C-12: Right bank versus left bank over optimal use of water in Walawe river basin

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This paper presents a comparative study of the objectives, concepts and design considerations in 2 projects, in relation to similar projects implemented in Sri Lanka.

The Walawe Ganga Development Scheme was started in 1964, with the construction of an earthern dam across Walawe River, for the cultivation of paddy, sugarcane and cotton on both banks.

Right bank According to the feasibility report of the SOGREAH Consultants (January 1984) the development area was 12,000 ha on the right bank, and 3,675 ha on the left bank (excluding 2,000 ha under sugarcane). Since over 50% of the area on the right bank faced severe water shortages for irrigation, it was decided to rehabilitate and improve the irrigation system. The main components were:

(a) Rehabilitation and improvement of irrigation infrastructure using the concept of rotational irrigation in turnout units.

(b) Each turnout unit was supplied with controlled standard discharge of water.

(c) Improvement of water management and increase of irrigation efficiency.

The basic planning concepts of the projects, as identified by the consultants were:

(a) One of the objectives was the possible augmentation of water resources to meet the planned developments. It had been assessed that there was adequacy between water resources and requirements. The assumption was, optimal water use through efficient water management at system and field level.

(b) Diversification of cropping patterns

(c) Activating the storage capacity of Chandrika reservoir

(d) Separation of domestic, industrial and irrigation supplies, with the possibility of not releasing water from the Uda Walawe Reservoir during off seasons

(e) Capture and re-use of return flows by re-conditioning the existing minor reservoirs

(f) Increasing storage capacity of Uda-Walawe reservoir by raising the height of the dam. It was expected that the implementation of Samanalawewa Hydropower Scheme in the upper reaches of Walawe basin would provide a minimum release of 55 MCM/year additionally.

The other objective was increasing agricultural production, foreign exchange savings and employment generation.

Left bank A feasibility study on the left bank of Walawe river, was carried out by JICA in 1991 and 1992.

The project area comprised the existing area and the new area of gross extents 16,480 ha and 15,700 ha respectively. The project included upgrading and rehabilitation of the irrigation system over 2,900 ha of net area and construction of an irrigation and drainage system afresh in the underdeveloped area, (6,380 ha). In addition, provision of social infrastructure facilities and O & M equipment were also included.

The basic planning concepts had been formulated in compliance with the national goals:

(a) Self reliance in rice and sugar
(b) Crop diversification and agro-industry
(c) Increase of rural income
(d) Employment generation
(e) Better irrigation facilities.

The fundamental irrigation development concept was the reservoir cascade system, believed to be the most efficient irrigation water re-use system. Land suitability, available water resources, irrigation by gravity, relation to existing irrigation development and adverse environmental impacts were the other factors considered in the feasibility.