

# NEWRICOMM UPDATE

## Newsletter Jul 2017

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Prof Ng Wun Jern & Dr Shameen Jinadasa with Guest-of-Honour, Mr Masagos Zulkifli Bin Masagos Mohamad, Minister for Environment and Water Resources at IES Prestigious Engineering Achievement Awards, 20 July 2017.

## NEWRICOMM WINS IES PRESTIGIOUS ENGINEERING ACHIEVEMENT AWARDS 2017

The water pollution of Kandy Lake and the Mid-Canal in the UNESCO World Heritage city of Kandy not only sullied the ornamental lake, but also contaminated a drinking water source in Sri Lanka. Find out how LEF Programme Fellow and President's Award winner, Dr Shameen Jinadasa, had worked with NEWRIComm and local stakeholders to stem the flow of pollution with a holistic approach -- and a surprisingly ingenious but simple solution.

## PCSWMM MODELLING WORKSHOP

From 5-7 June 2017, Lien Environmental Fellowship (LEF) project teams from the Institute of Technology Yogyakarta (ITY, Indonesia) and the University of Peradeniya (UOP, Sri Lanka) attended a workshop at NEWRI on hydrology and hydraulic modelling with PCSWMM software. The instructors were field experts from NEWRI's Environmental Process Modelling Centre (EPMC), Assoc Prof Irvine Kim & Dr Pennan Chinnasamy.

Mathematical modelling of environmental systems is often used by scientists and engineers to strategise implementation of solutions. Conducted properly, modelling helps implementers minimise the cost of field testing and efficiently analyse systems, synthesise, develop and prove models and make informed decisions. Thus, saving time, cost and risk.



NEWRIComm organised the workshop to support the project team strategise catchment data collection from their project sites in Gunungkidul, Yogyakarta (Indonesia) and Kurunegala Lake (Sri Lanka).

Both teams are conducting field studies to prepare for implementation: the LEF team plans to build bank filtration wells and sanitation facilities for communities living in drought-prone areas in Gunungkidul; In Sri Lanka, the team plans to remediate Kurunegala Lake, which is an important water source for Kurunegala Town during dry periods.

At the workshop, after software hands-on training, our LEF project teams discussed site-specific plans with A/Prof Kim and Dr Pennan. Aligned with LEF program values of capacity building, such workshop facilitates knowledge exchange and helps to enhance NEWRIComm's LEF Fellows' and team members' skills.

## AIDF ASIA SUMMIT

NEWRIComm participated at the 3rd Annual Aid & International Development Forum (AIDF) Asia Summit on 14- 15 June 2017 in Nay Pyi Taw, Myanmar. The AIDF Asia Summit is an exclusive platform uniting regional and global expertise from the United Nations agencies, government, non-governmental organisations, private sectors and academic institutes for knowledge exchange, cross sector engagement, and collaboration. The two day summit was attended by more than 300 high-profile participants from the various sectors.

NEWRIComm's Deputy Director, Dr Victor Sim was invited by AIDF to moderate the panel discussion session on Best Practice and Innovation in WASH.

The panel session was focused on the need for quality requirements and guidelines for drinking water, comparison of water treatment solutions, and strategies to encourage solution adoption by the communities in need. Dr Victor Sim also shared insights and case studies from NEWRIComm's Lien Environmental Fellowship projects.



## NEW LIEN ENVIRONMENTAL FELLOWSHIP(LEF) PROJECTS@NEWRICOMM

NEWRIComm is pleased to announce expansion plans in Indonesia, India and Sri Lanka, following the success of LEF projects in these regions:

### Indonesia: Water Access for Communities in Gunungkidul Karst Region

The project team from the Institute of Technology Yogyakarta (ITY), Indonesia will embark on a 18-months project to improve water security for communities in Kepek Village and Girisekar Village in the drought-prone district of Gunungkidul, through doline lake protection and construction of bank filtration wells. The project will benefit more than 2,000 residents upon completion.



The project team is led by Mr Agus Suyanto, a forestry lecturer from ITY, who coordinated the preceding LEF project at Candirejo Village, Gunungkidul.

### Sri Lanka : Conserving Kurunegala Lake for Sustainable Water Supply

Following the award-winning LEF project in Kandy Lake, University of Peradeniya (UOP) and NEWRIComm is collaborating to expand its lake remediation project in Sri Lanka.

The project team, led by Dr Shameen Jinadasa from UOP, is conducting feasibility studies at Kurunegala Lake. Kurunegala Lake is an important supplementary source of clean water to Kurunegala City, especially during the dry season. During the prolonged drought last year,

Kurunegala town experienced water rationing. Kurunegala Lake protection hence is critical for long-term water security of Kurunegala Town. The lake has showed signs of eutrophication due to sewage, urban runoff and agricultural runoff entry into the lake.



A comprehensive assessment of the lake and the catchment is important for developing sustainable solutions and programs for Kurunegala Town. The project will benefit over 30,000 residents in Kurunegala City.

### India : Managing Food & Vegetable Waste in Nagpur region

The anaerobic digestion technology for food waste management developed through LEF project in Nagpur will be replicated at six sites in and around Nagpur City.

The technology treats food waste, reduces sanitation hazard and loads to landfills, and helps to supplement energy through the biogas by-product. It is especially helpful for communities and institutions located off-grid. The first digester was deployed at the Go-Vigyan Anushandan Kendra, a training centre for farmers in Nagpur.

Through hands-on training and outreach programs incorporated in the project, the project will also enable the local communities to harness an alternative energy source for their daily needs. The program is led by Dr Anshuman Khardenavis from the National Environmental Engineering Research Institute (NEERI, India), and is due to complete in three years, benefitting more than 10,000 direct and indirect beneficiaries.



# The Kandy Lake Clean-Up



## A CONFLUENCE OF IDEAS, A NEW LEASH OF LIFE

### Head source of Pollution

Known as the 'Sea of Milk' or Kiri Muhuda, the renowned Kandy Lake was built by the last monarch of Kandy and Sri Lanka. Sited in the UNESCO World Heritage city of Kandy, the ornamental lake has fallen into dereliction. Rapid urbanisation and economic growth resulted in an increase in water pollution. The root cause? Wastewater discharge into the waterways that feed the lake.

The impact of pollution was obvious, as Kandy Lake became a breeding site for mosquitoes, algal blooms, and even dead fishes. A dumping ground for anything from bottles to animal parts from the slaughterhouses, the stench emanating from the lake was unbearable on some days. But the impact of this pollution extended beyond the lake; Kandy Lake discharges to the Mahaweli River - the longest river and a major drinking water supply in Sri Lanka.

This pressing issue inspired Dr Shameen Jinadasa to propose a project to mitigate water pollution in Kandy Lake and the Mid-Canal. As a result, the Civil Engineering Senior Lecturer from the University of Peradeniya (UOP), Sri Lanka, became one of the two first successful Lien Environmental Fellowship (LEF) Programme recipients.

### Ground-Up Ideas, Empowered Communities



First launched in 2010, the Lien Environmental Fellowship (LEF) Programme is funded by the Lien Foundation and administered by Nanyang Environment & Water Research Institute Community Development (NEWRIComm).

The LEF Programme reaches out to academics in the region passionate about improving

water sanitation and environmental sustainability in their communities and is currently supporting six LEF projects in five countries – India, Indonesia, Laos, Myanmar and Sri Lanka.

As the community development arm of NEWRI, NEWRIComm partners local stakeholders to invest in a better shared future by integrating NEWRI's research and engineering capabilities, on-the-ground expertise of local universities and research institutions, and the community's contributions.

Successful applicants like Dr Shameen Jinadasa refined their proposals through mentorship by NTU-NEWRI faculty for up to six months to improve water, sanitation, and renewable energy before they returned to their home communities in Asia to implement these projects, and transfer the knowledge to their students.

On why he chose to be a Fellow on the LEF Programme, Dr Shameen Jinadasa shared, "I really wanted to help my community, but sometimes we may lack the finances, political clout, knowledge or technology to make it work. To me, the programme presented the right platform that harnessed the relevant talents, engineering expertise, and organisational skill sets to help materialise the idea."



### Holistic Solutions, Sustainable Changes

Solving the problem at source is key. To this end, the project commissioned a wastewater treatment plant for the kitchens and toilets of the prominent Temple of Buddha Tooth (Sri Dalada Maligawa) to set an example for others. Dr Shameen Jinadasa elaborated, "Building such working models for the industry is an important first step to pre-empt water pollution by getting them to adopt best practices and new technology."



In addition, the team made up of members from NEWRI, UOP, and the local authorities in Sri Lanka, also came up with a green and simple solution to treat and purify the lake water – floating wetlands filled with a beautiful native flowering plant - Cannas. Acting like a filter, these ornamental flower beds trapped river sediments and absorb river pollutants like nitrogen. Cannas is chosen not only because it has been tested to absorb up to 60 percent of pollutants in four days, but also because it beautifies the lake – a major tourist attraction.

The lives of about 400,000 people living and working in Kandy City have been improved by these implemented solutions. But the road to sustainable and lasting change can only be built upon the changing of minds and behaviours. A holistic system package which included training, education and outreach is crucial to empower communities with the requisite know-how to eventually take ownership of the project.



To this end, the Wetlands Education Programme was launched at the Mahamaya Girls' College, a premier school located next to Kandy Lake, to nurture environmental stewardship among the young, the future custodians of Kandy City. Dr Shameen Jinadasa explained, "Sustainability starts from education - from school children, under-graduates, up to post-graduate level. Then we make them leaders in community engagement to teach others too. Same goes for the industry - from the labourers to the managers - we give them exposure to environmental education."

The project proved to be a success, and was one of 12 engineering projects awarded the Institution of Engineers, Singapore (IES) Prestigious Engineering Achievement Awards 2017 for making exceptional contributions that enhanced the quality of life and bring about engineering progress in Singapore. For his scientific research in this project, Dr Shameen Jinadasa was also awarded the President's Award in Sri Lanka. The project was officially handed over on 10 July 2014, demonstrating an impactful collaboration between institutions and nations that helped the community in meaningful and lasting ways.

