

Investigate had happen effect of modern technology for Sri Lankan irrigation system; a case study of Tissawewa

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Introduction

The irrigation works in Sri Lanka, the earliest dating from about 300 BC. There were some most complex irrigation systems in the ancient world. In addition, constructing underground cannels, the Sinhalese were among the first to build completely artificial reservoirs to store water development of the concept of irrigation came up with the civilization of the human. In addition to the just civilization the cultural impacts from the Buddhism. Forced to ancient people in Sri Lanka for irrigation agriculture. According to well-known historical concept of Wewai, Dagebai, Gamai, Pansalai there is first a temple in village and then a tank. In many causes, excavated good quality soil was used for the construction of the Dageba.

The study attempts to investigate had happen effect of modern technology for Sri Lankan irrigation system. To identify modern and ancient technology. To comparison modern and

ancient technology and also give solutions for the relevant impacts. Although Thisawewa was revealed our proud has been threat inform of the development process and it created many socio-economic and environmental problems. The study was finalized according to considering importance of above information.

Methodology

To deal with the research subject data were collected by a field survey conducted in the North Central Province in 2017. In this research focused the Thisawewa as a study area, it locates that alongside Anuradhapura Puththalam road from 44.46 m.p. and its catchment is 2.0 sq.mls., feed by Kalawewa and Yoda ela. The research was conducted adjustment to the Thisawewa based on primary and secondary data consisted of review of literature encompassing report on tank system, official publications of Government Issue, related text books and associated web

sites. The collected information by structured questionnaire survey and interviews conduct with mainly focus key information discussion with relevant officials such as Water Supply and Drainage Board, Irrigation Department, Public Museum. Analysis the primary data which Ms-excel, GIS, SPSS, and correlation and factor analysis methods. Graphs, chart and statistical table are used for data presentation.

Results and discussion

Researcher could found ancient irrigation system consist with wewa system Amuna system, Forest system, Animal system, Landscape system and also spillways comprise of Kalingulas, Sluices comprise of outlet tunnel, inter tunnel and Bissokotuwa and vast catchment which comprise of ground water replenishing and runoff controlling tanks.

The wewa system interrelated with hydrological civilization the labour cost is used more than technological cost in the ancient time. it was a best solution for natural fact created by itself. Although there was not modernization, globalization, industrialization at ancient time, people have best practices of irrigation technology such as Bissokotuwa, Ralapanawa, spillway. In addition to that modern irrigation system has improvement. Among them dam, sluice, Ralapanawa are important.

Dam

An impervious high barrier which is constructed across a river valley to form a deep storage reservoir is known as dam. The dam is mean for serving, multi-purpose function such as irrigation, flood control, water supply, fisheries and hydrology power generation.

Spill way

A spill way is the overflow potion of a dam over which surplus discharge flows from the reservoir to the downstream.

To protect the downstream based and flow of the dam from effect of scoring and erosion, the spillway is provided so that the excess water flows smoothly is necessary of spillway.

Sluice

Clay pots used in the past for sluices it had an ability to absorb poisons and help to clean as a filtering system. The ancient time wewa systems have one sluice but in the present day, it has two of sluices because of that water can have discharge to huge paddy field and it could have help flood control. Although past time couldn't have control flood and it was created most socio-economic and environmental impacts.

Elephant used in the past to press the tank bund. But now using mechanical system. Although present tank bund

was created by concrete. Ancient tank bund created by soil and rocks. Ruins of the ancient tank bund can be seen today. Fishes comes to surface water lay their eggs but it's a threat for fishes as a result of building concrete bund. There was a bowl shape for the tank but now shape of the tank has been change as a result of enlarging process, through that case people can be slip. Cannels have created to delivering the water for paddy cultivation those channels name as D1, D2. The modern irrigation technology had gain mostly positive impacts.

Through the negative impacts, bio-diversity extinction and decreasing the attention about rules and regulation are more careful. As solution planting natural plantation system prohibition the discharge of waste water from tourism industry, reduce the excess fishery industry and breeding eco-friendly aquatic living being such as tank cleaner.

Anuradhapura city has an ancient proud history about 70 years. This ancient city had been consisting with hydrologic civilization. When create the cities they depended on agriculture economy. Among them Tissawewa is most important. Water of Tissawewa is a symbol of the prosperity. All of water usage of Ranmasu Uyana had been completed by Tissawewa. As well as this water use for coronation and pleasure activity of royal palace

and other religious activities. Although present technology is high. But it couldn't setback ancient irrigation technology. Meanwhile conducting awareness programme for resident about technological measures. Creation eco-friendly plants and forest cover, strict the rules and regulation using Environmental Impact Assessment, and institutional support can be conducted to formulate a well-coordinated and sustain tank system adaptation process to Sri Lankan irrigation sector, to overcome short and long term impacts of the irrigation system.

References

- MFP. (2013)*development performance mid year review*. Department of project management monitoring.
- NWSDB, (2011)*National Water Supply & Drainage Board Annual Report*. Battaramulla: National Water Supply & Drainage Board.
- Perera K.L.P.S. et al., (2014)*Water Quality Characterization of Major Lakes in Anuradhapura and Identification of Major Pollutant Sources, Potential Mitigation and Management Strategies*. Malambe: SAITM Research Symposium on Engineering Advancements.