FACTSHEET 3

CLIMATE CHANGE AND WASTE

DID YOU KNOW?

- Uncontrolled burning of waste is a common occurrence on dumpsites. This generates carbon dioxide as well as other harmful and toxic gases, including dioxins and furans.
- Although it is less abundant in the atmosphere, methane is a very powerful greenhouse gas, with one methane (CH_4) molecule contributing 21 times more to global warming than a single carbon dioxide molecule.
- For the waste sector, methane produced by landfills is the largest greenhouse gas emission.
- The Pacific is adapting waste disposal sites through implementation of the semi-aerobic Fukuoka Method Landfill, developed by Japan's Fukuoka University in the 1970s. This landfill method creates a semi-aerobic environment, which minimises the production of methane, and quickly stabilises the buried waste mass.
- Recycling aluminium and tin cans, glass and plastic bottles, produces much less greenhouse gas emissions when compared to the manufacture of a new product.
- Composting organic material such as kitchen scraps, leaves and paper, reduces methane emissions associated with dumpsites and landfills. It also returns much-needed nutrients into local soils, and reduces the reliance of households and farmers on imported fertilisers.

HOW DOES WASTE CONTRIBUTE TO CLIMATE CHANGE?

Municipal solid waste including everyday waste from households, schools and shops, contains biodegradable organic matter such as kitchen waste, garden waste, and paper.

Biodegradation of these materials generates a mixture of carbon dioxide and methane. If air is present during waste biodegradation, more carbon dioxide is produced, whereas in the absence of air, anaerobic digestion takes place. This is a biological process that produces methane from organic materials. This is important as methane is a much more potent greenhouse gas (GHG) than carbon dioxide, and minimising its release slows increasing global warming.

Collection of waste also produces greenhouse gases from collection vehicle emissions.

The uncontrolled burning of waste, which is a common occurrence on dumpsites, also generates greenhouse gases including carbon monoxide and carbon dioxide.

HOW WILL CLIMATE CHANGE AFFECT THE WASTE SECTOR?

Many Pacific island countries and territories are low lying, with very small land areas. This makes it difficult to find appropriate locations for waste disposal. Many dumpsites are located in swampy areas, or lie very close to coastlines. Sea level rise caused by global warming will result in increased inundation and flooding of coastal dumpsites, thereby increasing pollution of coastal waters and marine ecosystems from harmful landfill leachate.

Rainfall patterns are changing and the intensity of storm events (cyclones) is likely to increase with global warming. These events have the potential to damage infrastructure and property. Much of the resulting disaster waste will end up in landfills or dumpsites.

The waste sector can better prepare for climate change impacts by reducing the need for landfills. This can be done by reducing the amount of waste generated by banning the use of plastic bags or placing an age restriction on imported vehicles, and by diverting as much waste as possible through recycling and reuse.

Residual waste that cannot be recycled or reused should be disposed of in landfills that are designed to cope with climate change impacts, including heavy rains and coastal flooding. Pacific island countries need to develop and implement disaster waste management plans to deal with disaster waste in the future.

HELPING YOU TO UNDERSTAND 'WASTE TALK'

Composting refers to a natural process of biodegradation. The amount of air and moisture and the composition of materials being degraded are controlled in order to speed-up the process. The end result is compost, which is beneficial as a soil conditioner, fertiliser and natural pesticide.

A **Dumpsite** is where waste is disposed of, but lacks any controls to protect human health and the environment. Dumpsites are characterised by unrestricted access, open burning, foul smells, exposed discarded litter and rubbish, flies and rats.

Inorganic waste is composed of natural and synthetic (man-made) materials such as glass, plastic, and aluminium, materials used in packaging, and building materials such as concrete and metal. Some inorganic waste, including steel cans, will break down within a year or two but others, like concrete and plastic, last for much longer.

A **Landfill** refers to an engineered site used for disposal of waste, which has measures in place to control any negative impacts on human health and the environment. The base of landfills are typically lined with an impervious material to prevent leachate from reaching the ground water, waste is compacted and covered with soil on a regular, usually daily, basis and access to a landfill is strictly controlled.

Leachate is the liquid that drains or 'leaches' from a landfill. Its composition depends on the age of the landfill and the types of waste it contains. Landfills containing organic waste and toxic materials usually generate harmful leachate. This must be treated before being released to the environment.

Organic waste is made up of animal and plant materials, and includes kitchen scraps, leaves, wood chips and sawdust, and fish and meat leftovers. This type of waste is broken down by insects, bacteria and micro-organisms. Organic waste makes up between 50–70% of the solid waste produced in most Pacific island countries.

Toxic waste includes natural and synthetic (man-made) waste that can harm or kill humans, plants and animals at low concentrations if they come into contact with it. Toxic waste can be found in common household items such as fluorescent lights, lead acid batteries, pesticides and in weed killers that are often difficult to dispose of safely. Although relatively small amounts of toxic waste are produced in Pacific island countries compared to organic and inorganic waste, they can have serious adverse effects on the environment!

REFLECTIONS ON POSSIBLE NEWS ITEMS

- **Your country, your community, your waste**: How well managed are the landfills and dumpsites in your country? What problems does this pose?
- **Your waste, climate change**: How are your national landfills and dumpsites impacted by climate change?
- **Climate change, your community**: Think of some stories that will encourage people to mitigate climate change and promote good waste practises at home. How can you tell these stories so your audience can see the human dimension to this issue?

A good website to visit that will assist you with finding out more about waste is the International Environmental Technology Centre on the United Nations Environment Programme web page. You can also visit the SPREP Waste Management and Pollution Control web page to find out more on waste projects that are happening in the Pacific islands, as well as the Pacific Climate Change Portal for more information on climate change in the Pacific.

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