ISWA WORLD CONGRESS 2022

'Don't Waste Our Future' theme of this year's ISWA World Congress

The global event by the International Solid Waste Association will take place in Singapore from Sep 21-23. BY NARENDRA AGGARWAL

DON'T Waste Our Future is the theme of the 3-day International Solid Waste Association (ISWA) World Congress 2022 taking place in Singapore from Sep 21-23 at the Sands Expo & Convention Centre

The global meeting is set to receive 1,000 foreign and local delegates. It also includes technical site visits and a cultural and social programme where professionals, government officials, industry leaders, academics, policymakers and scientists will exchange views on sustainable solid waste management.

The ISWA World Congress is a key international solid waste management event and this year, its 38th edition will be hosted by the Waste Management and Recycling Association of Singapore (WMRAS).

WMRAS was set up in 2001 as a not-for-profit trade association for solid waste management to advocate best practices, and to share and transfer knowledge between industry players, the government and community.

Key themes at this year's 2022 ISWA World Congress include sustainability – even in waste management; circular economy; robotics; and blockchain.

The Congress will take place both on-site and online, reflecting the realities of the post-Covid world. Of the 1,000 in-person attendees, 60 per cent are expected to come from overseas.

A highlight of the ISWA World Congress will be 35 booths on site, with a big Singapore Pavilion.

ISWA is an international network of waste professionals and experts whose mission is "to promote and develop sustainable and professional waste management worldwide and the transition to a circular economy".

It hopes to achieve this by bringing together waste experts from around the world to network, create best practices, produce industry reports, as well publish its own scientific journal, *Waste Management and Research*.

This year's Congress will highlight the human impact on the environment with targets to promote economic growth, increase efficiency in production and consumption, sustainably manage waste and resources, and to take action to tackle climate change.

ISWA also plans to release a white paper on available technologies in the field of waste to energy at the upcoming Congress. The white book on energy-from-waste (EfW) technologies will help stakeholders involved in the development of municipal waste management solutions in countries where EfW is not yet a familiar solution.

With the increasing number of large cities where waste collection and climate change are becoming major concerns, this project is one of the many urgent and positive solutions for the global community, says ISWA.

The association also plans to release a report on sustainable collection and transport technologies at the 2022 Congress. Led by the Working Group on Collection and Transportation Technologies and funded by the NVRD (Dutch Solid Waste Association), this project, launched following dialogue with international experts, aims to benchmark international best practices in collection and transport.

The project aims to find strategies to improve air quality within cities, through an analysis on low emissions or emissions-free vehicles. The focus of the work will be on developments and best practices in upper-middle income economies and high-income economies, says ISWA.

This year's Congress will highlight the human impact on the environment with targets to promote economic growth, increase efficiency in production and consumption, sustainably manage waste and resources, and tackle climate change. PHOTO: PIXABAY

Financing waste management is another key issue, said the association. Studies show that waste generation could rise significantly in the coming decades, driven by population growth and increased affluence. The waste management industry provides adaptable and scaleable solutions suitable for different communities, and can meet the challenge of collecting, transporting, and treating this waste, while extracting value from it and utilising energy within it – all while minimising harm to people and the environment.

Several parts of the world, however, still lack well-functioning waste management services. Securing the funding to provide these services is a challenge, and only a small fraction of international development investment and aid goes towards waste management, says ISWA.

To increase funding for waste management services, the sector must demonstrate and communicate the value of sustainable and efficient waste management, and actively engage in making itself attractive to available financing mechanisms.

Other topics that will be discussed in the ISWA World Congress include sustainable living and sound decision-making in waste recovery, looking at developing a community waste recovery framework to conserve the ecosystem and enhance liveability. It will also explore key factors for the treatment or recycling of the different types of materials such as plastics, waste from electrical and electronic equipment, chemicals, organics, and so on.

On the circular economy and green financing, industry experts will look at the key building blocks and how we measure effectiveness, as well as how to pay for waste management and recycling.

Sessions on waste management through technology will explore technological adoption such as artificial intelligence, big data, blockchain and Internet of Things within the waste management industry.

According to a 2018 World Bank report titled *What A Waste 2.0: A Global Snapshot of Solid Waste Management to 2050*, waste generation rates are rising around the world. In 2020, the world was estimated to generate 2.24 billion tonnes of solid waste, equivalent to about 0.79 kg per person per day.

With rapid population growth and urbanisation, annual waste generation is expected to increase by 73 per cent from 2020 levels to 3.88 billion tonnes in 2050. Globally, less than 20 per cent of the waste generated is being recovered and recycled.

ISWA World Congress 2022, the organisation's first physical event after 2 years, will be attended by delegates from around the world and features high-level plenaries on comprehensive programme in waste management and towards building a sustainable liveable future.

ISWA World Congress 2022
Sep 21-23, 2022 @ Sands Expo & Convention Centre
Register now! https://iswa2022.org

New energy and the triple bottom line

Waste-to-energy technologies can be adapted to the needs of any location worldwide, says Dr Michael Langen of HTP Engineers. BY NARENDRA AGGARWAL

NEW energy is energy from renewable sources such as solar, wind or biomass, says Dr Michael Langen, a partner and managing director of HTP Engineers in Aachen, Germany, which works in the areas of recycling and renewables and does technical consulting.

Waste-to-energy (WTE) technologies explore biomass such as bio-waste, wood, or residual waste, which contains biomass to a considerable extent. Technologies applied are bio-digesters including biogas purifiers and incinerators with combined heat power (CHP) units, he adds.

"These technologies are flexible and can be adapted to the needs of any location worldwide – for example, for district heating where residential areas are nearby, electricity production or feeding to the local gas grid," he tells *The Business Times* (BT) in an interview.

WTE strategies are environmentally beneficial in 2 ways. Firstly, they reduce the waste to be disposed of. Secondly, they save primary resources by substituting coal, crude oil or natural gas, he adds.

Dr Langen says good examples are the recycling of bio-waste from private households in bio-digesters, the reuse of the biogas after purification as fuel for the waste trucks which collect the waste, and the use of the digestate as a soil fertiliser. Such a project was implemented by Berlin.

Another good example is the modular WTE and recycling site of Attero, in the Netherlands. The so-called Energy Transition Park features a comprehensive inventory of new-energy generating facilities such as digesters, waste incinerators with CHP and recycling facilities. There are several more across Europe and the world.

"Let me make a general remark on the semantic of 'reuse and recycle', which is sometimes mixed up. Reuse means the extension of the lifetime of a certain good – for example, the refill of a drink bottle or the repair of an electronic gadget. Recycling means to loop the material of which the good is made back into a product of the same material type, not necessarily an identical product," Dr Langen tells BT.

"The benefits of reuse and recycle strategies are manifold and add to each other rather than being contradictory.

The challenges in plastic recycling are exceptionally high as plastic is a much more complex material than metal, glass or even paper. PHOTO: PIXABAY

"The most important benefits are cost savings, localisation of supply chains (as both reuse and recycle strategies can be implemented on regional levels) and the minimisation of the environmental footprint of industry and commerce as well as society at large."

Decisive factors

The importance of WTE, sorting and biological treatment (biogas) facilities stems from the position of such plants in the circular economy. None of the goods, which are being disposed of once a reuse strategy is no longer feasible, can be mechanically or energetically recycled without facilitating advanced technologies.

WTE, sorting, reprocessing and biotreatment plants are the essential hubs by which the material or energy content is valorised. The right design, capacity and location of these hubs are decisive factors to accomplish the environmental and economic goals of modern waste management, says Dr Langen.

His work in plastic recycling goes back to the 90s, when a cluster of research organisations in Germany developed a fully automatic process to recycle plastic packaging waste. His role was at the transfer point from science to industry to implement that process and demonstrate its feasibility in the industrial scale plant at the Expo 2000 world exhibition in Hannover, Germany.

"It was a huge success and the plant had been in operation for about 10 years now. My personal vocation has always been to implement advanced recycling technologies as a consulting engineer and partner of HTP," Dr Langen tells BT.

The challenges in plastic recycling are exceptionally high, as plastic is a much more complex material than metal, glass or even paper. A clear understanding of the cost structures, technologies and markets is particularly important when making plastic recycling successful, he adds.

The recycling industry is transforming rapidly from a volume-based to a quality-based approach. The volume-based approach was mostly driven by the waste management companies, which in the past needed easy, fast, and cost-efficient solutions for the recycled streams. Waste managers always take a volume approach as this is a core basis of their business model. Success of recycling was measured by recycling rates that considered the recycled volumes only.

"Today, the transformation of a linear economy to a circular economy leads to the involvement of any player in the supply chain and henceforth a shift in focus," says Dr Langen. "Success of recycling is being monitored by recycled content of the packaging and goods placed in the market additionally. As any player must safeguard recyclability and the recycled content, the quality of recycled commodities becomes a core issue. It does not mean volume is no longer important – contrary to that, only a quality-based approach can ensure the most needed volume increase."

"Today, the transformation of a linear economy to a circular economy leads to the involvement of any player in the supply chain and henceforth a shift in focus."

Dr Michael Langen (left)

Companies in the circular economy help to save natural resources, give employment to people, clean-up and save the habitat of wildlife and care for sustainable economies. These targets are manifold, as the activities of individual companies are wide and diverse, covering science and education at universities and private institutions, engineering, analytical services, manufacturing, operations, sales and application engineering, collection, and clean-up services, monitoring, and so on.

"The key target is to collaborate truthfully, open-minded, and amicably across disciplines, regions, and industry segments. It is for the benefit of all, and there is more to gain from collaboration than from being seclusive and competing just for individual success," Dr Langen tells BT.

New players

Some experts say that a circular economy for plastics can only be successful economically when it is decoupled from the oil market.

"Formerly, recycled plastics could only be sold at a discount against virgin plastics. With virgin plastic prices following a similar volatility as crude oil, the small and medium-sized companies in the recycling industry could never weather the lows," says Dr Langen. "Additionally, recycled plastics carry the cost of disposal services – collection, cleaning and so on – which virgin plastics do not. These are the 2 main factors which put recycled plastics at an insurmountable disadvantage."

Today, at least partly, recycled plastics are getting out of this because a recycled content is stipulated by the regulators for many consumer goods – for example, polyethylene terephthalate (PET) bottles.

Now that recycled PET granulates are competing with its peers and not virgin, the price level of recycled PET is less volatile and traded at a premium of 30-50 per cent against virgin granulate. A similar tendency can be seen for other polymers, such as polyolefins, he adds.

In any new area, especially work of a developmental nature, getting financing is an uphill task. However, for plastic recycling, the times are changing rapidly. In the last 2-3 years, a lot of new players with substantial strategic interests and strong financial capabilities are entering the market. "Such players are from the petrochemical industry or retailers such as the Schwarz-Group in Germany. It is a kind of gold rush among some of the technology providers, and investors should be careful about which project and technology to invest in. On the other hand, the demand for new facilities and recycling capacities is enormous, and the manufacturing industry is not up to satiate the needs," says Dr Langen.

Waste management and recycling projects are complex and depend on many core competencies, of which technology is just one. Other ones are manufacturing and construction, operations, sales, and sourcing. A banker would try to analyse the project team as to the rightful and balanced way in which these competencies are represented. Payment and compensation models should reflect the commitment to a successful project delivery.