



MEDICAL WASTE BUILDS AS CHINA FIGHTS COVID-19

INTEGRATED WASTE MANAGEMENT DURING COVID-19 AND BUILD BACK BETTER

Healthier & Happier Society

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PANDEMIC & MEDICAL WASTE

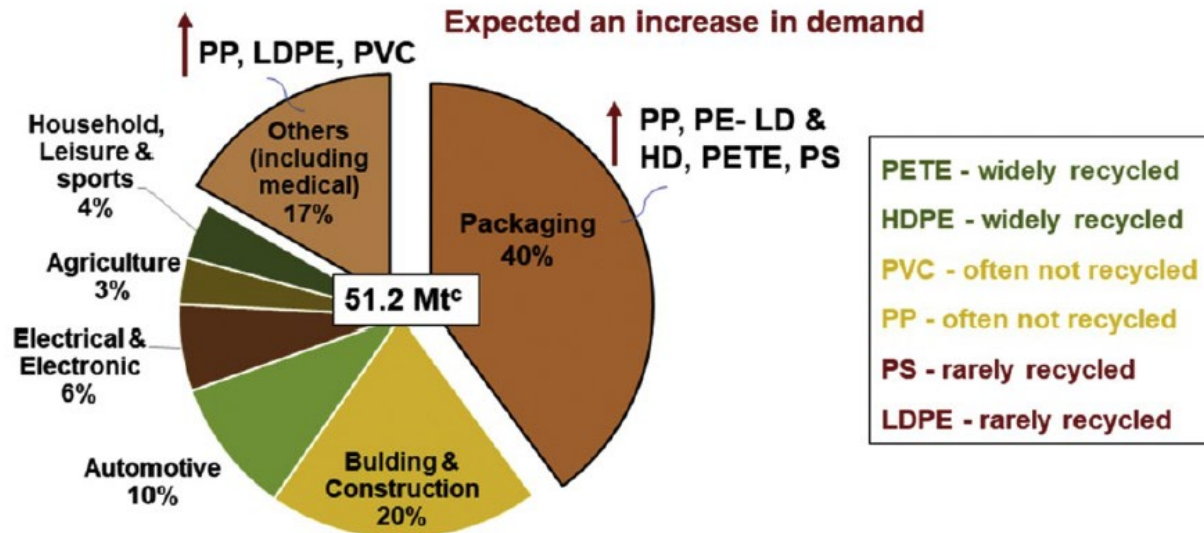
A chart in ADB’s *Managing Infectious Medical Waste during the Covid-19 Pandemic* shows that over a period of 60 days, Asian cities listed above could collectively churn out over 60,000 tonnes of medical waste. ADB noted that estimates are based on the experience in Wuhan, China. Other countries may experience different emergency timelines, which are dependent on specific policies and predicted infection curves, it said.

Source: ADB Image: Eco-Business

According to the ADB’s estimates, Jakarta could generate 12,720 extra tonnes of used disposable gloves, gowns, face masks and intravenous therapy bags in 60 days during the height of the virus. The Indonesian city has seen the highest number of fatalities in the Asean bloc, accounting for about half the region’s coronavirus-related deaths as of 4 May.

City	Population (World Population Review)	Medical waste generated (tonnes per day before Covid-19)	Additional medical waste (tonnes per day)	Total possible production over 60 Days
Manila	14 million	47	280	16,800
Jakarta	10.6 million	35	212	12,720
Bangkok	10.5 million	35	210	12,600
Ha Noi	8 million	27	160	9,600
Kuala Lumpur	7.7 million	26	154	9,240
Total			1,016	60,960

PANDEMIC & PLASTICS WASTE



Increase of the plastic types is estimated based on increasing material demand in PPE^a, food delivery^b etc

Source: Jaromír Kleme, Yee Van Fan a, Raymond R. Tan b, and Peng Jiang c, "Minimising the present and future plastic waste, energy and environmental footprints related to COVID-19" Renewable and Sustainable Energy Reviews 127 (2020)

The Pollution Control Department Thailand recently reported that the amount of plastic waste, especially plastic packaging, increased by 15% from 5,500 tonnes per day to 6,300 [because the demand for food delivery tripled]

- An alarming increase in waste plastics and a substantial decrease in its recycling.
- Main sources of increased waste plastics are related to the use of plastics in medical and packaging.
- The global, regional and national net plastic demand is yet to be assessed in the context of this pandemic.
- The plastic demand in the medical sector to help in combating the COVID-19 including the face shield (PP), gown (LDPE), vinyl gloves (PVC), disposable bag, tube, masks (plastic sheet and non-woven fabric) etc.
- The vast demand for food delivery or takeout as well as grocery delivery increase PP, LDPE, HDPE, PETE and PS, which are the common packaging materials

PANDEMIC AND WASTE MANAGEMENT – MEDICAL WASTE

1. Large number of single-use Personal Protective Equipment (PPE, such as masks and gloves) used by consumers and non-medical users, which have a great potential of littering or not collected/recycled properly, and will potentially pollute the lands, rivers, waterways and the ocean.
2. The use of (both disposable and reusable) masks will gradually be mainstreamed for the mass population in post-COVID-19 era. There usually lacks separate collection and recycling systems for non-healthcare PPE, which might be contaminated, with low value for recycling (low value of low-grade plastics), while hard for recycling (multi-layer masks with mix of different plastics and textile).
3. When not managed soundly, infected medical waste or personal PPE could be subject to uncontrolled dumping, leading to public health risks, and to open burning or uncontrolled incineration, leading to the release of toxins in the environment and to secondary transmission of diseases to humans. That waste can reach water sources and add to riverine and marine pollution.
4. In Wuhan, where the novel coronavirus first emerged, officials didn't just need to build new hospitals for the influx of patients; they had to construct a [new medical waste plant](#) and [deploy 46 mobile waste treatment facilities too](#). Hospitals there generated six times as much medical waste at the peak of the outbreak as they did before the crisis began. The daily output of medical waste reached 240 metric tons, about the weight of an adult blue whale.

PANDEMIC AND WASTE MANAGEMENT – PLASTICS WASTE

1. COVID-19 response in combatting the disease and change in lifestyles during the restricted movements has witnessed how reduction in plastic pollution is becoming more challenging as the COVID-19 pandemic is causing an increase of plastic waste in three forms. Firstly, plastic components, including packaging of sanitizer bottles, personal protective equipments and masks is a new stream of plastic waste.
2. The plastic ban in India, which had just started to take effect, has been substantially derailed as the pandemic increased the need for packaging, and enforcement systems are looser due to pandemic. Thirdly the increased use of food take away is adding millions of packing materials, including plastics, into waste streams.
3. An example is Singapore where 5.7 million residents generated an additional [1,334 tons of plastic waste](#) from takeaway and delivery meals. In Thailand, the COVID-19 pandemic and the resulting lockdown has led to a huge rise in the country's plastic waste. According to the Thailand Environment Institute (TEI), the average amount of plastic waste increased from 2,120 tons per day in 2019 to approximately 3,440 tons per day between January and April 2020. The rise in the month of April alone was nearly 62%.
4. COVID-19 has also led to increase in packaging due to online shopping and home delivery food. There is also change in mindset that packaging and single-use plastics provides “safety”.
5. The pressure on the governments to address more urgent challenges due to COVID-19, the focus and push on minimizing waste plastics through various measures including banning and charging has gone slow. Plastic recycling also got back seat due to the fears of waste plastics being infected and also due to the lockdown.
6. This situation has multiplied the amount of waste plastics being dumped in open environments (marine and land) and also its impact on marine life, air quality (due to burning), biodiversity and plantation.
7. According to the International Union for Conservation of Nature (IUCN), about 450 million tonnes of plastic is produced each year, 12 million of which ends up in the ocean. The UN Environment Programme said that if this trend continues with no intervention, the world will have more plastic in the ocean than fish by 2030.

PANDEMIC AND WASTE MANAGEMENT – DISASTER WASTE

1. Pandemic creates a longer-term disaster like situation like flooding when many homes are submerged but people still staying resulting into two types of wastes – household waste and waste from the rotten/destroyed by the floods. In the pandemic, there are also two-types of wastes – household wastes and the wastes related with the pandemic (masks, gloves, medication, etc.)
2. During flooding, the normal waste management system is altered and boats are used instead of vehicles and temporary storage for the waste is prepared uphill. Similarly, during COVID-19, the waste collection, storage and treatment system is to be altered by providing personal protective equipment (PPE), disinfection sprays, tightly sealed collection and transportation, proper storage and environmentally sound treatment. We can see how Wuhan in China quickly adapted to improved waste management system during COVID-19.
3. During disaster management the governance structure also changes to national disaster management authorities or similar institutions and coordination becomes highly important among various services and departments.
4. Hence, basic principles for disaster waste management (prevention, preparedness, response/removal, and recovery) applies in pandemic situations; thus, shall be integrated in waste management strategies at local, state and national level.

Building Back Better – COVID-19



Working With the Environment to Protect People

UNEP's COVID-19 Response

While there is a clear need to focus on an immediate humanitarian response, governments cannot lose sight of environmental sustainability

Inger Andersen
Executive Director of the United Nations Environment Programme and Under-Secretary-General



RESPONSE 1:

The medical & humanitarian emergency phase

RESPONSE 2:

A transformational change for nature and people

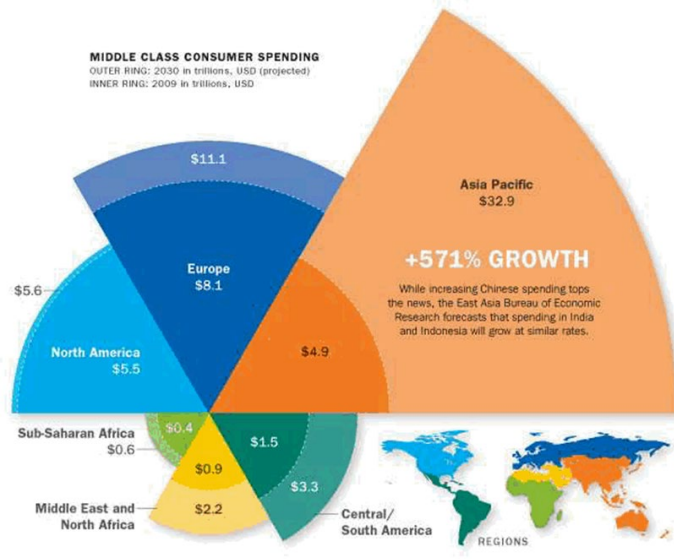
RESPONSE 3:

Investing to build back better

RESPONSE 4:

Modernizing global environmental governance

SUSTAINABLE WASTE MANGAEMENT



Growing population
from 7 billion today
to 9 billion by 2050



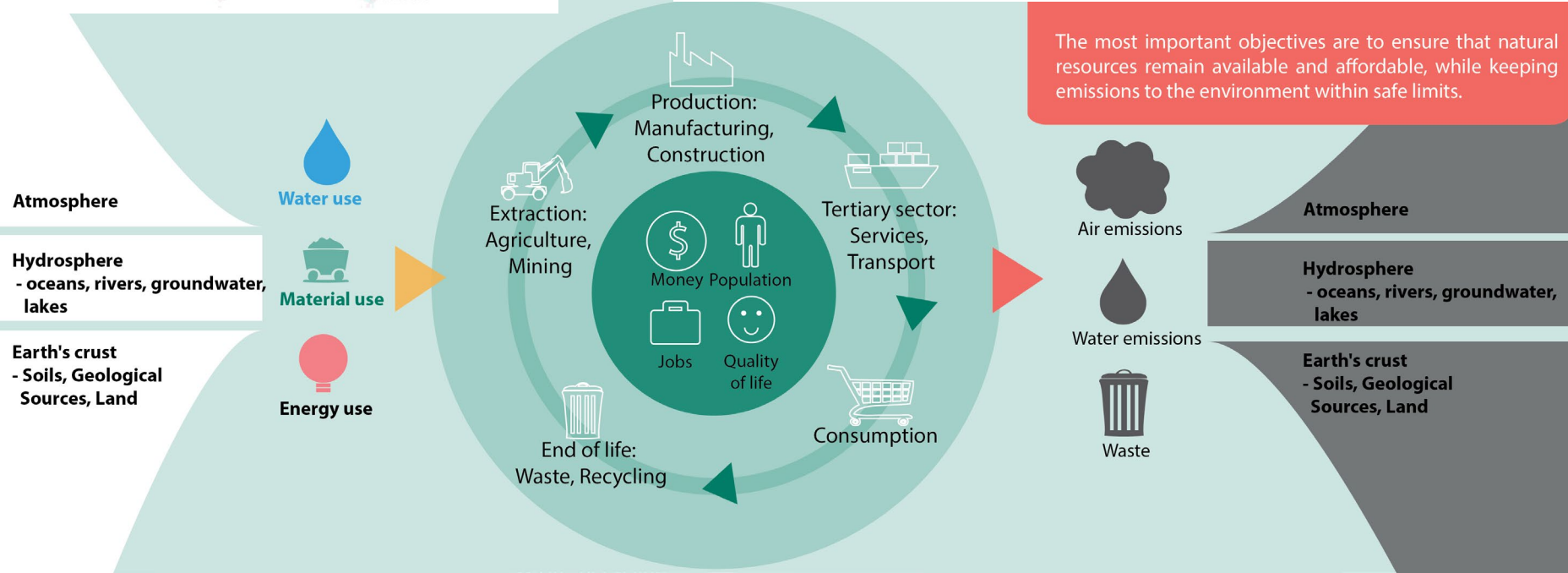
Economic development and increasing
global trade



Growing middle-class
with **changing consumption patterns**

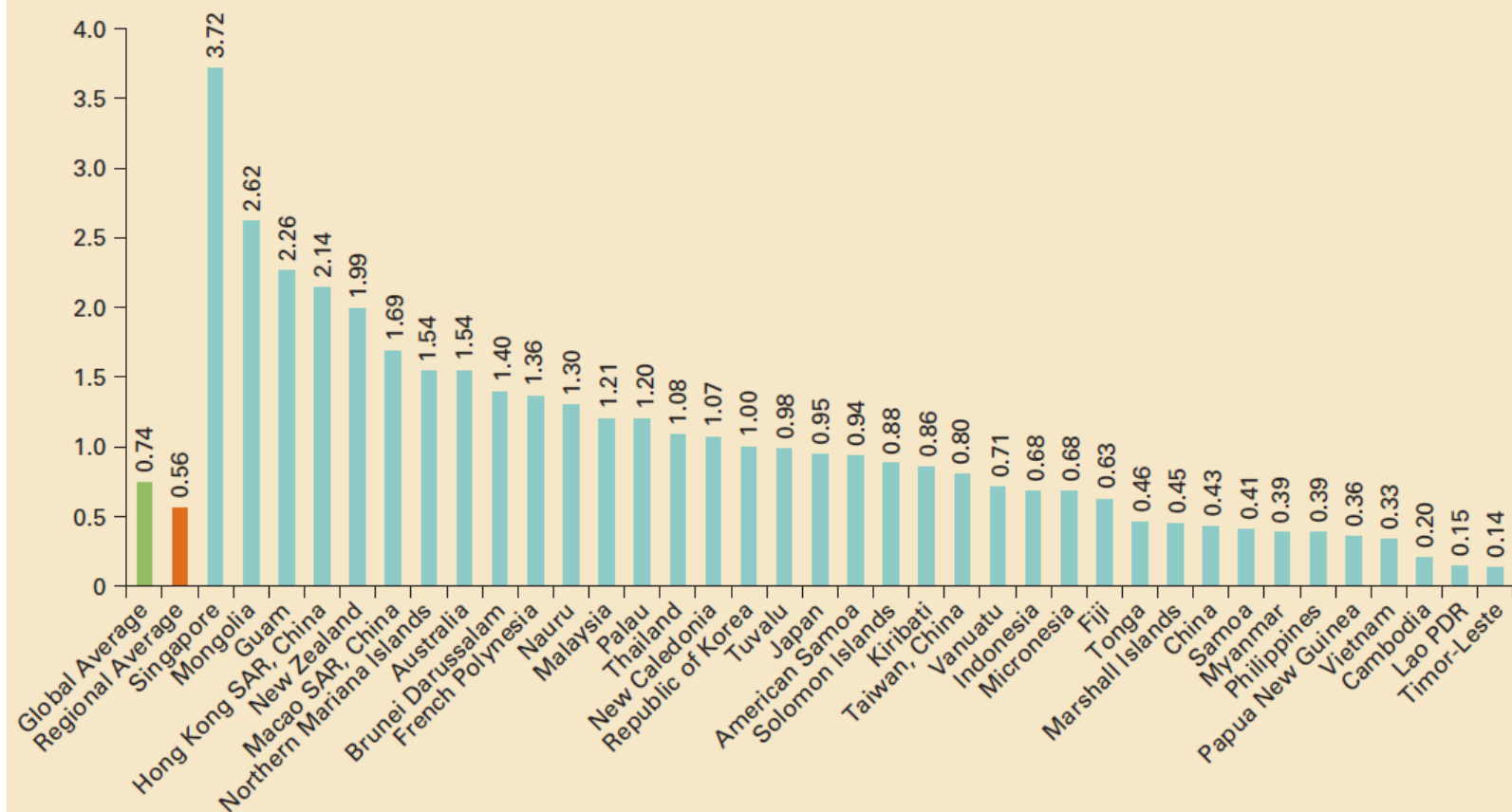


Increasing
consumption of biomass



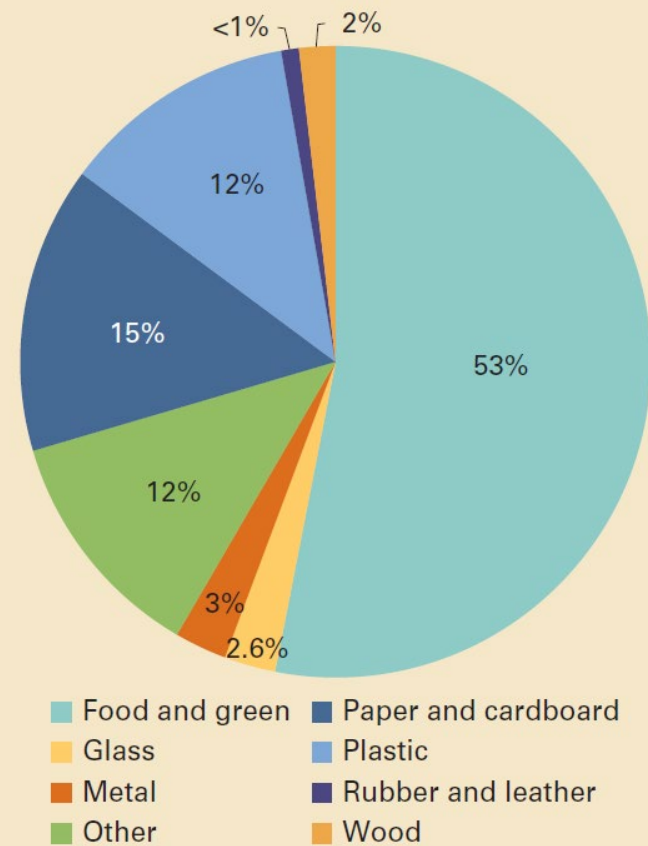
SOUTHEAST ASIA AND PACIFIC

Figure 3.1 Waste Generation Rates: East Asia and Pacific Region
kg/capita/day



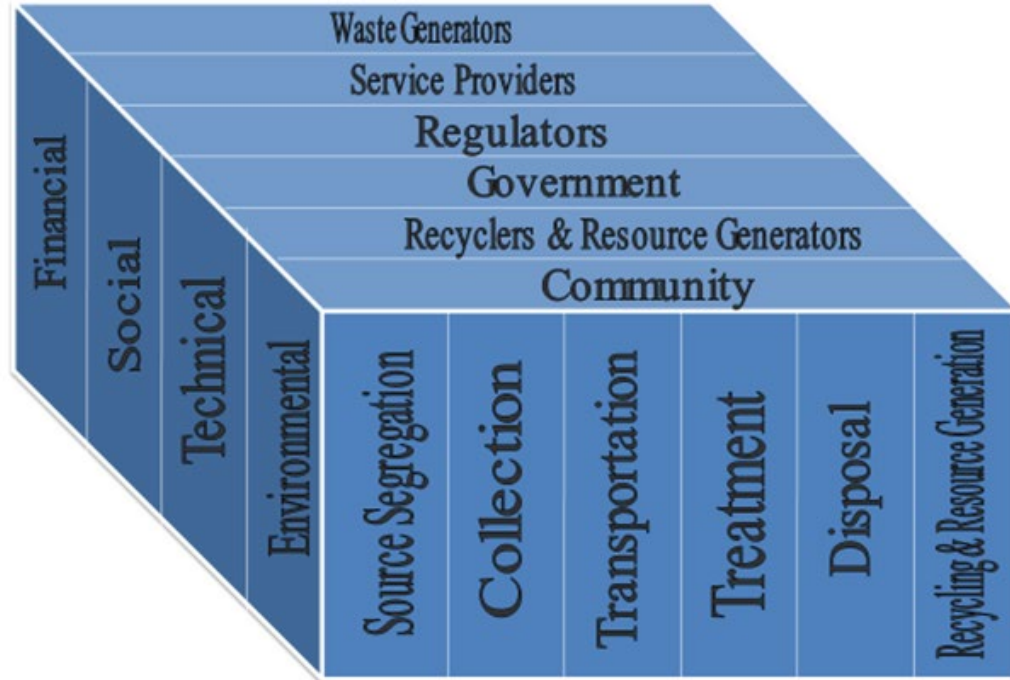
Note: Data adjusted to 2016 as described in box 2.1; kg = kilogram.

Figure 3.2 Waste Composition in East Asia and Pacific
percent



IDENTIFYING PRIORITIES

Roles and Responsibilities



Government

Public Sector

Regulatory Framework,
Institutional Setup, Tariff
Designing, Subsidies &
Guarantees

Businesses

Private Sector

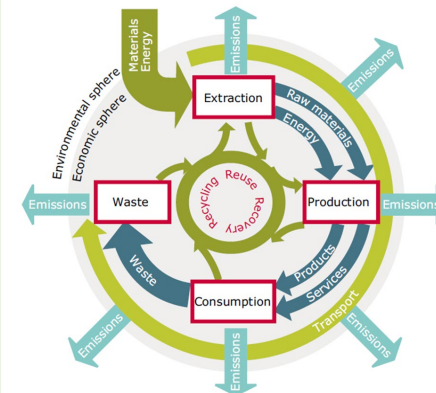
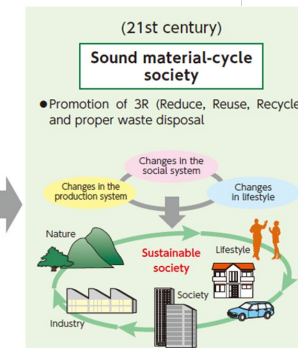
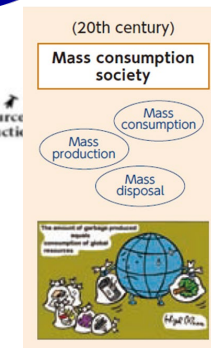
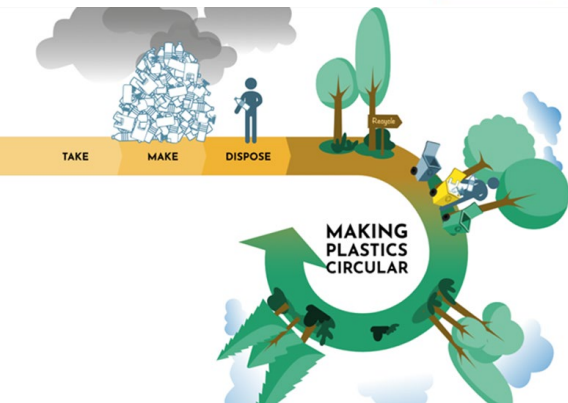
Financial Share,
Technical Innovation,
Managerial Role, Local
Knowledge, Backward
& Forward Linkages

Circular
Economy

Citizens

Community

Willingness to Pay,
Awareness and Will,
Environmental Friendly
Life Styles



Major Challenges for Integrated Waste Management

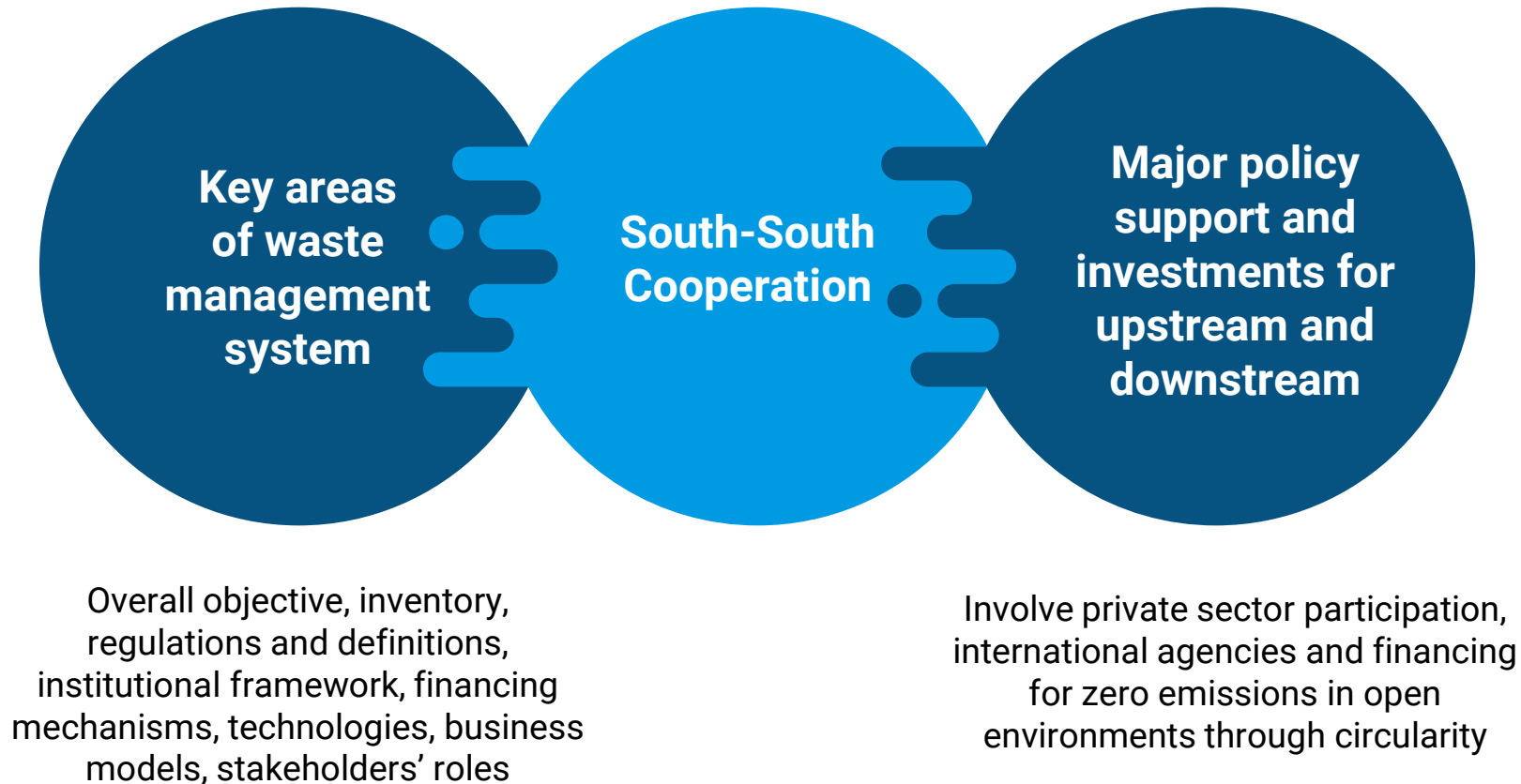
	Regulatory frameworks – lack of updated policies, thinly spread in other sectors (water quality, air quality, supply chain, etc.), and for meeting national and global commitments (MEAs, SDGs, NDCs)
	Institutional arrangements and enforcement – lack of clear institutional arrangements, public sector and private sector arrangements, and lack of capacity for enforcement
	Financing mechanisms - not enough direct taxes based on polluter pay principle and extended producer responsibility, lack of sufficient budget allocation to even meet only collection of waste
	Business models – private sector participation in waste management value chain is not designed to sustain on self-earning models and provide effective services
	Technologies & infrastructure – most of places still primitive technologies and infrastructure in operation for segregation, sorting, storage, disposal and recycling causing inefficiencies, and not sufficient use of digital technologies yet
	Informal sector – there is no change in informal sector practices, gender, child labor and livelihoods even after many decades requiring steps to change informal to formal sector with green jobs and quality livelihoods
	Behavioral challenges – in source segregation, proper disposal, waste reduction, polluter pay principle, use of recyclable goods and packaging, and buying products from recycled materials

UNEP's Toolkits and Trainings

Guidelines for Holistic Waste Management at national and city level	Quantification and characterisation of waste
Guidelines for Framework Legislation for Integrated Solid Waste Management	Assessment of current waste management system and gaps therein
Sustainability Assessment of Technologies	Target setting and stakeholders' concerns
Waste agricultural biomass to a resource	How to develop integrated solid waste management plan
Converting waste plastics into a resource	Sustainable Public Procurement (Green Public Procurement)
Technologies for waste oils	Compendium of Technologies
Treatment/Destruction of healthcare waste	Assessment of waste plastics
WEEE/e-waste management	Assessment of E-waste
Waste and climate change	Assessment of value chain for E-waste management and take-back system
Wastewater reuse	
Water use efficiency – every drop counts	

Priorities and Discussion Points

Establish common inventory systems, definitions, labelling, controlling illegal movement of waste, trade and investments in environmental services, and knowledge sharing



Thank you

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