



**Frontier Technologies as an Innovative
Tool to Transform Waste to Wealth**

Message from the UN-Habitat Executive Director, Maimunah Mohd Sharif on World Habitat Day, 7 October 2019

Every year World Habitat Day, celebrated on the first Monday of October, gives us an opportunity to think about how we can all make a real change in the cities and towns where we live. It is a time for us to look at ways we can overcome the challenges that we face each day and improve everyone's lives. As hubs of innovation and creativity, cities are the best place to come up with solutions and UN-Habitat as the United Nations Agency focused on sustainable urbanization is ready to provide full support.

One of the most intractable problems that is all too evident in many of our communities, are the mounds of waste in the streets, the effluent in our rivers, our overflowing landfills and the thick smoke from smouldering piles of rubbish. Every year our homes, factories, industries, offices, markets and shops produce 7 -10 billion tonnes of waste that are polluting our air, soil and water, killing marine life, contributing to climate change and threatening the health of our planet and its population.

This year, we want to highlight that sustainable waste management can contribute to happier, greener, healthier cities. The theme of this year's World Habitat Day, being celebrated on 7 October is : "Frontier technologies as an innovative tool to transform waste to wealth."

By "rethinking" the entire waste management cycle, we can resolve not only the challenge of inadequate waste management, but also create employment, promote economic growth, improve public health and ecosystems and combat climate change.

The biggest impact will come from changing the way we generate waste and reducing the amount that we produce. We can all reduce our waste, reuse our existing resources and recycle what we really do not need. Here frontier technologies can help us. The Internet of Things allows manufacturers to closely monitor equipment so that it will be repaired and replaced only when necessary. New materials include plastics that are biodegradable when released to the environment and recycled materials that can replace raw materials for various applications. 3D printing can improve efficiency in manufacturing by reducing waste and can reuse waste plastics for the printing process.

Additionally, technology can come to our aid in assessing how much waste is created and collected, by whom and what is recycled. Big data analysis can provide new input and insights, helping us to better understand waste flows.

When it comes to recycling and upcycling (adding more value to waste) we need innovative solutions every step of the way, particularly to extract more value from generated waste. For example, waste water is an affordable and sustainable source of water, energy, nutrients and other recoverable materials. It can be used for food production through crop irrigation or raising fish. Nanotechnology can help to reuse waste water in water-scarce countries.

Waste-to-energy projects that recover energy from non-recyclable waste or as a first step before recycling can generate heat, electricity, or combustible products. If used in a responsible, appropriate and sustainable manner, examples such as biogasification, fuel briquette manufacture and landfill gas collection and combustion, offer huge potential to mitigate greenhouse gas emissions.

UN-Habitat and partners are running a global campaign to enhance waste management and resource efficiency in the world's cities. The Waste Wise Cities Campaign encourages local and national authorities to commit themselves to carrying out actions based on 12 principles for effective waste management (<https://new.unhabitat.org/waste-wise-cities-campaign>). These include the careful evaluation and implementation of technological alternatives and learning from other cities. So far more than 80 towns and cities have signed up, including seven counties in Kenya, three cities in India and three municipalities in Lebanon.

UN-Habitat has a vision of "a better quality of life for all in an urbanizing world". We need to reduce our waste and then use what remains in an innovative way and everyone has an important role to play to make this happen.