Issues Arising from Water Encroachments along Hurulu Wewa Feeder Canal

A. Abeynayaka[1], D.R.I.B. Werellagama[2*] and G.N. Paranavitana[3]

[1]*Kaluganga Agriculture Development Project EIA Team, Centre for Environmental Studies, University of Peradeniya*
[2]*Department of Civil Engineering, University of Peradeniya*
[3]*Natural Resource Management Services, Mahaweli Authority of Sri Lanka*

Introduction

Water encroachment is unauthorized tapping of irrigation water provided for downstream users. In Sri Lanka, the Mahaweli Development Scheme, a major development project in the country's history, could not achieve some of its objectives owing to this problem. Attempts by engineers and other government officers to solve this problem are prevented by the intervention of local politicians. This paper studies the fate of the water in main canal feeding Mahaweli water to the Hurulu Wewa (HW) in Anuradhapura district of Sri Lanka.

The dry zone of Sri Lanka has been the home of one of ancient "hydraulic civilizations" in monsoon Asia (Wittfogel, 1957). It consists of interconnected minor irrigation tanks collectively referred to as a cascade (Madduma Bandara, 1985). These cascades were formed not only as water storage and irrigation practice but also as a system for proper land use, planning and operation, and maintenance.

Materials and methods

The study covers the experiences of the authors during the EIA study of Kaluganga Agricultural Development Project.

Results and discussion

The 33 km long HW feeder canal (HFC) was designed to convey 4.3 m^3/s of water throughout the year to the HW (Lahmeyer International, 2004). The canal discharges the water into Yan Oya (a natural stream), which crosses three minor tanks including Thalkote, Hiriwadunna, and Habarana (TH&H) with command areas of 80, 64, 40 ha, respectively (MASL, 2005). At the project planning stage, the land around the banks of the canal was undeveloped and the project planners of 1960s and 1970s ignored future land development possibilities and water requirement for those lands. Hence the project planners assumed that the bulk of the flow (except minor losses such as seepage and evaporation) would reach the HW.

Figure 1. Farmlands leading up to the dam

Mahaweli Authority of Sri Lanka (MASL), Department of Agrarian Services (DAS) and Irrigation Department (ID) are managing the major three components, HFC, TH&H and other minor irrigation schemes, and HW respectively. Lack of interaction among those institutions is a problem. When the MASL releases water to HFC the water passes through tanks managed by farmer organizations (FO) under DAS. At the beginning the cultivated area under those tanks (TH&H) was limited due to low availability of water. Yet, when the HFC passed through those tanks, the water availability was not a constraint any more. It destroyed the concept of "tank capacity controlled farmland area" (Abeynayaka *et al.*, 2007). Farmers encroached the land as they could. It continued up to the dam in some places (Figure 1) by removing the interceptor (the marshy land between the dam and the paddy field), which acts as a salt trap. This has made a severe impact on the sustainability of the farm lands.

On the other hand the lands around the HFC were developed by taking water from HFC. Since HFC is a contour canal along most of its path, farmers on the low side started to take water out with siphons (now the lands are developing on the high side also using solar

pumps). Once a siphon is set up, water generally is allowed to flow out continuously to sustain the siphon function. This consumes a considerably larger amount of water than a well designed outlet irrigation canal, which can also be used as a discharge control device.

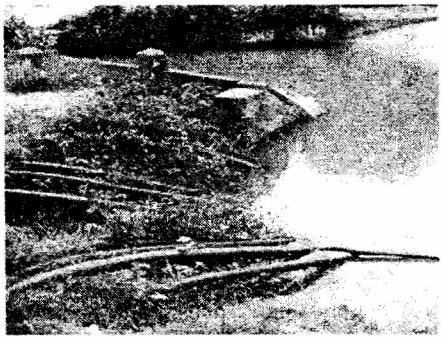

Figure 2. Water encroachments

The design flow rate of 4.3 m^3/s gives a water flow of 44.6 MCM (million cubic metres) for a four month cultivation season ("Yala") and 55.7 MCM for a cultivation season of five months ("Maha"). Yet the HW water budget shows a very low inflow to the HW (Figure 3) starting from 1985. On many occasions the HFC flow is far below the designed flows due to water pilferage.

Owing to water scarcity in the HW command area, the farmer organizations (FO) of HW have campaigned to adopt a water management plan for the HFC. In late 1990s' FO of HW and HFC, ID, and MASL discussed and agreed on a water management plan, providing more water to HW. HW farmers now provide labour for the maintenance of the upstream canals and the labourers also serve to police unauthorized tapping. Yet the informal agreement did not consider improving water controlling structures or land use planning of the area. When MASL officers removed the siphons, local politicians forced them to put the siphons back. This is a case of the state acting against the promises made to the donors, to provide water to HW. Measures to prevent recurrence of such things are important in future schemes.

Conclusions

Improper management including poor catchment management and land use planning reduces the productivity of water resources and land. Future land developments must take these facts into account at project planning stage itself. Water management policy must be coupled with land management and land development.

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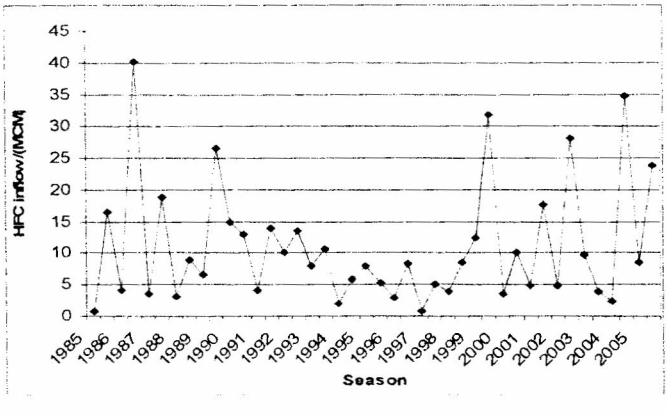

Figure 3. Inflow data to HW in Yala-Maha two seasons

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