all encouragement to make the country self-sufficient in food, especially in rice, and that a tax on land or water would act as a disincentive towards the declared goal of attaining self-sufficiency in food items.

It is against this briefly outlined background that we have to examine the policy on Operation and Maintenance of irrigation works which was introduced by the present Government in January 1984. This policy had many new and interesting features which made it very different from earlier schemes to recover a payment from farmers for irrigation water supplied to them. The main features of this policy were that annual Operation and Maintenance

costs of an acre of paddy land was assessed at Rs. 200/= and farmers cultivating irrigated paddy land in major systems including Mahaweli were required to pay a sum of Rs. 100/= per acre per year that they cultivated. The Government was careful to explain that this sum of Rs.100/= was not a water charge or irrigation rate or a charge for meeting the capital expenditure on these schemes or even the costs incurred from time to time in rehabilitating these schemes. As the very expression Operation and Maintenance would indicate, it was intended to be a contribution by farmers towards the day to day maintenance of the system where the benefits of irrigation water would accrue to the farmers themselves. The Government on its part undertook to provide a contribution of a sum of Rs. 100/= per cultivated acre per year in respect of each scheme. The contribution made by the farmers as well as the Government would not be credited to general revenue as in the past but placed in a special fund which would then allocate the money in respect of each scheme for Operation and Maintenance work in that very scheme. The annual programme of maintenance work and the priorities within each such programme for expenditure of these funds would be decided in consultation with the farmers and farmers' organizations in each scheme. The most innovative and democratic feature of this policy was that the farmers in each scheme could see for themselves the work that was being done with their contributions and the contribution of the Government and they would be given the opportunity of having a say in how the expenditure should be managed. This policy was applied to paddy lands falling within the Mahaweli Development Project as well. Although officially this new policy was to be implemented from January 1984, due to numerous administrative and organizational reasons, actual collections commenced towards the middle of 1984. It is not our intention here to undertake an evaluation of how well this policy fared in implementation since its introduction in 1984. We understand that a specific study on that aspect of the matter has been undertaken by persons who are more competent to do so. When this study is made available to the interested researchers it should prove a valuable document.

The recovery of operation and Maintenance contributions from major irrigation schemes which commenced officially in January 1984 has been studied by the implementing authorities and in the light of experiences obtained so far in implementation, some modifications to the scheme have been introduced by Ministry of Lands and Land Development by Circular Number 02/213 of 11th July, 1986. At the time the scheme of recoveries was introduced, the Department of Irrigation had assessed that a sum of Rs. 200/= per acre, per year would be required to meet the cost of Operation and Maintenance of one acre of paddy land in major irrigation schemes. The sum of Rs. 100/= that the farmers were required to pay at the commencement of the scheme was to be gradually increased to Rs. 200/= per acre, per year to cover the full cost of Operation and Maintenance. The circular instructions referred to have modified some of the earlier decisions. The current Operation and Maintenance contribution of Rs. 100/=by farmers as the maximum per acre per year is frozen until further notice. Another change that has been introduced is that the

contribution in respect of land cultivated for both Maha and Yala will now be Rs. 100/= per acre per year, whereas earlier it was Rs. 120/=. Similarly, the contribution from lands cultivated during only one season will be Rs. 60/= per acre per year as against the Rs. 75/= stipulated earlier.

These modifications to the original scheme indicate that the policy makers are adopting a realistic attitude towards operation and Maintenance recoveries in the light of numerous implementation difficulties that they have had to face.

We think that if the policy of Operation and Maintenance recoveries is to be stabilized at a reasonable level of efficiency, a large number of other questions will have to receive continuous attention. We can here point out only a few of the issues and for sake of brevity and convenience we discuss them very briefly but they are not arranged in any order of relative importance.

(1) Wherther the system of Operation and Maintenance recoveries is referred to as an irrigation rate, a water charge or a water tax is not of much consequence to the farmer. In all probability these are for him distinctions without a difference. As far as he is concerned he has to pay a stipulated sum of money to the Government and he would like to know why he has to pay it, what benefits he will get out of it, and that these collections are made in equitable manner from all farmers without discrimination, nepotism and bureaucratic over-lordism. In other words, we think that the chances of stabilizing the recoveries programme will be enhanced to the extent that the confindence and co-operation of the farmers are won over for the new system. Any punitive, administrative or legal action, can perhaps be enforceable in isolated cases, but they will have to be very much the exception especially which the climate of opinion which surrounds the question of state recoveries on land and water.

(2) There is no way of getting behind the fact that these systems will have to be maintained and if so somebody has to do the work and somebody has to pay for it. One of the most interesting developments in recent years has been the extent to which external donors/lending agencies have come forward to invest in the irrigation sector in the country. Apart from the direct and indirect influences that the external lending agencies will exercise on policy making in this sector, they will be fully entitled to ask how well the money has been spent.

(3) We have got accustomed to the idea that irrigation schemes require rehabilitation from time to time. Sometimes this has come to mean that regular Operation and Maintenance can be neglected because rehabilitation will adequately look after all matters when the due time comes. As everyone knows, rehabilitation of irrigation settlements are proving more expensive everyday and the national exchequer which bears the capital costs of

constructing irrigation schemes and meeting recurrent cost of staff and establishment cannot be expected to bear the cost of expensive rehabilitation, particularly at a time when unprecedented expenditures are being incurred on security and defence. We will therefore be compelled increasingly to seek external assistance to undertake rehabilitation. When such requests are made the prospective donor or lending agencies will naturally ask the question as to how we are going to maintain these systems after the rehabilitation is completed. Many persons who have worked in the district administration are aware that the same village tank can come into the priority list for rehabilitation once in every few years.

(4) It is perhaps not sufficiently appreciated that not all the officially recognized settlers in major irrigation schemes do actually receive water for paddy culitvation. In fact, some of them regularly do their Maha cultivation depending on rain fall. It is within the personal knowledge of one of us that in one of the major irrigation schemes in the dry zone settlers who had been brought into some of the tracts under the program of "advance, alienation" (when settlers are brought to the land well before irrigation facilities are provided) had not received water for 8 years. In addition, there are the well recognized problems of inadequate irrigation especially for tail-enders. In implementing the Operation and Maintenance program very careful attention will have to be given to farmers with their individual problems because to attempt to effect recoveries on the basis of administrative fiats would only lead to farmer resentment and ill feelings. We understand that the scheme in operation will provide for waivers and exceptions in such cases but the procedure for effecting such waivers should be under continuous review so that there is no inconveniences caused to the farmers.

(5) Most of the older irrigation systems have changed their ground conditions since the original blocking out plans were prepared and selected allottees were handed over the land. Encroachments are a major phenomenon in most of these schemes. Lands which were earmarked as reservations have been asweddumized as paddy lands. What were once drainage channels have been obstructed or damaged. These realities of the ground must be carefully estimated because they have a very distinct bearing on the Operation and Maintenance recovery program. Considering the large numbers of public officials at various levels working in and around these major schemes it should be possible to obtain a fairly good idea of the situation on the ground by deploying these officers perhaps after a short period of training where they are made to understand the purposes for which the information is being collected.

(6) The success of the Operation and Maintenance recoveries program would also depend on the capacity of the farmers to make the payment. Somewhat contradictory positions have emerged in public announcements and in media discussions on the levels of income obtained through paddy production. It has been sometimes said that farmers in the major irrigation systems have become very prosperous financially and that much of the rural savings in the banks belong to these farmers. On the other hand, it has also been said that paddy farming is becoming increasingly uneconomical because costs of production, especially, hired labour, fertilizer, and other agricultural inputs and hiring of machinery have increased greatly while the yield levels have not increased at a matching pace. Even if rural savings are an indication of farmer prosperity we still have to determine whether the income has accrued from his production activities on the farm or through other sources of employment. The conventional approach to assessing net income from farming has been to assess the gross returns and deduct the cost of production. We are inclined to think that this approach does not in fact give a true indication of the economic returns to the farmer and his family because there are many other things he has to purchase from outside for his livelihood. For instance, he has to buy textiles, school books, medicine, cooking utencils, bicycles, radios, etc. where the price mark ups of the sellers can be very high. The most common term used for these externalities is the terms of trade. And how does the net income earned by the farmer from paddy cultivation appear in the light of these expenses ? We would therefore urge that as supporting measures for the Operation and Maintenance recoveries program, as many micro studies as possible be undertaken quickly in different major irrigation systems to obtain a reasonable assessment of average net farm incomes. In conducting these surveys the sample should provide sufficient representation for those who receive inadequate irrigation water.

The issues that we have mentioned above are not intended to be comprehensive in any way. They are only indications of the cluster of issues that surround recovery of charges for maintenance. The recoveries program should therefore be viewed not in isolation but within a larger policy framework in which income levels of farmers, availability of irrigation water in the schemes, establishment of a continuing dialogue with the farmers through formal or informal channels are taken into account. It is in this context that we feel that the Integrated Management of Settlement Schemes (INMAS) introduced by the Ministry of Lands and Land Development should be given the fullest support. As stated in *Resource Development* (1978/82) issued by the Ministry of Lands and Land Development in March 1983, "these areas have tremendous potential for further development as growth centres for industry and other services and for increasing employment. It is proposed to introduce and implement management systems for these settlers with the assistance of multi-disciplinary teams of professionals and by the active promotion of farmer organizations." The areas referred to in this quotation are the major irrigation systems.

The INMAS program which is very much reminiscent of the program of Special Projects in major colonization schemes carried out in 1960s and early 1970s is a step forward in the right direction. The similarities between the Special Projects and the approach are considerable but so are the differences. The Special Projects achieved to a large extent the objective of increasing crop production in accordance with the short term objectives of the Government at the time. The INMAS program is expected to look at development issues on a longer time scale and if it is able to make significant progress without much delay, the Operation and Maintenance recoveries program will also have a chance of success and stabilization.

References

Department of Land Commissioner (1981)
Statistical Information of the Human Settlement Schemes Under the Land Commissioner's Department of Sri Lanka, Colombo.

Madduma Bandara, C. M. (1985)
"Catchment Ecosystems and Village Tank Cascades in the Dry Zone of Sri Lanka : A Time-Tested System of Land and Water Resource Management" Lundquvist, J; Lohm U. and Falkermark, M. (eds.): *Strategies for River Basin Management* pp. 099—113, D. Reidel Publishing Company.

Ministry of Agricultural Development and Research (1985)
1985—86 *Annual Implementation Programme : A Working Document*, Colombo.

Ministry of Lands and Land Development (1983)
Resource Development, 1978—82, Colombo.

Ministry of Mahaweli Development (1985)
Mahaweli : Projects and Programme 1986 , Colombo.