

CONFERENCE SUMMARY REPORT

The World Conference on Waste Management (WCWM 2019)

“Towards a Sustainable Future through Strategic Waste Management”

7th and 8th March 2019

Taj Samudra Hotel,

Colombo, Sri Lanka

Madumi Rasangika Kariyawasam (Conference Rapporteur)

TABLE OF CONTENT

Introduction	3
Speech by the Conference Co-Chairs.....	4
Guest speech	5
Keynote Forum:	
"Circular Solutions – Waste and Resource Management for Sustainability"	5
"Finding the Right Way to Take Care of MSW Leachate"	6
Special Award	7
Workshops:	
Industrial workshop by INSEE Eco cycle	7
Workshop 1 - "Be a Leading Activist on Waste Management"	7
Workshop 2 - "Managing and Controlling Waste in the Workplace for a Sustainable Business"	8
Technical Session 01: Waste Management, Reduction, and Reutilization	10
Technical Session 02: Waste Modeling	11
Technical Session 03: Waste Oil and Waste Water Recycling	11
Technical Session 04: Waste Management & Social Issues	12
Technical Session 05: Plastic and E-waste Management	13
Technical Session 06: Waste Generation and Composting	13
Online Video Presentation	15
Poster Session	15
Conference Closure	15

INTRODUCTION

The 1st world Conference on Waste Management in Sri Lanka (WCWM 2019) was held on 7th and 8th March 2019 at Taj Samudra Hotel, Colombo, Sri Lanka. The Conference was organized by The International Institute of Knowledge Management (TIKM), under the theme “Towards a Sustainable Future through Strategic Waste Management” in close collaboration with the Center for Sustainability, University of Sri Jayewardenepura, Sri Lanka.

The conference began with opening remarks by Mr. Isanka P. Gamage, co-founder & managing director of the TIKM, and continued with keynote forums, workshops, and presentations. With respect to registrations, the conference brought together over 47 participants from 12 countries, representing government agencies, civil society, academia, and the private sector.

The conference was chaired by Dr. Dongbei YUE, Associate Professor and Associate Dean, School of Environment, Tsinghua University, China and Dr. Randika Jayasinghe, Head of the Department, Department of Biosystems Technology, Faculty of Technology, University of Sri Jayewardenepura. Guest Speech of the conference was delivered by Mr. S.M.Madawalagama (Director, Solid waste division, Ministry of internal and Home Affairs and Provincial Councils and Local Government, Sri Lanka).

The keynote forum was enlightened by keynote speeches by Prof. Margaret Bates (University of Northampton, England) on the topic “Circular Solutions – Waste and Resource Management for Sustainability” and, by Dr. Dongbei YUE (Tsinghua University, China) on "Finding the Right Way to Take Care of MSW Leachate”.

The conference provided a solid platform for participants across the globe to share their research findings with one another and to discuss their ideas in relation to the field waste management. The Conference comprised of six (06) technical sessions. The technical sessions are as follow:

- Waste Management, Reduction, and Reutilization
- Waste Modeling
- Waste Oil and Waste Water Recycling
- Waste Management & Social Issues
- Plastic and E-waste Management
- Waste Generation and Composting

In recognition of innovations in the waste management sector in Sri Lanka, two special awards were conferred to Mr. Suresh Madushan for UCEMB Application Innovation, and to Mr. Lahiru Wijerathna for the First Yogurt Cup Recycling program in Sri Lanka.

The conference workshops were conducted as an interactive session by Dr. Randika Jayasinghe and Prof. Margaret Bates respectively on "Be a leading activist on Waste Management" and "Managing and controlling waste in the workplace for a Sustainable Business". An industrial

workshop was conducted by Ms. Arusha Hemamali from INSEE eco cycle; industry partner of the Conference.

SPEECH BY THE CONFERENCE CO-CHAIRS

Dr. Dongbei YUE, Associate Professor and Associate Dean, School of Environment, Tsinghua University, China

Dr. Dongbei YUE welcomed the gatherings to the 1st world conference on waste management in Sri Lanka. Sharing the China experience with the participants, Dr. Dongbei YUE explained waste management practices, emerging trends, the drawbacks in the current waste management system in China.

“Waste issues are always complicated” conveyed the importance of immediate actions in waste management. Dr. Dongbei indicated waste management as a global issue and discussed the significance of powerful strategies and stakeholder participation in addressing sustainable waste management solutions.

Lastly, he appreciated the TIIKM for organizing this conference which is requisite for this emerging field of waste management.

Dr. Randika Jayasinghe, Head of the Department, Department of Biosystems Technology, Faculty of Technology, University of Sri Jayewardenepura

Co-Chair of WCWM 2019, Dr. Randika Jayasinghe delivered a welcome speech at the inaugural session appreciating participants to the conference. She identified waste management as one of the biggest challenges in Sri Lanka. “Mounting of plastic made Sri Lanka among the top countries in ocean pollution” she mentioned while reminding the pathetic incident of Meethotamulla garbage collapse, which made a waste disaster in Sri Lanka.

Dr. Randika reviewed the importance of the management actions of improper garbage dumping sites. She shared some media publications on the waste issue related threats to wildlife as an eye-opening to the participants.

With the wealth of knowledge and experience gathered Dr. Rangika Jayasinghe indicated waste management as a “Social, Political Challenge”. she introduced some sustainable innovative applications using waste as a raw material, “waste is not a problem, But a resource” further “We need to find better projects to address this problem in a sustainable manner”

Guest Speech by the Mr. S.M. Madawalagama

(Director, Solid Waste Division, Ministry of Internal and Home Affairs and Provincial Councils and Local Government, Sri Lanka)

Mr. S.M. Madawalagama (Director, Solid Waste Division, Ministry of Internal and Home Affairs and Provincial Councils and Local Government, Sri Lanka) delivered an introductory speech on waste management regulation in Sri Lanka. He introduced the National Solid Waste Management Support Center, Sri Lanka and discussed its duties and responsibilities in waste management.

Mr. Madawalagama highlighted the importance of having a National Policy on Waste Management, current waste management issues, waste management actions and success stories on waste management in Sri Lanka. He pointed out strict necessity on waste segregation and requested to promote waste segregation. "Sri Lanka generates 56% of biodegradable waste, a resource potentially compostable." was highlighted by Mr. S.M. Madawalagama discussing the movement to a circular model from the current linear model to achieve sustainable waste management.

As a special concern, Mr. Madawalagama emphasized water pollution and dengue problems as the reward of inefficient waste management. The necessity of having developed technology, creative innovations, improved transportation were debated for sustainable waste management and he left the words "we are in a way to solve the waste problem. But we have to do it wisely without creating any future burden"

KEYNOTE FORUM

"Circular Solutions - Waste and Resource Management for Sustainability"

Prof. Margaret Bates (University of Northampton, England)

Prof. Margaret Bates, University of Northampton, England delivered the first Keynote address of the conference on "Circular Solutions - Waste and Resource Management for Sustainability". Introducing the linear and circular economy concepts Prof. Margaret depicted circular economy model as a sustainable solution, giving real-world examples from the UK. She mentioned access to material as an important fact in sustainable economic growth and the increasing material prices and insecurity of supply as major threats to the growth of the UK economy.

She discussed the opportunities for businesses to move into the circular system. Prof. Margaret highlighted whole waste hierarchy, new product designing, the value of secondary products, innovation of new business models, the collaboration of entire supply chain, and energy from

waste as important drivers in maintaining the circularity of the system. She exchanged her knowledge on some models effective in the UK, such as Product service systems, Dematerialized services, Hire & leasing practices, Incentivized return & re-use, Asset management, Collection of used products, use of long life products and discussed the value of such applications in sustainable waste management.

She introduced REBus project in the UK as a part of a resource-efficient business model and highlighted recycling as key sustainable waste management activity in either economic or environmental terms. PolyCE project which encourages the use of recycled plastics to reduce the extraction of virgin material and the post-consumer plastic recycling was discussed as a sustainable initiative. Further, discussed the barriers, benefits, and responsibility of the government in implementing the circular economy model.

"Finding the Right Way to Take Care of MSW Leachate"

Dr. Dongbei YUE (Associate Professor and Associate Dean, School of Environment, Tsinghua University, China)

Starting from a brief introduction on Tsinghua University, China, Dr. Dongbei YUE commenced his keynote speech at the conference. He simply mentioned leachate as a liquid waste emerging from the waste facility. "Leachate is mainly from landfills but in China incineration plants are also responsible due to the higher number of plants" Dongbei YUE mentioned. He discussed the composition of leachate, its complexity and the factors that affect the composition stressing the importance of leachate treatment. "If leachate is not treated before its quality and composition get changed it is harder to treat" mentioned by Dongbei YUE.

Dr. Dongbei YUE explained the evolution of leachate treatment process from ancient biological treatment to modern membrane retentate treatment. He emphasized the treatment of landfill leachate on-site as a must in leachate management in China. Though all authorized landfills in China equipped with leachate facilities insufficient funds and low worker capacity are barriers for onsite treatment in China he mentioned.

He discussed the potential impacts of publicly owned treatment plants which contain common and emerging contaminants enabling serious environmental pollution. Finally prof. Dongbei mentioned leachate treatment and its management using systematic strategies will lead to a suitable future as there is no best solution, but suitable solutions.

SPECIAL AWARDS

Mr. Suresh invented an application of artificial intelligence to address waste issues by innovating a mobile app called UCEMB app. This waste management app is currently used in the Urban Council of Embilitpitiya and it allows to view both garbage trucks and trash markers enabling an efficient waste disposal system in that area. Despite being aimed at waste management, this app consists of a number of other features encouraging its use.

Mr. Lahiru Wijerathna who awarded for First Yogurt Cup Recycling program in Sri Lanka mentioned: “It is not eliminating waste, Lets Recycle”. Further, he stressed that the final product of this innovation, the seed trays have many producers but have to think of sustainable production to address social and environmental issues.

WORKSHOPS

Industrial workshop by INSEE Eco cycle

INSEE Eco cycle is the industrial waste management arm of INSEE Group that enables industries to manage industrial waste in a sustainable manner through an innovative initiative. Ms. Arusha Hemamali forms the INSEE addressed on typical waste management in Sri Lanka mentioned that they have identified 23 critical waste problems currently in Sri Lanka. Answering to that in INSEE they use co-processing technology in managing industrial hazardous waste inlining with sustainable development. At INSEE they monitor emitters in accordance with EU standards ensuring environmental sustainability.

Support of INSEE in national projects to prevent waste from polluting the environment such as kokanee disposal, disposal of milk powder with melamine, a dump of waste at the national cancer hospital and the biggest chemical disposal the 2018 dangerous cargo disposal recalled their contribution towards sustainable waste management. She further mentioned recently INSEE is partnering with local authorities to manage municipal solid waste that assists waste problems to find a sustainable solution.

“Be a Leading Activist on Waste Management”

Dr. Randika Jayasinghe (Head of the Department, Department of Biosystems Technology, Faculty of Technology, University of Sri Jayewardenepura, Sri Lanka)

The Workshop session involved many interactive discussions, which covered various topics in relation to solid waste management (SWM). In addition to the best management practice, Dr. Randika discussed on converting waste into a resource, the ways to create awareness and the

role of waste management activist in waste management. She questioned from the audience "Are you aware of where your trash ended up" and discussed the NIMBI concept as an eye-opening. She stressed the importance of Practice than building concepts in waste management.

Dr. Randika discussed on different plastic types, their recyclability, available market demand and encouraged waste separation as it is a complicated issue if they are in the form of mixed waste. Sharing her experience provided a platform for the participants to gain insight into some products that added value to waste. She demonstrated on upcycling products "something different from waste for a better product" by illustrating examples from the local level and also highlighted the opportunities for waste to wealth jobs in Sri Lanka.

Introduction of upcycling products made the workshop more enthusiastic and deeply discussed on the product, their durability, cost-effectiveness, market demands answering the questions arisen from the audience. Dr. Randika shared her experience in working with communities innovate products from waste materials.

"Every manufacturing company in Sri Lanka generates plastic waste in the form of packing, spare parts and etc" she mentioned. Further, she revealed starting a waste business without understanding the waste environment as a suicidal attempt. She mentioned "people in Sri Lanka are price conscious but not environmentally conscious" so quality materials, sustainable markets, branding, and quality control are challenges because of the competitiveness in the market.

Audience questioned on actions to avoid microfibers, the available platform for sharing knowledge on upcycling, and industry level waste based production. "Move to cotton, reduce the use of products which use microplastic particles and microfibers, it's a social responsibility and universities have special a role in creating such platforms, it is encouraged to collect materials directly from industries than collecting from the landfills which adds a bad image" she answered.

"Managing and Controlling Waste in the Workplace for a Sustainable Business"

Prof. Margaret Bates (University of Northampton, England)

The workshop "Managing and controlling waste in the workplace for a sustainable business" mainly focussed on sustainable waste management solutions, to save money in businesses in the UK, to use as a model in promoting sustainable business in other countries. Prof. Margaret Bates the resource person of this workshop introduced the legal definition for waste in Europe discussing the ways that UK companies waste money on waste disposal.

Discussing the waste hierarchy, Prof. Margaret mentioned recycling as a good option in waste management, but reminded the hidden cost and environmental impacts of recycling as it uses energy and water while creating different types of waste. Considering the waste disposal which is at the bottom, “Cost of Waste isn’t just the Cost of Waste Disposal” she highlighted the importance of identification of true cost of waste as we only consider easily identified cost but not the hidden costs.

Giving examples from UK businesses she described her experiences on cost savings and environmental savings. She introduced the use of sustainable disposable methods, recycling of resources, reusing resources, replacing instruments with energy efficient equipment, water saving and looking at all other aspects of environmental performance as a strategy for a sustainable and profitable business.

Prof. Margaret explained waste minimization concept as it reduces waste generation, pollution, conserve resources and reduce the burden on waste disposal which is profitable in term of economy. She mentioned, "Businesses usually underestimate the true cost of their waste" which gives inaccurate information on waste disposal cost which is only a bit of waste management.

She identified time pressure, perceived costs, lack of understanding of the issues, Lack of management commitment, Lack of shop floor commitment as barriers and further discussed the most preferable ways to save cost, achieve waste minimization in order to implement sustainable waste management in businesses.

The workshop provided space to discuss the key initiatives within a business/institution to increase the profit by managing its business environment. She addressed the solutions to above barriers and mentioned the selection of company champions, green teams, and an increase of staff awareness as efficient drivers to a sustainable business.

TECHNICAL SESSIONS

Technical Session 01: Waste Management, Reduction, and Reutilization

Chaired by: Prof. Wing Keung Law, Nanyang Technology University, Singapore

Evaluated by:

Dr. Dongbei Yue, Tsinghua University, China

Dr. Randika Jayasinghe, University of Sri Jayewardenepura, Sri Lanka

Presenter/s Name	Topic
Rahman A (School of Business, Independent University, Bangladesh)	Using Market-Based Instruments in Managing Municipal Solid Waste Problem. The Case Study of Dhaka City
¹ Kaluarachchi M.S, ¹ Waidyasekara K.G.A.S, ² Rameezdeen R. (¹ University of Moratuwa, Sri Lanka, ² University of South Australia, Australia)	Environmental Behavior of Construction Workers on Waste Management at Construction Sites
¹ Zimar A.M.Z, ¹ Aslam Saja A.M, ² Haraguchi M. (¹ South Eastern University of Sri Lanka, ² Harvard Kennedy School, Cambridge, Massachusetts, USA)	Role of Municipal Council in Solid waste Management- Current Practices and Future Challenges in Sri Lanka
H.M.S.C.H.Bandara, G. Thushanth, H.M.C.C. Somarathna (University of Jaffna)	Feasibility of Concrete Containing Recycled Concrete Aggregates
Muthukumara S.A.U.R, Jayasinghe G.Y, (Faculty of Agriculture, University of Ruhuna, Sri Lanka)	Present Status, Roles and Challenges of Local Government Authorities in Solid Waste Management in Sri Lanka- A review

Highlights of the Session:

The session investigated current waste management practices, Challenges, and Solutions in implementing sustainable waste management. Rahman mentioned waste as a market failure in the absence of correct pricing and illustrated the necessity of market-based instrument to address municipal solid waste management. Kaluarachchi M.S addressed the behavioral contribution of workers at construction sites towards the waste production and management and found the possibility to reduce the environmental impacts by increasing the awareness on negative environmental impacts of construction waste among workers. Zimar A reported municipal solid waste management as a major challenge in Sri Lanka and stressed the importance of strict regulations and proper implementation and monitoring in addressing waste issues in Sri Lanka. H.M.S.C.H.Bandara experimentally investigated the feasibility of using Recycled concrete aggregates as coarse aggregates in concrete. In finding a sustainable solution to address the construction and demolition waste, depletion and scarcity of natural sources, increasing production cost and strict environmental regulations he delivered recycle concrete

aggregates as a solution. Muthukumara S.A.U.R discussed the importance of an effective waste management system for Sri Lanka mainly focusing on reuse and reduction instead of promoting waste collection and disposal.

Technical Session 02: Waste Modeling

Chaired by: Prof. Aminur Rahman, Independent University, Bangladesh

Evaluated by:

Dr. Randika Jayasinghe, University of Sri Jayewardenepura, Sri Lanka

Prof. Margaret Bates, University of Northampton, England

Presenter/s Name	Topic
Nevrlý V, Šomplák R, Smejkalová V, Khýr L, Pavlas M (Faculty of Mechanical Engineering, Brno University of Technology, Czech Republic)	Quantification and Assessment of Collection Costs for Various Systems
Adrian C. H. Lai, Adrian Wing-Keung Law (Nanyang Environment and Water Research Institute(NEWRI), Nanyang Technological University, Singapore)	Effects of Pyrolysis Kinetics on Incineration Modeling
¹ Aslam HMUA, ² Butt MAb, ² Bareen F-, ² Shafiq M, ³ Butt FA, Shahid M ² , Javaid A ² , and ² Husnain A (University of Management and Technology, Pakistan. ² University of the Punjab, Pakistan, ³ Albert Ludwigs University, Germany)	Organic waste Composting: A Resource Recovery Approach towards Sustainable Environment

Highlights of the Session:

The session explained the use of computer models to predict solid waste generation, collection capacity, and electricity generation from solid waste to obtain sustainable waste management. Nevrlý.V introduced a method to calculate the route planning for waste collection vehicles, to facilitate an efficient waste collection. Adrian C. H explained an incineration model which accounts drying and pyrolysis processes enabling to optimize the design and operation of an incineration plant.

Technical Session 03: Waste Oil and Waste Water Recycling

Chaired by: Dr. Lai Chun Hin Adrian, Nanyang Technology University, Singapore

Evaluated by:

Dr. Dongbei Yue, Tsinghua University, China

Dr. Randika Jayasinghe, University of Sri Jayewardenepura, Sri Lanka

Presenter/s Name	Topic
Oshinusi O.H, Gray G.M (The George Washington University, U.S.A)	Evaluation of PM Emissions of a Diesel Engine Fueled with Waste Cooking Oil Biodiesel: A Systematic Review
Li Zhou, YQ Jin (Institute for Thermal Power Engineering, Zhejiang University, China)	Removing Organic Oil from Sintered Neodymium-Iron-Boron Scraps by Solvent Extraction for Recycling
¹ K. Kirujika, ² S. Kreshaanth, ² C. Gunathilake, ¹ D.T.Udagedara, ² A. Manipura (¹ Uva Wellassa University of Sri Lanka. ² Faculty of Engineering, University of Peradeniya, Sri Lanka)	Investigation of Electrochemical Denitrification of Prawn-Farm Wastewater
¹ M.M. Prabhakaran, ¹ P.K. Chandravathi, ² D.J. Killedar (¹ Saras Engineering and Environ Consultants, Kerala, India. ² SGSITS, Indore, MP, India)	Detergent Removal from Waste Water- A Solution Using Locally Available Waste

Highlights of the Session:

Oshinusi O.H mentioned comparatively low PM emitted biodiesel from waste cooking oil as a sustainable alternative for conventional petroleum diesel. Li Zhou explained the formation of oily sludge scraps from sintered NdFeB magnets and the importance of recycling of NdFeB waste to mitigate the strains and risk of a shortage of rare earth elements. In solving the wastewater problem K. Kirujika was introduced an electrochemical method to remove nitrate from wastewaters of prawn industries and M.M. Prabhakaran highlighted a solution for waste using waste as a resource. He introduced locally available waste materials to remove detergent from wastewaters as a sustainable solution.

Technical Session 04: Waste Management & Social Issues

Chaired by: Dr. W.J.S.K. Weerakkody

Evaluated by:

Dr. Dongbei Yue, Tsinghua University, China

Prof. Margaret Bates, University of Northampton, England

Presenter/s Name	Topic
¹ Pavlas M, ¹ Dvořáček J. Gregor J. ¹ Kropáč J., ¹ Šomplák R, ² Pitschke T, (¹ Faculty of Mechanical Engineering, Brno University of Technology – VUT Brno, Czech Republic, ² Bifa Umweltinstitut GmbH, Germany)	Environmental Benefits of Biowaste Treatment Methods
Ashish Khanal (Kathmandu University, Nepal)	Occupational Health Hazards of Itinerant Waste Buyers (IWBS) In Kathmandu, Nepal
Darshani D.B.M, Jayasena H.A.E.C, Soorige S.D.A (University of Moratuwa, Sri Lanka)	Applicability of Zero Waste Concept in the Hotel Sector in Sri Lanka

Highlights of the Session:

The session explained the social issues related to waste management. Ashish Khanal discussed on occupational health hazard of waste collectors while Darshani D.B.M introduced the importance of zero waste concepts in eliminating landfills. The session concluded the use of protective equipment, personal guidance, and awareness of environmental safety as an important factor in sustainable waste management to address social issues.

Technical Session 05: Plastic and E-waste Management

Chaired by: Prof. Wing Keung Law, Nanyang Technological University, Singapore

Evaluated by:

Prof. Margaret Bates, University of Northampton, England

Dr. Randika Jayasinghe, University of Sri Jayewardenepura, Sri Lanka

Presenter/s Name	Topic
¹ Galagoda, R.U, ² Jayasinghe, G.Y. (¹ University of Sri Jayewadenepura, Sri Lanka. ² University of Ruhuna, Sri Lanka)	Micro Plastic Pollution on Coastal Ecosystems and Marine Waters in Sri Lanka

S. Sanjith, W. Priyantha, H.M.C.C. Somarathna, D.S. Sampath (Faculty of Engineering, University of Jaffna, Sri Lanka)	Uniaxial Tensile Characteristics of Natural Fiber Composites from Banana Fibre and Thermoplastic Waste
Liyanage K.L.A.K.T, Waidyasekara K.G.A.S, Mallawaarachchi H. Pandithawatta T.P.W.S.I (University of Moratuwa, Sri Lanka)	Conceptual Framework to Enable Zero Waste in Construction Industry

Highlights of the Session:

This session explained the importance of awareness and new engineering designs of plastic waste to achieve sustainable waste management. Galagoda, R.U indicated the impact of microplastic as a global threat to human health due to ocean pollution and bio amplification. S. Sanjith introduced a natural fiber composite made of recyclable natural and plastic waste to use as an alternative for structural and infrastructural construction applications. This session explained the importance of new engineering designs and awareness of plastic waste to achieve sustainable waste management.

Technical Session 06: Waste Generation and Composting

Chaired by: Dr. Lai Chun Hin Adrian, Nanyang Technological University, Singapore

Evaluated by:

Dr. Dongbei Yue, Tsinghua University, China

Prof. Margaret Bates, University of Northampton, England

Presenter/s Name	Topic
^{1,2} Thiel F, ³ Pushpakumara A.W.S., ¹ Marschner B ³ Weerakkody W.J.S.K. (¹ Ruhr University Bochum, Institute of Geography, Germany, ² International Water Management Institute, Resource Recovery & Reuse, Sri Lanka, ³ Wayamba University of Sri Lanka, Sri Lanka)	Co-Composting of Fecal Sludge and Organic Solid Waste as a Resource for Agriculture
D.G.M.M Dodawatta, Dr. S.S Kariyawasam (University of Moratuwa, Sri Lanka)	An Investigation on the Influence of Household Attitudes and Behavior for Performance of Solid Waste Management System in Sri Lanka: Application of Q Methodological Approach
Jayasekara K.T.R, Dinugala H.P (University of Sri Jayewardenepura, Nugegoda, Sri Lanka)	Estimating Per Capita Solid Waste Generation in Households for Effective Waste Management System
^{1,2} Thiel F., ³ Rathnathilaka A.T.D., ¹ Marschner B ³ Weerakkody W.J.S.K. (¹ Ruhr University Bochum,	Analysis of Municipal Solid Waste Compost on Compliance with Sri Lanka Quality Standards

Institute of Geography, Germany. ² International Water Management Institute, Resource Recovery & Reuse, Sri Lanka, ³ Wayamba University of Sri Lanka, Sri Lanka)	
¹ N.W.S. Kumarasena, ¹ D.I.C. Gurusinghe, ¹ R.C. Wijemanna, ² M. Balakrishnan, ² N. Srivastava, ³ R. Batra, ³ S. Pathan, ⁴ M.M. Moller (National Cleaner Production Centre (NCPC), Nugegoda, Sri Lanka. ² The Energy and Resources Institute (TERI), Darbari Seth Block, India Habitat Centre, India. ³ STENUM Asia Sustainable Development Society, India. ⁴ Austria Recycling, Wipplingerstrasse, Austria)	Sustainable Construction Through Waste Management in the Metal Product Supply Chain in Sri Lanka

Highlights of the Session:

The session mainly scrutinized on finding sustainable solutions to waste generation, especially for biodegradable solid wastes. D.G.M.M Dodawatta investigated the relationship between household attitudes and behavior on waste management performance in Sri Lanka. Jayasekara K.T.R proved the correlation between income and waste generation in the household enabling to select the best waste management system before implementing actions. Thiel F and Rathnathilaka A.T.D discussed on composting as an organic matter recovery action from organic municipal waste. Further discussed on quality standards and the benefits as sustainable action for addressing waste issue. N.W.S. Kumarasena

ONLINE VIDEO PRESENTATION

Pramita S. K, Dr.Mamatha S. V, Abhishek Gowda S, Mhatre Prathamesh, Deeksha R, Srikanth U (Ramaiah University of Applied Sciences, India)	A Study on Challenges for Adoption of Reverse Vending Machine: A Case of North Bengaluru, India
---	---

Pramita S explained the use of Reverse Vending machine as an effective solution for plastic waste disposal. She recommended to increase awareness, mandate more legislation and policies to encourage citizens to use reverse vending machines to keep the environment plastic free.

POSTER SESSION

Chaired by: Dr. Dongbei Yue, Tsinghua University, China

Presenter/s Name	Topic
Nayanika S.A.D, Danthurebadara M (University Of Peradeniya, Sri Lanka)	Study on Renewable Energy Consumption Potential for Electricity Generation as A GHG Mitigation Option in Sri Lanka
Šomplák R, Janošťák F, Nevrlý V, Smejkalová V, Pavlas M (Faculty of Mechanical Engineering, Brno University of Technology, Czech Republic)	Improvement of Waste Reverse Logistics Model by Complex Transportation Cost Analysis
¹ D.M.K.G Dissanayake, A.C.A. ¹ Jayasundara, ² H.D.S Chamruk (¹ University of Peradeniya, Peradeniya, Sri Lanka, ² Siam City Cement (Lanka) Ltd, Puttum, Sri Lanka)	Comparative Study on Desulfurization of Waste Rubber Pyrolysis Oil in Sri Lanka
¹ Smejkalová V, ¹ Šomplák R, Nevrlý V.1, ¹ Pavlas M (¹ Brno University of Technology, Czech Republic)	Forecasting of Waste Production Using Confidence Interval Estimation

CONFERENCE CLOSURE AND AWARDING

Mr. Duminda Koralagamage expressed the gratitude for the following organizations partnered the ‘WCWM 2019’: Academic Partner – Center for Sustainability, University of Sri Jayawardenepura; Industry Partner – INSEE Ecocycle; Strategic Partner – Colombo Plan; Tour and Accommodation Partner – GlobeEnjoy Tours; Events Partner – Blue Arc

The two-day conference was concluded on the 8th March 2019 with the awarding of outstanding presenters. The conference was adjourned following the announcement that the 2nd World Conference on waste Management 2021 will be held in Sri Lanka.

Session Best Awards

Session: Waste Management, Reduction and Reutilization

H.M.S.C.H. Bandara (University of Jaffna, Sri Lanka)

Session: Waste Modling

H. M. U. A. Aslam (University of Management and Technology, Pakistan)

Session: Waste Oil and Waste Water Recycling

K. Kirujika (Uva Wellassa University of Sri Lanka, Sri Lanka)

Session: Waste Management & Social Issues

M. Pavlas (Faculty of Mechanical Engineering, Brno University of Technology – VUT Brno, Czech Republic)

Session: Plastic and E-Waste Management

S. Sanjith (Faculty of Engineering, University of Jaffna, Sri Lanka)

Session: Waste Generation and Composting

F. Thiel (Ruhr University Bochum, Institute of Geography, Germany)

Best Student Award: K. Kirujika (Uva Wellassa University of Sri Lanka, Sri Lanka)

Overall Best Award: F. Thiel (Ruhr University Bochum, Institute of Geography, Germany)