Highlights of Irrigation Engineering Beyond Engineering

I record with gratitude the guidance, trust, and encouragement extended by my superiors, colleagues, and supporting staff throughout my service in the Irrigation Department from 1995 to 2020. Whatever I achieved during this period was the result of teamwork, institutional support, and professional mentorship. I therefore consider my eligibility for the Dr. A.C. Visvalingam Award in 2025 as recognition not only of my own contribution, but mainly of the collective effort of those who shaped my professional journey.

During my career, I contributed to several nationally significant assignments including the Minipe Nagadeepa Irrigation Rehabilitation Project (MNIRP), Welioya Diversion Project, Pro poor Economic Advancement and Community Empowerment Project (PEACE), Deduru Oya Project, Dam Safety and Water Resources Planning Project (DSWRPP), Climate Resilience Improvement Project (CRIP), and the Wellassa Navodaya Project. Among these, a few projects stand out for their technical, environmental, and social significance.

At the Welioya Diversion Project, which I joined in 1999, progress since commencement in 1994 had reached only about 3%. Despite difficult terrain, limited access, inflationary pressures, and design shortcomings, the project was successfully revived and completed by 2007. The original estimate prepared in 1994 was Rs. 640 million, while the final expenditure remained around Rs. 852 million, considerably below the revised estimate of Rs. 1,600 million prepared in 2005.

Major improvements introduced under the project included 4 km of concrete-lined canal, five aqueducts, three spill structures, a 600 m cut-and-cover tunnel outlet, 10 road bridges, rehabilitation of 30 minor tanks, and reforestation of 75 acres. These interventions expanded the irrigable extent from 2,000 acres to 4,500 acres, strengthened food security, and improved rural livelihoods. The environmental restoration carried out through the Miyawaki Method later contributed to me receiving the 2015 IESL National Environmental Award.

Picture of the tunnel out let during miyawaki reforestation and google images in 2005 and 2020. of the same place or comparison

Several strategic decisions helped reduce project costs substantially. Large civil works, including the diversion weir, lined canals, aqueducts, and canal earthworks, were implemented through direct labour arrangements with Cabinet approval. This approach minimized contractor overheads, claims, and escalation costs while generating employment and skill development opportunities for local

communities. More than 50 local youths received training as machinery operators and supervisors, while nearly 30 were later absorbed into the permanent cadre of the Irrigation Department.

An important design modification was introduced within the Dahaiyagala elephant corridor, where the originally proposed double-banking canal embankment system was revised to a single-banking cum level crossings arrangement with the concurrence of the Department of Wildlife Conservation. This reduced earthwork quantities immensely, facilitated wildlife movement, supported fish breeding, and enabled the formation of balancing reservoirs with useful wedge storage along the canal alignment.

Welioya Diversion weir and, 1600m long Tunnel .and environmentally friendly single banking balancing reservoirs along the main canal

The 2004 tsunami response at Karagam Lewaya in Hambantota remains one of the most unforgettable assignments of my career. Under hazardous and emotionally difficult conditions, the Irrigation Department, supported by the Sri Lanka Army, undertook the removal of submerged vehicles and debris using available machinery and field improvisation techniques. The operation demonstrated the importance of engineering service during national emergencies.

Komatsu 155 , Komatsu 85 Crawler Tractors , PC 200 Crawler Excavators etc were used to remove the large vehicles partially submerged in the lagoon

From 2010 to 2014, as Chief Resident Engineer in Mannar, I was involved in the post-war rehabilitation of the Giants Tank Irrigation System, Tekkam Anicut, Akathimurippu Tank, Viyadikulam Tank, and more than 80 minor tanks and canals. Around 25,000 acres of agricultural land had remained abandoned for over two decades due to war and repeated flooding. Rehabilitation included canals, bunds, regulators, sluices, electro-mechanical gates, reduction gear gate hoists, solar installations, and flood management structures.

One of the most socially significant interventions under this programme was the excavation of a 10 km trans-basin canal to address the long-standing inundation problem in the Kuruvil area. This hydraulic intervention safely diverted excess floodwater while creating wedge storage for supplementary irrigation, groundwater recharge, and soil moisture improvement. Nearly 2,000 acres were protected from prolonged flooding, while agricultural productivity and resilience to climatic variability improved significantly.

The collective efforts of the Irrigation Department, Sri Lanka Army, Forest Department, and District Administration contributed greatly to the revival of agriculture in Mannar after the restoration of peace. More than 40,000 acres under the Giants Tank, Akathimurippu, and Viyadikulam systems were restored to cultivation, strengthening regional livelihoods, food security, and communal harmony.

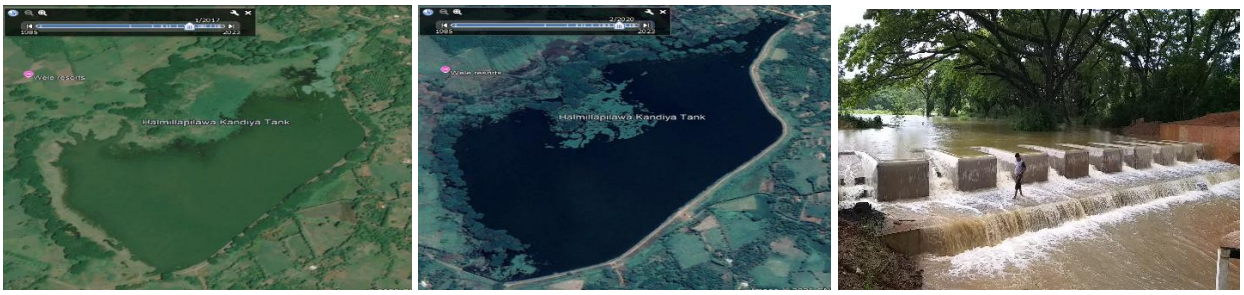
*The Chairman of the Kuruvil Farmers' Organization was astonished—and smiled with disbelief—upon witnessing his deep tube well turn into a naturally overflowing **artesian well**.*

This is an aerial view of the Murunkan Irrigation land in 2009 and 2018. A large quantity of ammunition was discovered during ground excavation works .Model farm has Tom EJC mango , Dragon Fruit ,Guava ,Lemon etc

During the major floods of December 2010, I was also involved in the emergency at Nalanda Dam, where rising water levels and a malfunctioning bottom outlet posed a serious threat. When proposals were made to breach the structure with explosives, the Irrigation Department opposed the action due to the potential risk to the dam. Under emergency conditions, I coordinated an alternative intervention using expansive chemicals for controlled spill reduction, enabling the safe release of water without damaging the structure.

From 2016 to 2020, as Director of Irrigation in Monaragala, I focused on improving water security in the Uva Province through rehabilitation and upgrading of existing reservoirs under the Wellassa Navodaya Project. Reservoirs including Yudaganawa, Halmillapillewa, Radana, Thenagallanda, Ittakatuwa, and Balaharuwa were rehabilitated through desilting, bund strengthening, spill improvements, and protective works.

At Halmillapillewa Wewa, storage capacity increased by approximately 40%, while at Yudaganawa Wewa the introduction of a Piano Key spillway and improved sluice arrangements increased storage by nearly 55%. At Kumbukkan Oya Anicut, electro-mechanical gates eliminated recurrent flooding of the main road, while at Dewliya Tank a cable-stayed suspended fiberglass aqueduct restored water conveyance after nearly twenty years of neglect. These interventions demonstrated how practical engineering solutions can deliver long-term benefits in water management, agriculture, and flood resilience.



Yudaganawa wewa in August 2014, before and after rehabilitation in February 2020, enhanced storage area and piano key spill

Dewliya wewa suspension fiberglass aqueduct on GI structure and electromechanical gates and shelter at Kumbukkana anicutl

Throughout my career, I have tried to uphold a simple professional philosophy: engineering must be guided by basic engineering principles, technical practicality, cost consciousness, environmental responsibility, and service to the public. Whether in development work, post-war rehabilitation, disaster response, or climate resilience, I have always regarded engineering not merely as construction, but as a means of improving lives, strengthening communities, and safeguarding national resources. I strongly believe that “Engineering has something to do with everything.”