WASTE WISE CITIES

October 7 World Habitat Day 2019

Frontier Technologies as an Innovative Tool to Transform Waste to Wealth

World Habitat Day 2019

Key Messages

7-10billion tonnes of urban waste every year

Scale of problem

Globally cities produce between **7 – 10 billion tonnes of municipal solid, industrial, commercial and construction waste every year**. This waste must be managed in a controlled manner to build sustainable and liveable cities, otherwise it poses a significant risk to the health of our planet and its citizens.

Lack of adequate waste management has resulted in excessive air, soil and water pollution, threatening public health, ecosystems and biodiversity. **The build-up of waste in our oceans and other waterbodies kills some 100,000 marine animals every year.**

Around 80 per cent of the estimated 8.3 billion tonnes of plastic ever produced is still around – either in landfills and open dumps or it has directly entered the environment.

Only a fifth of global municipal solid waste is recovered through recycling and composting, while a third is still openly dumped. About 80 per cent of wastewater is discharged in the world's waterways and oceans without being safely treated.

It is estimated that 1.6 billion tonnes of CO2 equivalents were generated from the treatment and disposal of waste in 2016 – representing about 5 percent of global greenhouse gas emissions caused by human activity.

Every 30 seconds a person dies due to diseases caused by poorly managed waste, such as diarrhoea, malaria, heart diseases and cancer resulting in 400,000 to 1 million deaths a year.

Cities in low-income countries spend on average **20 per cent of their budgets on solid waste management** but less than half their population has any form of waste collection.

Cities spend often less than three per cent on sanitation, while 16 per cent of urban dwellers still lack access to basic sanitation services.

Poor global and local data on waste management makes it difficult for cities, especially in middle- and low-income countries, to make informed decisions to protect public health and the environment, as well as to become more efficient.

Municipal solid waste management is often considered a local problem – however, the root cause relates to global production, consumption and recovery of materials. The resulting transboundary movement of materials, products and waste, although regulated, may pose threats to local economies and their environment.

Urban OCTOBER

IMPLEMENTING THE NEW URBAN AGENDA

UN HABITAT FOR A BETTER URBAN FUTURE

Opportunities

Between 15 – 20 per cent of worldwide greenhouse gas emissions caused by humans can be mitigated through sustainable waste management, especially the 5Rs (Rethinking, Refusing, Reducing, Reusing, Recycling).

By innovating their waste management, cities can create employment, promote economic growth, improve health and ecosystems, contributing to happier, healthier and greener cities, and make huge savings.

Wastewater is an affordable and sustainable source of water, energy, nutrients and other recoverable materials – and urgently needs to be safely managed, to respond to the ever-increasing water scarcity and to reduce pollution. Wastewater reuse for food production can off-set cost of synthetic fertilizers, the production of which is harmful to the planet.

Innovative approaches to promote sustainable waste management need to address every step of the waste hierarchy - reduction, reuse, recycling, recovery and disposal. Reducing the waste generated in the first place will create the biggest impact.

3d printing and other innovations in digital fabrication linked to the circular economy have the potential to significantly improve efficiency in manufacturing and reduce waste.

Frontier technologies – including 3d printing, the internet of things and big data - have the potential to improve how people see, work and live with waste.

With the right manufacturing, management and circular systems, new materials, such as bioplastics and recycled plastic, can significantly reduce the adverse impact on the environment from waste.

Technologies such as the internet of things, combined with big data, machine-learning and artificial intelligence can be used to gather accurate data on the waste flows in cities, to understand who is producing, collecting, reusing, and recycling waste and where, leading to more informed decisions.

New and digitally-enabled construction and manufacturing techniques need to be applied to eliminate waste and ensure sustainable material cycles.

UN-Habitat's Waste Wise Cities Campaign supports cities in monitoring their waste flows to transform them into valuable resources and opportunities. The campaign is about how working together can have a much greater impact.

Improved sustainable waste management contributes directly to the Sustainable Development Goals (SDGs) by improving access to basic services (SDG 1), by eliminating dumping (SDG 6), by decreasing the adverse environmental impact of cities (11), by increasing sustainable consumption (12) and by decreasing marine litter pollution (14).

If implemented, sustainable waste management also supports the achievement of a number of other SDGs, for example by improving public health and well-being (SDG 3) and by generating renewable energy from organic waste (SDG 7).

Key Messages especially to local governments

- Support the collection of data on sources and sinks of waste in your city.
- Commit to integrated sustainable waste management and join the Waste Wise Cities Campaign.
- Apply inclusive frontier technologies and innovative approaches to turn waste into wealth while reducing environmental and health problems.
- Develop internal digital skills and build capacity related to the use of new technologies and data.
- Establish policies that ensure universal access to technologies, build digital literacy, reduce the digital divide and ensure privacy and security.
- Commit to transparency, accountability and non-discrimination of data, digital content and algorithms.
- Establish open and ethical digital service standards.
- Engage with and support bottom-up approaches that enable communities, youth, women and disabled people to become innovators in the circular economy and the use of technologies in waste management.

Key Messages to everyone

- Rethink waste - change your mindset and acknowledge waste as a valuable resource.
- Create and implement a legislative environment that envisions a circular economy.
- Research new frontier technologies that have the potential to substantially improve existing waste management.
- Commit to digital rights, ethical standards, non-discrimination, openness and transparency in the use and development of frontier technologies.
- Invest in alternative solutions to reach a circular economy through innovative partnerships.