



NEWS RELEASE

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Singapore, 20 April 2006

NTU and Lien Foundation collaborate to establish new humanitarian organisation

Nanyang Technological University (NTU) and Lien Foundation (LF) have joined hands to establish the 'Lien Foundation – NTU Environmental Endeavour', an initiative that aims to improve living conditions in developing communities in Asia through technology-based developmental work.

The Endeavour will be implemented through its two arms, the Lien Institute for the Environment (LIFE), which will explore and develop environmental technologies, and Lien AID, which will deploy the know-how in the field. Lien Foundation has committed S\$8 million to the Endeavour. (Please refer to attached fact sheet for details of the Endeavour).

The Endeavour will be launched officially at a dinner tonight, as a precursor to the United Nations Environmental Programme's (UNEP) Champions of the Earth 2006 Awards. Winners of the award, as well as representatives from UNEP, will be at the dinner to witness the launch.

The collaboration is believed to be the first time a Foundation partners a University to establish a humanitarian organisation. The partnership leverages NTU School of Civil and Environmental Engineering (CEE)'s strength in environmental technologies and extend LF's experience in supporting community work to the region.

The collaboration is also significant in that it 'reunites' the two organisations. 50years ago, Dr Lien Ying Chow, the founder of Lien Foundation, was a co-founder of Nantah, the predecessor of NTU.

Through the Endeavour, CEE's world-class environmental technologies will be translated into sustainable solutions for developing communities. It will focus on disaster prevention as

well as provide disaster relief support. Some of the areas identified by the Endeavour include: providing innovative solutions for water production, sewage treatment and strengthening of masonry structures and rapidly deployable structures. The Endeavour will further develop NTU's existing research and technologies and work with local NGOs to deploy them in the field.

The Endeavour will also leverage NTU's network of environmental organisations and research institutes to tap their expertise. Some of these organisations include Stanford University, Tongji University, PUB, NEA, and other environmental-related companies.

NTU's School of Civil and Environmental Engineering will also incorporate appropriate Endeavour projects and research topics into its undergraduate and graduate curricula. This provides its students the rare opportunity to work on real-world community projects.

The Endeavour has started discussions with various organisations in Thailand, China and Indonesia. It also plans to launch an annual global environmental technology competition for the public to encourage innovation for real-world problems. The competition will be launched in May.

Mrs Margaret Lien, Governor, Lien Foundation, says, *"We in Singapore, being strategically located in the heart of Asia, should use our technological edge to assist neighbouring communities in achieving sustainable development. The Lien Foundation – NTU Environmental Endeavour aims to do just that - capitalise on existing technologies to benefit communities in Asia."*

Dr Su Guaning, President, NTU, says, *"NTU is proud to partner Lien Foundation on such a meaningful collaboration. Our two organisations share the vision of taking our technological know-how to where it matters most – corners of the world where real problems need to be urgently resolved. Our partnership harnesses and combines technology and scientific endeavours with field work and application, to deliver sustainable development that has a lasting impact on developing communities."*

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About Nanyang Technological University

Nanyang Technological University (NTU) is a research-intensive university with globally acknowledged strengths in science and engineering. The university has a beautiful garden campus and a distinguished lineage with roots that go back to 1955.

NTU's 12 schools span diverse disciplines – from engineering and the sciences to art, design and media. The university has a strong engineering college focused on innovation, a business school with one of the top 100 MBA programmes in the world, an internationally-acclaimed National Institute of Education, one of the best communication and information schools in Asia, and a biological sciences school at the

forefront of Singapore's life sciences initiative. The Institute of Defence and Strategic Studies is a world authority on terrorism issues.

Ranked among the top 50 universities in the world, NTU has in place multi-country programmes and initiatives, many established through its strategic alliances with 300 institutions in more than 45 countries, including Massachusetts Institute of Technology, Stanford University, California Institute of Technology, Cornell University, Cambridge University, and Beijing University.

For more information, visit www.ntu.edu.sg

About Lien Foundation

The Lien Foundation was created in 1980 by Dr. Lien Ying Chow, an eminent business leader, banker and hotelier. His influence extended beyond the private sector and Singapore, as a community leader, diplomat and philanthropist.

The Foundation's current areas of focus are education, eldercare and the environment. It seeks to enhance:

- Educational opportunities for the underprivileged and the development of emerging fields of study
- Excellence in eldercare
- Environmental sustainability in water & sanitation

The Foundation believes in developing the capacity of institutions to address community needs and empowering individuals to reach their full potential. It is pioneering new ground for organized philanthropy in Singapore by convening strategic partnerships and catalyzing action on social and environmental challenges.



FACT SHEET

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About Lien Foundation - NTU Environmental Endeavour

Overview

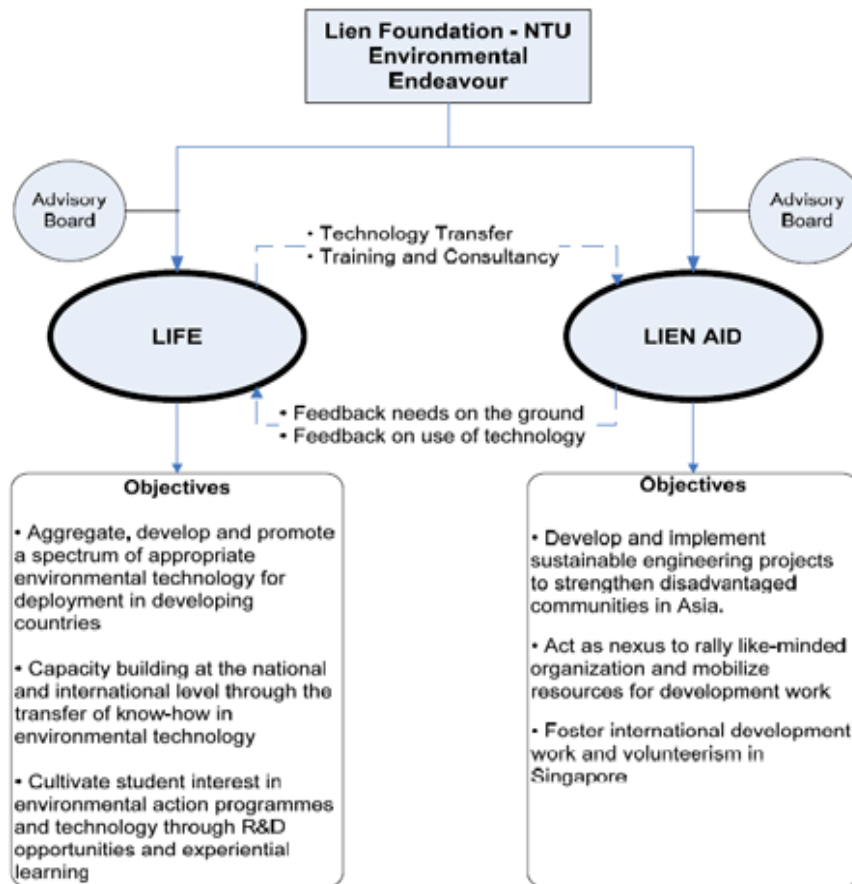
The Environmental Endeavour is embodied in two complementary entities: the Lien Institute for the Environment (LIFE) and LIEN AID. Both will work hand-in-hand to develop, implement and promote affordable, socially and culturally acceptable technologies and practices.

LIFE will explore, develop and promote the use of a portfolio of low-cost, small scale, culturally acceptable environmental technology and techniques that can be deployed in developing countries.

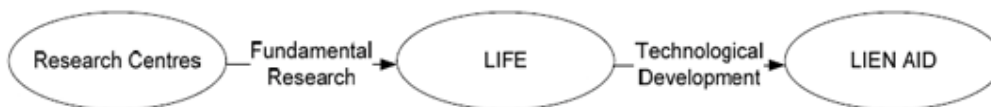
LIEN AID will pro-actively seek out the needs and deploy the appropriate technological know-how in the field through engineering-based community projects. This partnership between an **action driven R&D entity** and a **R&D-driven action entity** will be a distinct platform for Singaporean's to effectively service global environmental and social needs through innovative programmes and technology-based solutions.

(see Table 1)

Table 1



To grow its portfolio of environmental technology, LIFE's R&D staff will continuously aggregate and evaluate relevant research being done both locally and overseas. Promising research will be used to develop and produce the appropriate technologies. Working through LIEN AID and other NGOs, these technologies and ensuing products will be deployed in the field.



Working closely with LIEN AID, LIFE can then close the feedback loop on user needs and requirements. The Institute will ensure that engineering support like training, maintenance and servicing be appropriately designed to meet the indigenous operational constraints.

Inter-disciplinary studies will be considered for the development of relevant policies, paramount to ensuring that the improvements made to the community are long-lasting.

Technological development

CEE already houses a number of environmental technologies and techniques that can be deployed. Further engineering improvements are needed for robust, reliable and durable systems. This is crucial if the Environmental Endeavour is to produce long-term sustainable improvements to the target communities. Some of the technologies that LIFE will work on immediately include:

1. Water Production Technology

There are portable small-scale potable water treatment systems such as the one used in the aftermath of the 2004 Indian Ocean Tsunami for potable water production. Nine units were installed by NTU students in Meulaboh and the surrounding villages in Aceh. The unit takes water from sources that are contaminated by the tsunami and produces clean and safe water. The unit is hand-powered and thus does not require electricity and has low maintenance - excellent for use in rural areas.

Though sufficient for temporary relief, engineering development steps are needed to improve the unit for long-term use. Enhancements will be made so that the existing unit will be suitable for significantly larger scale and longer term deployments. Larger units, sufficient to sustain a small community or school will be developed. Additional improvements such as the incorporation of disinfection units would be explored. These units will be designed such that they can be deployed and maintained by the locals. Manuals will be written such that local workers with very limited technical skills can refer to.

2. Small Sewage Treatment Systems (SSTS)

SSTS is a biofilter-based system, a type of treatment process that consists of a bed of inert materials (e.g. plastics or stone) onto which microorganisms grow so as to promote aerobic degradation of sewage. Depending on the specific site conditions, a biofilter system can be easily manufactured and installed as the materials needed are readily found. SSTS can be adapted to any existing household waste treatment systems, e.g. septic tanks, or be used as a simple but efficient sewage treatment system. It is easy to operate, maintain and is scaleable to meet expanding needs.

Engineering developments steps are needed to translate SSTS into a technically efficient, cost-effective, and the environmentally friendly system. Local logistical and infrastructural conditions will have to be studied to identify the engineering parameters that will affect SSTS' design and performance. Prototypes will be built and tested onsite for usability and reliability. User manuals will be developed to ensure the local users know how to use the system.

3. Strengthening of Building Structures

Programmes will be initiated in earthquake-prone countries to systematically develop building materials. Training will be provided for local masons on the importance and use of these materials for the strengthening and repairing of masonry buildings. In the long run, local masonry buildings will be more earthquake-resistant and the local community will be trained to repair earthquake damaged buildings. This in turn reduces the number of lives lost due to unreinforced buildings.

We will also work with local authorities to develop emergency plans for public buildings such as schools.

4. Rapidly Deployable Shelters

The provision of large-scale shelters is vital in post-disaster relief operations. These temporary shelters serve as command centres, medical centres and relief camps. Thus the provision of lightweight economic, easy-to-assemble shelters would greatly expedite relief operations.

These are currently ready to be used in the field. Programmes would be initiated to train local communities and humanitarian relief groups on the installation and construction of these shelters.

5. Green Habitat Model

A Green Habitat that mixes local culture and philosophy with the above mentioned technical experiences will be developed. The Green Habitat can be built in a local residence or a school to demonstrate sustainable living and disaster-preparedness. The features of the Green Habitat may include:

- Reliable clean water supply
- Rainwater collection (through our training)
- Water conservation (through our training)
- Better health/sanitation with the small sewage treatment system
- Recovery of nutrients by using discharged effluent for watering/irrigation
- Produce fertilizer and biogas as an alternative distributed energy source
- Convert organic wastes into compost and/or fertilizer
- Earthquake-resistant building with an emergency plan

Successful implementation of such a model will be one of the first of its kind. Such a model will have long term effect in empowering the local community to becoming self-sufficient and self-reliant. If successful, the model could also be exported to other communities and empower many other communities as well.

For more information, please visit www.ntu.edu.sg/cee/life