

Open MIND



Books are one of the key tools MIND uses to raise awareness all over the world.

We are excited to share the news that the University of Cambridge Press has released his latest book on sustainomics titled "Sustainability in the 21st century" in June 2019. Hard copies are available at

hability+in+the+21st+century+by+m bhan+munasinghe&ref=nb_sb_noss The National Honours Ceremony 2019, at the BMICH on 19TH August 2019



His Excellency Maithripala Sirisena, President of Sri Lanka, bestowed the highest National Honour of Deshamanya on Prof. Mohan Munasinghe, for most distinguished contributions of a highly meritorious nature to the nation.

Prof. Mohan Munasinghe delivers a lecture on Sustainable Future for Sri Lanka

Public Lecture organized by the Cambridge University Society (CUS) of Sri Lanka

SSC Auditorium, Colombo, 10 June

An erudite audience of leading Sri Lankan intellectuals consisting of alumni of Cambridge University, UK and their guests were present on 10 June 2019, at a public lecture delivered by Prof. Mohan Munasinghe who shared the 2007 Nobel Prize for Peace, as Vice Chair of the UN Intergovernmental Panel on Climate Change (IPCC). The speaker was introduced by Mr. Stanley Obeysekere, President of CUS. The topic was **Balanced Inclusive Green Growth (BIGG) achieved by implementing the Sustainable Sri Lanka 2030 Vision and Strategic Path.**

The lecture was preceded by the soft launch of a new 700 page book by Prof. Mohan Munasinghe, just published by Cambridge University Press (the world's largest scientific publisher), titled Sustainability in the 21st Century: Sustainomics and Balanced Inclusive Green Growth (BIGG). The talk briefly summarized the main material in the book, which will also be the textbook used in a post-graduate course to be offered in China, in September 2019, to students at Peking University, Tsinghua University and Harbin Institute of Technology.



Prof. Munasinghe summarized the results of the recent report of the Presidential Expert Committee (PEC) on **the Sustainable Sri Lanka 2030 Vision and Strategic Path**, and how to implement it following a **Balanced Inclusive Green Growth (BIGG) pathway.** The PEC report is available on the Presidential Secretariat website.

Prof. Munasinghe advises government, business and civil society leaders in Portugal

Prof. Munasinghe was invited to Portugal to provide advice to government, business and civil society leaders regarding sustainable development goals (SDG) and climate change issues. He conducted a seminar on "The world after climate change" for a packed auditorium of 400 top level government officials, company CEOs and civil society leaders, on their role in addressing climate change and sustainability issues. The meeting was organized by The Economic Journal, a leading Portuguese newspaper that provided headline coverage of his visit (see attachments).

During his stay, Prof. Munasinghe was also Chief Guest at the Portugal National Cultural Festival, where he was received by Mayors of all the main cities in Portugal, toured the Festival grounds, and delivered a speech to the general public and students about sustainable development. Subsequently, he gave advice to the Lisbon Mayor's Office on implementing urban sustainability programs, after Lisbon recently



Prof. Mohan Munasinghe with His Excellency Joao Pedro Matos Fernandes, Minister of Environment and Energy of Portugal

Senior Research Fellow of MIND team completes his doctoral study on the sustainability of poultry production systems in Sri Lanka

Prof Mahinda Atapattu, is an academic attached to the Department of Animal Science, Faculty of Agriculture, University of Ruhuna. Prof Atapattu is also a senior research fellow of the MIND Institute. Recently he was awarded the Degree of Doctor of Philosophy on Sustainable Livestock Production Systems, from University of Ruhuna. The study compares the sustainability of backyard poultry production system and broiler production under naturally-ventilated open-house system and tunnel-ventilated closed house systems. Despite numerous studies aimed at specific aspects, backyard poultry production systems have not been studied from sustainability point of view.



Prof Atapattu's study aptly fills this gap of knowledge. The study also presents a set of indicators and technical threshold levels to be used in sustainability assessments of poultry production systems. Importantly, the study has determined the performance of a range of environmental indicators such as global warming potential, water footprint, on-farm eutrophication potential, nitrogen and phosphorus utilization efficiency of broiler production under open and closed house conditions in Sri Lanka. This information will serve as a valuable reference point for future sustainability studies both locally and globally.

What our scholars have been up to ...

• Shujan Suntheralingam – 14th Batch of scholars (Sept 2014 – August 2016)

University of Colombo School of Computing (UCSC)

Since he graduated from UCSC in 2015/16, through a swift career progression Shujan climbed up the ranks in the IT Services Industry by leading numerous Software Projects/Products. Currently he is working as Agile Product Owner at Digital Mobility Solutions Lanka widely known by the brand name 'PickMe', which is revolutionizing on-demand digital mobility space in Sri Lanka.

 Dinal Herath - 15th Batch of scholars (Sept 2015 - August 2016) University of Colombo - Science Faculty Currently a Computer Science PhD Candidate in State University of New York (SUNY).

Ms. Lihini Weerasinghe – 17th Batch of scholars (Sept 2017 – August 2018)

University of Colombo – Science Faculty

She shares her experience at the Asian Universities Alliance (AUA) Youth Forum held in November 2018. AUA, consists of 15 major Universities From around Asia. This Alliance strives to promote inter cultural tolerance, improved academic interaction and empowerment of students to contribute in seeking solutions to the prevalent global issues. University of Colombo is the only Sri Lankan University to be included in the group of prestigious Asian Institutions. The Youth forum was held under the theme "Life below Water" which is also one of the United Nations Sustainable Development Goals. Lihini made a contribution on "Practicing Sustainable Fishing", explaining how the approach couples tourism with the traditional fishing practices of the stilt fisherman in the South of Sri Lanka, and the traditional boat fishing in the area of Negombo.







Latest Research – Economic Valuation of Ecosystem Services to Community in Kalpitiya

MIND institute together with the Sustainable Ocean Resources Network (SORN), SOAS University of London and Sri Jayawardanapura University is conducting an economic valuation study in Kalpitiya Peninsula to inform policy for protection of ecosystems in the area.

Traditionally a fishing areas, Kalpitiya peninsula is increasingly affected by the tourism industry – increasing number of tourist hotels (large, small and micro scale), clearing land for commercial uses (mainly hotels (and decreasing yields in some instances), clearing of mangroves, damages to sand dunes, increasing industries such as aquaculture (prawn farming), salt farming (not so much related to tourism), crowded beaches, increasing boat traffic, and coastal development such as reclamation, erosion, accretion and sedimentation etc. are growing in the area. These activities have a variety of impacts, both positive (increased income for locals) and negative (harm to mangroves and other ecosystems).



DENGUE MENACE

By Dr. Ranjiva Munasinghe & Janith Kaluarachchi

MIND Analytics & Management

The female Aedes Aegypti mosquito, with characteristic black and white stripes or spots on its body, is responsible for transmitting the terrible Dengue virus. It is also called the break-bone fever due to the abdominal bone and muscle pain that occurs sometimes. Annually, there are an estimated 390 million cases of which 25,000 are fatal.

BACKGROUND

Dengue originated some 800 years ago amongst monkeys and was subsequently transmitted to humans. The virus was restricted to Africa and Southeast Asia until the mid-20th century when it began to spread globally. Latin American countries such as Brazil, Colombia and Venezuela have reported the greatest number of cases.

A significantly-higher number (above 50,000) of Dengue cases have been reported in Sri Lanka since 2016. Around 30% of Dengue patients in 2017 were children. There were 34,765 cases reported in Sri Lanka from January to July 2019, a 4.42% increase compared with the same period in 2018. Sri Lanka needs to take immediate and effective measures to control this deadly mosquito-borne malady. It

is our duty to ensure the protection of people before the untimed languishing of the future generation.

In 2017, Sri Lanka suffered an outbreak of Dengue that took 320 lives, with 186,101 cases having been reported. According to the WHO, it was significantly higher than the average number of cases reported since 2010. It can be seen from Figure 01 that there was an increase in cases reported in June-July and December-January.

Aedes Aegypti mosquitoes lay eggs in stagnant water. The positive relationship with monthly rainfall and cases of Dengue has been conducive in spreading the virus after the rainy season. Usually, Dengue cases are reported considerably after the inter-monsoon period following the North-East monsoon (March to April) and the inter-monsoon period following the South-West monsoon (October to November). The Western Province is the most threatened by Dengue. The most prevalent cases by districts for the year 2018 were Colombo (10258), Gampaha (5857), Batticaloa (4843), Jaffna (4058), Kandy (3832) and Kalutara (3155), having the highest reported number of cases.





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Source: Epidemiology Unit, Ministry of Healt

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ECONOMIC COST OF DENGUE

Studies have shown that the cost of Dengue in Colombo district hospitals in 2012 was Rs.325.6 million with an average cost of Rs.113,379.13 per patient. The study found that the average cost of managing a paediatric patient with DHF was Rs.79,656.40 (Health System Cost, 2012) based on data from the Colombo District. In particular, Divisional Secretariats including Dehiwala-Mt. Lavinia. Moratuwa, Kolonnawa, Nugegoda, Maharagama, Kesbewa, Kaduwela, Homagama, Padukka and Hanwella (all under the administration of Regional Directorate of Health) and



Colombo and Thimbirigasyaya (both under the Health Source:(Thalaga, 2012) The Study Based on Colombo District Department of CMC) were accounted for by this study. When calculating the costs of Dengue, relevant fixed and variable cost elements are taken into consideration including drugs and supplies, utility and maintenance, human resource and other subsidiary cost elements. This can be seen in

| | Pivot field names | | |
|---|-------------------|--------------------|-----------------------|
| Column 1 | LKR | Number of patients | Total average cost |
| Adult DF in the ICU | 64,733 | 6 | 388,396 |
| Adult DF in the Ward | 25,688 | 1,504 | 38,634,135 |
| Adult DHF in the ICU | 113,379 | 28 | 3,174,623 |
| Adult DHF in the Ward | 33,442 | 1,868 | 62,469,693 |
| Paediatric DF in the ICU | 31,855 | 8 | 254,839 |
| Paediatric DF in the Ward | 28,194 | 3,732 | 105,218,888 |
| Paediatric DHF in the ICU | 79,656 | 124 | 9,877,394 |
| Paediatric DHF in the Ward | 38,462 | 2,747 | 105,654,317 |
| Total cost of Dengue management per person | | | 325,672,286 |

Cost of management per personChart 01

Source: Epidemiology Unit, Ministry of Health

Figure 02.

Chart 01 explains the financial cost of managing paediatric and adult patients who suffered from Dengue or Dengue hemorrhagic fever. According to data provided by the Health Ministry, an average of Rs.60,048.56 was spent on a pediatric patient who suffered from Dengue fever and Rs.118,118.10 on hemorrhagic patients. Dengue An average of Rs.90,420.26 is allocated for adult patients who suffered Dengue from and Rs. 146,821.43 Dengue hemorrhagic Figure 03 for patients.

In addition to these visible cost elements, the roots of the financial burden of Dengue go much deeper. A study was conducted at Lady Ridgeway Hospital to investigate the external financial expenditure of break-bone fever. The study focused on analysing both expenses for the hospital as well as external costs for households. The study was conducted from December 1, 2012, to May 31, 2013, including three months of high disease incidence and three months of low incidence. 507 child patients aged up to 12 years were admitted to two wards and 137 observants who fulfilled the requirements were taken into consideration.

As illustrated by Figure 03, the total financial burden for the households of patients suffering from Dengue fever is Rs.3,965 and Rs.4,758 for Dengue hemorrhagic patients per illness episode. Food for parents, cost of transportation and lodging are considered under



non-medical costs and further investigation and cost of purchasing medicine are included in medical costs. A major element of indirect cost is the loss of working hours. Loss of work is not applicable in this study as all patients are below 12 years. But the loss of income to the household due to unpaid leave taken by parents has been considered as an indirect cost.

It is evident that Dengue has put a huge financial constraint on households. The poverty line of Sri Lanka is Rs.1,423, and 6.7% of the population live below the national poverty line, according to the Asian Development Bank. That implies the cost of treating Dengue (non-hemorrhagic) fever is 278.64% greater than the poverty line.

PREVENTIVE MEASURES

FIGURE 4 Cost of Dengue prevention -Colombo district



(Thalagala, 2012) The study based on Colombo district Cost item

- Equipment (Maintenance & annual capital)
- Fumigation & Larval reduction consumables
- Staff salaries (adjusted for dengue related activities)
- Transport (Maintenance only)
- Utility/maintenance cost of infrastructure facilities

Most of the affected countries have focused on the prevention of Dengue. Figure 04 shows the cost of Dengue prevention programmes implemented in the Colombo District. Fumigation consumables including kerosene oil, diesel, petrol, insecticides and larval reduction consumables including abate granules and liquids, BTI local and bativec liquids have been taken into account. The required machines, vehicles, infrastructure and other relevant elements were also considered. In Sri Lanka, the emphasis is on fumigation and raising awareness.

In other countries, communities seem to be much more aware of Dengue prevention and elimination. They have implemented advanced and innovative projects to control the virus physically, biologically and chemically. A successful biological project has been tested in many countries including Townsville-Australia, Panama, Brazil, Colombia, Indonesia and Vietnam. They have released captive-bred male mosquitoes with a naturally occurring bacteria called "Wolbachia" to mate with local mosquitoes. The bacteria hinder Dengue transmission and today, researchers of Monash University believe that the same method can be used to control "Zika" and "Malaria."

The project cost 15 Australian Dollars per person in Townsville. In Lahore, Pakistan, a mobile application called 'Clean Lahore' was created as a response to the rapid spread of the virus. The general public can make complaints on uncleanness and improper waste collection through the application with live pictures, live GPS location and comments. This proved to be very successful in reducing the number of cases. In Brazil, the Vector Species Genetic Modification method was tested and resulted in an 85% decline in the Aedes Aegypti population. This method works by releasing genetically-modified vector species of mosquitoes to the environment.

All countries are trying their best to reduce the spread of the virus in order to protect human lives from Dengue. According to the research conducted based on the Colombo District, the estimated per capita cost of Dengue prevention and control in Colombo was Rs.55.10 (USD 0.43) in 2012. It is just USD 0.03 per person monthly which lags behind USD 0.13 per month in Panamaand USD 1.88 per month in Cuba. It is clear that Sri Lanka could do more to allocate funds to implement projects that can curb the spread of the malady.