

DPM TEO CHEE HEAN & FINANCE MINISTER HENG SWEE KEAT VISIT NEWRI

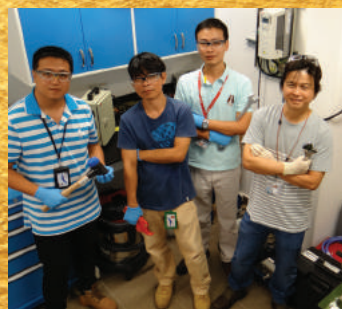
NEWRI

Update

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A Word from the Prof...

Dear Friends, Colleagues, and Students,

This message shall be my last to you as NEWRI Exec-Director. My role as the latter ends on 31st July 2017. It has been some 10 years since I first came to NTU to build NEWRI, and with you I do believe we have succeeded in building arguably one of the largest environmental R&D organizations in the world. I had anticipated NEWRI to be my last big project in an academic career which has now spanned 37 years and, and if I may be permitted to be proud of our achievement at this juncture, NEWRI has indeed been a notable occurrence on the research landscape in terms of its conceptualisation, implementation and reach in the domain of environmental engineering. NEWRI has contributed to Singapore's water security and the environmental engineering industry, trained numerous postgraduate students who have gone on to join industry and academia, and has closely mapped the ongoing national drive to bridge research, innovation, and value realisation from IPs generated.

It has been an exciting and personally rewarding 10 years - having founded and led NEWRI, and having the privilege to have worked closely with so many of you. However, these 10 years have also brought me to the point in my career where I should begin to consider what I shall do next in my life. There would be those among you who have worked closely with me who are aware of my links with the industry and my interest in developments therein. It is such interest which has led to NEWRI's RED operating philosophy (Research-Engineering-Deployment) and an outcome of RED is the spin-off company which drew IPs from NEWRI-SMTC, ie DeMem. The latter has recently made IPO. NEWRI has transited into Tranche-3 funding last year and so now carries substantial core funding forward into the next 5 years cycle of its life. As of last year, NEWRI has also already brought in significant amounts of project funding in support of R&D activities in its component Centres. An example is NEWRI-R3C's NEA funded demonstration-scale gasification facility which is being constructed in Tuas.

I am much comforted I am leaving NEWRI in Dr Adil's capable hands. He founded and leads START, is associated with NEWRI, and so is very aware of the workings within NEWRI. In addition to such familiarity, Dr Adil is more than capable of independent strategizing and action to follow through with directions. This is important as NEWRI would then not run risk of stagnating but continue to evolve for the better – and I would wish for NEWRI to do well going forward.

I would want to thank all of you for the support you have afforded me during these 10 years without which NEWRI could not have been brought to where it is today. Although I shall step away from NEWRI management, my interest in research remains and so you may yet see me working in the laboratory with my research team and, of course, I expect to have more interactions with colleagues in the industry – professionally and to explore how IPs developed can be deployed.

I wish you all things good going forward.

Yours sincerely,

Prof Ng Wun Jern
Executive Director,
NEWRI

"The best measures of a lifetime's contribution of research are not just scientific publications in leading journals, but much more importantly, the problems it has solved, solutions it has provided, and lives it has touched. Prof. Ng's innovations across the past several decades have provided sustainable solutions for a variety of challenges, from the treatment of challenging industrial wastewater, to the treatment of, and resource recovery from agricultural waste, to bio-fertilizers and soil remediation. These are all extremely relevant, not only from the perspective of today's global environmental and water challenges, but also from the perspective of several generations of researchers trained in this scientific ethic, and equally from the economic benefit to the companies which have leveraged these technologies, and to society as a whole."

Dr Adil Dhalla

Deputy Executive Director, NEWRI
Managing Director, ST-ART

"I have always been extremely impressed with Prof Ng's ability to communicate complex science and engineering to industrial clients. His broad knowledge of both academic fundamental science and industrial processes is something that all academics can only aspire to achieve. He always goes about his activities with the highest levels of professionalism and treats everyone around him kindly and fairly, as evidenced by the large number of staff who have remained loyally at NEWRI for many years. I have learned an enormous amount of science and engineering through interactions with Prof Ng as well as being deeply impressed with his management skills and ethics, which have paved the foundations to NEWRI's continuing success."

Associate Prof Richard Webster

Deputy Director, NEWRIEdU / Deputy Director, ECMC

"Prof Ng's shoes are big ones to fill.

I think his ability to view technologies in a macro perspective, from a commercialization and economic viewpoint is a unique strength. This is a huge asset for an academician. This ability to connect technologies with end applications coupled with his strong networking skills have helped build NEWRI's profile in the environmental engineering space. Prof Ng is highly respected in his field of science. For a research institute in Singapore to be in the forefront of environmental science and engineering research in the world stage is no mean achievement. While this will count as a team success, the bulk of the credit for having gotten there would certainly have to go to the leadership.

I wish him much success in all of his future endeavours as he embarks on a new chapter in his life. It has been a great pleasure being a part of his team."

Dr Babu Narayanswamy

Director, NEWRI Engineering Team

Thank you for your Leadership

"Dear Prof Ng, Many thanks for your leadership at NEWRI. We are proud to be part of NEWRI and of its achievement. It is my wish that many of us who have benefited from your wisdom can still do so in future. Let the 'party' continue! - from HU Xiao (Matthew)"

Prof Hu Xiao

Director, ECMC

"In my eyes, Prof Ng is not only an outstanding scholar in the field of environmental engineering, but also has a wealth of practical experience, while he has deep vision about the development of the global water market. In the past ten years, what the most impressed me is his strategic vision, humor and optimistic mindset even under stress. Working with him is a great pleasure, an experience that I truly treasure. Nothing I can say will ever convey tones of my gratitude to his guidance, support and mentoring. Thank you, Prof Ng!"

Prof Liu Yu

Director, AEBC

"I have seen NEWRI grown from a grand concept to an established well-known global institute reputable for its research abilities and industrial linkages. I have yet to observe such a remarkable success story in Singapore other than NEWRI. I have observed the struggle of countless centres in their quest to become great names. In short, NEWRI wouldn't exist without Prof Ng's leadership.

The community development arm has benefited much from NEWRI's know-how and image. I shall strive to build upon the solid foundation backed by the founder's vision and look forward to Dr Adil's continued leadership to bring NEWRI to greater heights."

Dr Victor Sim

Deputy Director, NEWRIComm

**Professor Ng Wun Jern,
Executive Director of NEWRI
officially relinquishes
his position in July 2017.
Dr Adil Dhalla will be appointed
Interim Executive Director.**

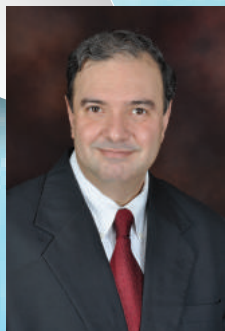




IN A BRIEF

Dialogue with an Expert

We caught up with Dr Adil Dhalla (Deputy Executive Director of NEWRI and Managing Director of START) to appreciate a little more about him, what going to happen in the next half decade for NEWRI and the industry, in this interview segment where we get direct with our experts in the field.



A brief introduction to our readers.

Dr Dhalla is Deputy Executive Director, NEWRI, and concurrently Managing Director, Separation Technologies Applied Research and Translation (START) Centre, Singapore's national facility for bridging the gap between research innovations and commercial outcomes in the field of separations. Effective August 1, 2017, he will be NEWRI's Interim Executive Director.

Prior to this, Dr Dhalla has been in various senior R&D leadership roles with General Electric (GE) over fifteen years, including most recently, Director of the GE Singapore Water Technology Centre from April 2010 to July 2015, and Regional Ombudsperson for GE Power and Water from 2012 to 2015. Since joining GE in 2000, he has also established and led technical centres of excellence in chemistry, materials and process technologies. In 2005, he was appointed Technical Director, Chemistry and Characterization, and in 2008, Technical Director, Polymer Science and Technology. After completing his five-year integrated master's degree in chemistry from the Indian Institute of Technology in Bombay, he earned a doctorate in chemistry from Cornell University in Ithaca, NY, USA. Following a post-doctoral stint at Penn State University, he was a research fellow at the Bristol-Myers Squibb PRI in Princeton, N.J., and a senior manager in the research and technology division of Ciba Specialty Chemicals in Mumbai, India.

From 2012-13, Dr Dhalla was Chair, pro tem Chemical Standards Committee for Industrial Wastewater, Singapore. He was on NEWRI's Advisory Board from 2014-2015. Since 2015, he has been Vice President of the Singapore Section of AIChE (American Institute of Chemical Engineers), and is also a member of the American Chemical Society.



Dr Dhalla briefing DPM Teo Chee Hean on the membrane facilities in START.



Dr Dhalla sharing a moment with Prof Ng Wun Jern.

Background and specialty?

With industrial experience spanning 24 years, including 20 years in management roles, Dr. Dhalla's key areas of professional expertise include the leadership and operational management of large, multifunctional teams, strategic planning, R&D in product/process development and commercialization. He has co-authored more than 20 issued patents (US and EP), more than 30 GE internal reports, several publications in peer-reviewed international journals, and most recently, an Elsevier book chapter on Singapore's leadership in water innovation.

Dr. Dhalla has always been eager to learn new areas of science and technology. For his Masters' thesis, he worked on the total synthesis of an alkaloid molecule, and his Ph.D. thesis included studies on homo-antiaromatic molecules and the mechanism of the enzyme photolyase, which cleaves dimerized thymidine base pairs. For his post-doctoral research, he worked on the regeneration of catalytic activity in mutated enzymes. His research at Bristol-Myers Squibb included mechanistic enzymology for rational drug design for antibacterial and central nervous system applications. In the following years, he set up and led teams working in the areas of functional colorants, specialty chemicals and monomers, chemical process and catalysis, characterization, polymer technology, membrane technology, and water applications. Since joining NEWRI, it has been his privilege to expand his horizons, by learning from our experts in various areas of environmental technologies.

Comment on NEWRI and the industry at large?

NEWRI is a very unique entity, not only in Singapore, but also globally. The vision and efforts of Prof. Ng and the founding leaders of our organization have been critical to building a technology powerhouse in broad areas of environmental and water technology, key to the needs of Singapore, but also Asia and across the world. What differentiates us is our ability to not only be on the cutting-edge of research in our domain, but also to selectively take technologies to engineered solutions with tangible outcomes in the real world. The environmental and water industry, as with other domains, will go through its ups and downs, but NEWRI's broad based structure gives us the ability to help sustain our industrial and institutional partners through these cycles.

How do the ART units, including START, which you have set up and led over the past year, enable this vision?

How are we doing this? One of the biggest challenges for commercialization of novel technologies, even if IP is protected, is the gap between laboratory processes, results and testing, and the full scale final product. Hence, translation of lab scale technologies directly to the final application, would involve in most cases, a significant risk. This gap is based on several key challenges, including scale-up of component materials and equipment, systems level thinking, testing at pilot scale in an actual application setting. The ART units, including START, are set up to provide a dedicated framework to mitigate this risk. For example, imagine a very innovative membrane technology, which has been proven on the laboratory scale. In order to validate this technology in an actual working unit in real life conditions, there are several steps involved. The first would be to evaluate the manufacturability of the membranes at scale, followed by module design, construction and testing, and finally, building a pilot system using these modules, and testing it in real life conditions for the intended application. This is the mandate for START in the field of separations, and the other ART units, WW-ART and WtE-ART, in their respective domains of Wastewater and Waste to Energy, respectively. However, just translating technologies in a vacuum is not our intent. Our colleagues from NEWRI Tech and NEWRI Comm are a big part of not only getting market intelligence which will enable us to make the right choices for translation, but are also key to the actual implementation. Our NEWRI Edu unit will continue to look for ways to make graduate study a more enriching experience for our students. Of course, let us not forget for a moment the key role our Administrative and Operations Staff plays in making this vision possible. They are truly our unsung heroes.... I would encourage each of us not to take their efforts for granted, and to show our appreciation whenever possible.

Where do you see NEWRI in 5 years?

We are developing our organization to collaboratively drive our national and global priorities. What this entails, is maintaining and building on our bedrock strength in R&D from AEB, ECME, EPMC, R3C and SMT (in alphabetical order 😊), while developing our engineering and translation units, so that we can offer "enterprise solutions" to our partners, from the laboratory to real life. This will make NEWRI a magnet for intellectual and commercial partnerships, not only at an institutional, but even a national level. Of course, as with most worthwhile efforts, this is not easy, but I am confident that we will make it happen.



Dr Dhalla and the START team in a friendly badminton match in May 2017.



Dr Dhalla and the START team.

DPM Teo Chee Hean and Finance Minister Heng Swee Keat visits NEWRI (10 April 2017)



DPM Teo Chee Hean and Finance Minister Heng Swee Keat visited NEWRI on the 10th April 2017. They spent a day in Cleantech One with visits to ERI@N as well as NEWRI to gain insights and updates of the research being conducted. At NEWRI, both ministers were given a tour of the laboratories and various researchers had an opportunity to impress upon the ministers details of research projects. (10 April 2017)



De.mem listed on the Australian Stock Exchange (ASX)

Singapore-based water company De.mem, industrial wastewater treatment solutions provider, listed on the Australian Stock Exchange (ASX) during the 1st quarter of 2017. The company raised approximately SGD 5 million to further expand its business in Singapore, Vietnam and the region. De.mem is a spin-off company from the Nanyang Technological University's (NTU) Nanyang Environment and Water Research Institute (NEWRI), having licensed several innovations from the university.

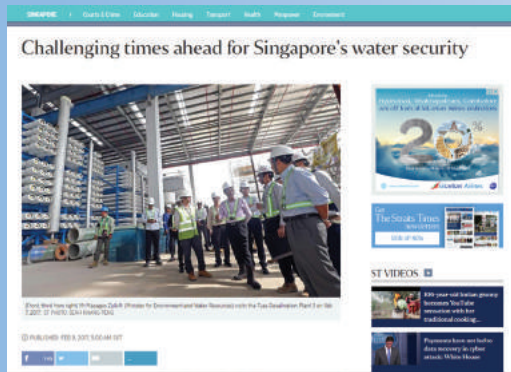
To read the article, please click here
[NEWRI NEWS \(23 March 2017\)](#)



World Water Day (Channel NewsAsia)

During World Water Day, CNA ran a video on home appliances and water efficiency. Prof Ng Wun Jern was interviewed and gave comments on how 'certain things must be constantly repeated. He also said "as we use water daily, familiarity can make us forget its value", so regular reminders are necessary that "water is very valuable and is not infinite."

To view the video, please click here
[CNA clip \(22 March 2017\)](#)



Challenging times ahead for Singapore's water security

Professor Ng Wun Jern was quoted in the article saying, "an imminent price hike would raise operating costs for the industry and drive it to consider changing processes to use less water."

To view the article, please click here
[ST article \(9 Feb 2017\)](#)



Saving water: Move beyond price to focus on public education

In an article on saving water, Dr Adil Dhalla comments on the necessity of water-saving and how it is 'vital to the nation's water security'.

To view the article, please click here
[ST article \(6 March 2017\)](#)

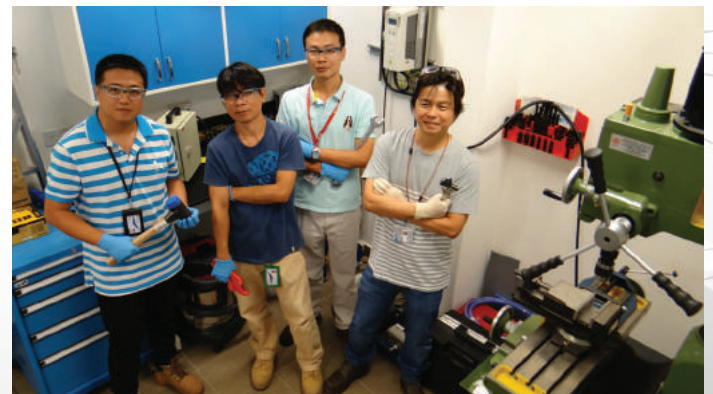
SPOTLIGHT ON

Get to know some NEWRI men who Engineer Solutions NEWRI RESEARCH ENGINEERING TEAM

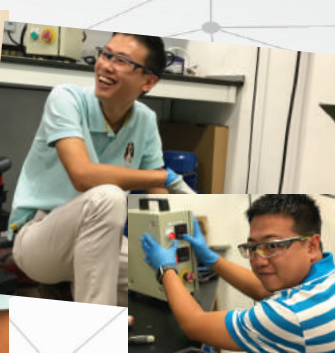
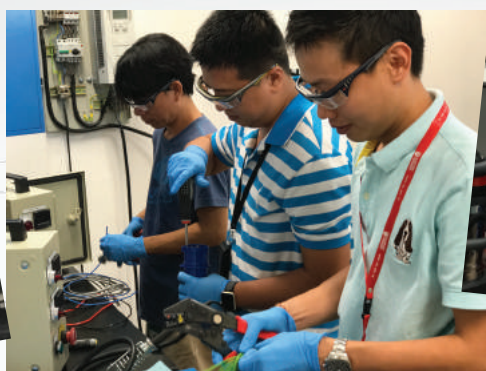
At NEWRI, the Applied Research and Translation (ART) units namely ST-ART, WW-ART and WtE-ART translate laboratory inventions into full scale processes and products.

The core engineering team looks at scientific solutions developed in NEWRI's laboratories from an engineering perspective, helps design deployable solutions and subsequently enables the demonstration of these solutions through the proof of concept approach and pilot plants. In other words, the team is tasked with helping the researchers move their ideas from the lab to scale-up and then on to commercialization through proof of concept/piloting.

This process can be accelerated by discipline and diligence at the various stages – engineering design, vendor identification for prototype build, FAT (factory acceptance test), SAT (site acceptance test), commissioning and finally taking ownership of the prototype/plant. The team is staffed with engineers with diverse background and experience to enable a smooth and safe journey along the Research-Engineering-Deployment (RED) path.



From Left to Right:
 Guo Qiming, Joselieto Luy Absalon, Goh Seng Yong,
 Michael Dy Cham Lua in the workshop





NEWRI was part of the Sustainable Earth Peak Expo in NTU. NEWRI booth helped create awareness of our RED (Research - Engineering - Deployment) philosophy. This gave an opportunity for visitors to get to know NEWRI and its research being done. Prof Bertil Andersson and delegation also visited the NEWRI booth and were greeted by Dr Babu Narayanswamy, Prof Wang Rong and Dr Adil Dhalla. Special thanks goes to Mr Gu Jun, Ms Gopi Tesajiri, Ms Wu Dan, Ms Han Qi, Mr Lai Li and Mr Withanage Don Chanaka Udayanga, who took up the challenge (for the NEWRIedu video) of manning the NEWRI booth. (The Sustainable Earth Peak Expo was held on the 17 March 2017)



CONGRATULATIONS!

Institute for the Advanced Study of Sustainability, United Nations University conducted 2017 ProSPER.Net Young Researchers' School (YRS) and Velautham Daksiya was awarded with a scholarship to take part. The 2017 school was held in International University – Viet Nam National University Ho Chi Minh City with the theme of 'Water Security for Sustainable Development in a Changing Climate'.

By assembling young researchers from ProSPER.Net institutions for an intensive 10-day program, the school fostered the growth of a network of sustainability scholars and professionals in the Asia-Pacific region. Daksiya said 'The impact of climate change and the ways of handling it were discussed. It encouraged me to shape up my future goals. It's a great experience networking with expertise who has similar research interest'. NEWRI congratulates Ms Daksiya on achieving this award.



At NEWRI we do not forget our foundation which is deep scientific research. NEWRI's researchers and professors from our various Centres of Excellence publish frequently in journals, conferences and keynotes. To view the catalog of titles, you can log on to the NEWRI webpage on PUBLICATIONS for more information. Link below:

Please click for NEWRI Publications [CLICK HERE](#)

NEWRI's webpage - optimised for your mobile phone viewing!
We have made sure our website has been updated to show more! Have a look! Scan the QR code for those on smart phones.
<http://newri.ntu.edu.sg/Pages/Home1.aspx>





VISITS AND EXCHANGES



AMS Institute (Netherlands) visits NEWRI
(31 May 2017)



POTEN Group (Beijing China) visits NEWRI
(25 Apr 2017)



GlobalTechnologies (GT) with scientists from Ukraine,
and Surbana Jurong (SG) visits NEWRI for potential collaboration
(21 Apr 2017)



The Salim Group visited NEWRI with hopes of future collaboration (11 Feb 2017)



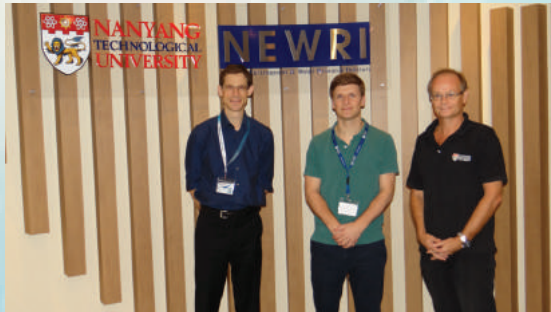
Gansu University (China) visits NEWRI (28 Mar 2017)

Universiti Putra Malaysia (UPM),
Dept of Civil Engineering visited
NEWRI on their '6 days in
Singapore Mobility Programme'.
(17 Feb 2017)



Meeting with Hutchison Water visitors, Dr. Dan Eldar and Dr.
Gaya Loren at NEWRI (9 Feb 2017)

2017 NAP Finalists' Campus
Visit/Interview to NEWRI
(8 Feb 2017)



Ochaninomisu University student visits NEWRI (27 Feb 2017)

Engineering With Membranes (EWM2017) Recent Advances in Membrane Science and Technology, organized by the Singapore Membrane Technology Centre (SMTC) and held at the InterContinental Singapore, showcased recent advancements of membrane research, development and applications related to water production and desalination, wastewater treatment and reclamation, gas and liquid separations & purifications, energy issues, the environment, special needs, etc. from the 26 -28 April 2017. It provided a forum for exchange of ideas and thoughts, and discussions for the global membrane community, whilst building a network of professionals. Below are some captured moments from the convention.



SEMINARS, WORKSHOPS & TRAINING



Enhancing staff knowledge and experiences, NEWRI holds regular in-house workshops and seminars by fellow researchers and visiting professors, scientists, institutes, and external visits; allowing knowledge to diffuse throughout the organisation. Some highlights below;

Get in touch with us if you like to be updated!
Click here: <https://goo.gl/hBsdVy>

		Dates (2017)
1.	Potential impact of climate change on the future streamflow and water levels of the Mackenzie River Basin of Canada – Prof Gan Thian Yew	15 June
2.	PCSWMM hydrology & hydraulics modelling workshop for the Kurunegala Lake Catchment Study project - A/Prof Irvine Kim & Dr Pennan Chinnasamy	5 – 6 June
3.	Investigating the Potential of A. Lesbiacum in Ni Phytoextraction from Soils - Dr Maria Aloupi	11 May
4.	Engineering With Membranes (EWM2017) Recent Advances in Membrane Science and Technology (International Conference)	26 – 28 April
5.	Life Cycle Assessment of Processes for Resource Recovery from Waste-to-Energy Bottom Ash – Prof Thanos Bourtsalas	15 March
6.	Oral Communication Skills – Prof Bill Krantz	21-22 / 27-28 February
7.	Sustainable Landfilling: What is the status and what has to be changed? – Prof Rainer Stegmann	13 February
8.	Treatment of contaminated soils, potentials and limits – Prof Rainer Stegmann	20 February
9.	NEWRI Process Design Workshop – Dr Victor Sim	5 January

NEWRIComm administers the Lien Environmental Fellowship (LEF). The program supports projects to provide clean water and better sanitation for under-served communities in the Asia Region. Through NEWRIComm, NEWRI's know-how is deployed to help communities through training, education, and implementation of engineering solutions.

To NEWRIComm, Prof Ng Wun Jern is more than the unit's Director; he is also mentor to the team and to many NEWRIComm project coordinators who are based outside Singapore.



At Naypyitaw, Myanmar with Yezin Agricultural University rector and lecturers



In Sumedang project site with the team from Indonesian Institute of Sciences and Giriharja Village, Bandung Indonesia



Prof with the Irrigation Department at Kandy, Sri Lanka



At the "Water, Wetland, and We" school exhibition in at Mahamaya Girls' College's wetland Education Centre, Kandy, Sri Lanka

Prof Ng's advice are sought after (Professors think a lot!) by the NEWRIComm team and the overseas stakeholders.



At the president's office in the National University of Laos



Meeting with Chief Minister and Governor of Kandy, and Chief Custodian of the Dalada Maligawa temple.



Prof deep in thought while Dr Shameen awaits in suspense.

His presence lends trust and confidence. Over the years, NEWRI has formed a strong network of partners and relations through its community projects.



Token of appreciation from Saptosari Village, Yogyakarta, Indonesia



MOU Signing with the National university of Laos



Prof Ng explaining about the bank filtration well in Candirejo, Yogyakarta

Under his leadership, the team has successfully developed and handed over projects in Sri Lanka, Indonesia, and India, which together have improved the lives of close to a million people.

Our partners are continuing to collaborate with NEWRIComm to expand the projects to help more communities in the region.

The Lien Environmental Fellowship program is continuing into the next phase with NEWRIComm, and the team is expanding to support the program. Prof Ng will continue to lead the unit.



With the Mandalay City Development Council, Myanmar



Off to investigate the next project site(s)!

