



Waste Management

The Open University of Sri Lanka (OUSL)

Prepared by

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Waste Management at the Open University of Sri Lanka (OUSL)

Waste management in universities is a critical component of sustainability efforts. As the OUSL, we have successfully implemented effective waste management practices, which not only reduce the environmental footprint of the university but also serve as a model for students and the broader community. So, we are already immensely proud of our journey to make OUSL a more sustainable university while instilling eco-conscious values in our students, staff, and community. Here is the OUSL's waste management process.

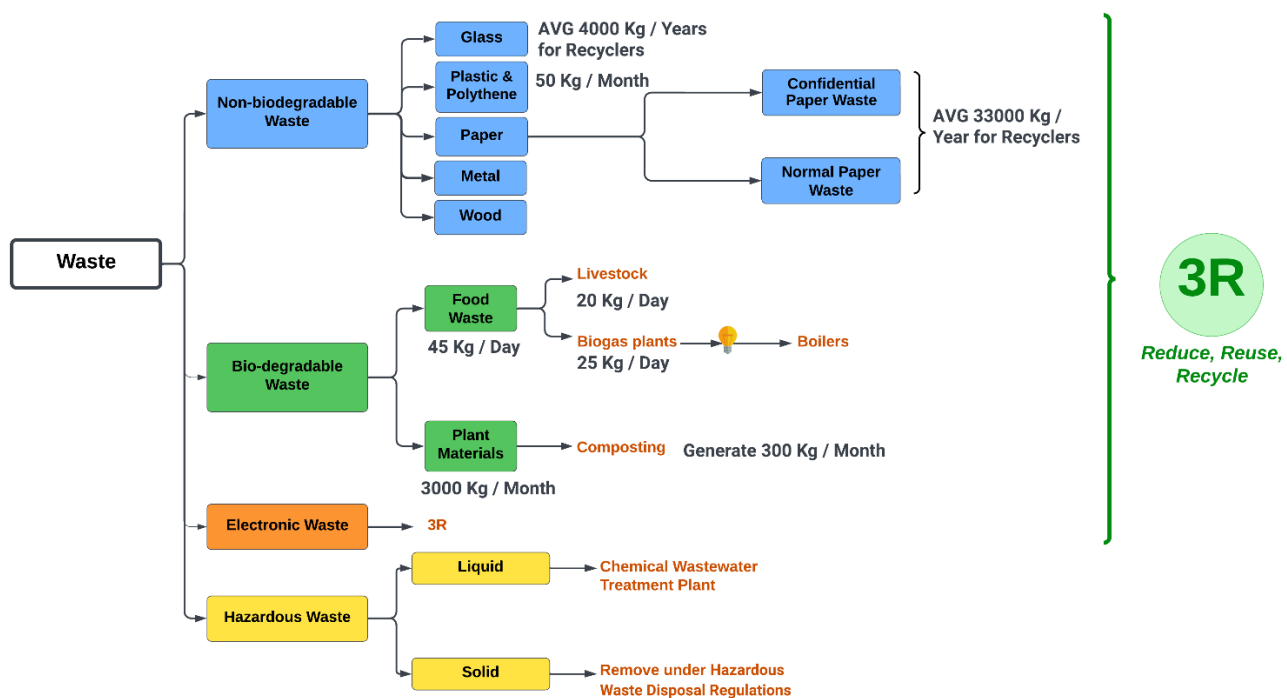


Figure 1.1: Waste management process of the Open University of Sri Lanka.

In our waste management process, we have identified and assessed the types and quantities of waste generated within OUSL premises. Accordingly, waste segregation bins were placed throughout the university, giving anyone access to removing waste in the right manner and embedding sustainable waste management practices within OUSL's culture.

1.0 Non-biodegradable Waste

1.1 Glass

Glass waste in OUSL comes from various sources, including glass bottles, containers, lab equipment, and windows. These items can be found in cafeterias, laboratories, classrooms, and administrative offices. The glass waste recycling at OUSL follows a structured process. Initially, glass waste is segregated from other waste types at the source and placed in designated recycling bins strategically located across the campus. These specialized bins are specifically utilized for collecting glass materials within university premises. After collection, the glass waste is quantified and then transported to recycling facilities. Through collaboration with local recycling companies, the collected glass waste undergoes effective recycling, thereby bolstering the university's sustainability initiatives.

1.2 Plastic & Polyethene

Our university usually generates approximately 44 kg of PET bottles per month. This waste is collected in two designated recycling bins near the canteen and the administrative building, provided by a recycling company. Once these bins are filled, waste is collected by the recycling company, which provides some income for the OUSL. This money is utilized for cleaning services, well-being initiatives, and activities related to the university's green society. Additionally, other plastic and polythene waste from various locations on the campus is collected into segregation bins and then collected by the local authorities and recycling companies in Sri Lanka.



Figure 1.2: Sending collected pet bottles for recyclers.

1.2.1 Measures to Reduce Plastic Waste

Our university has taken a significant step towards sustainability by implementing plastic-free zones within its premises. Through careful assessment, it was determined that the canteen was a major source of plastic and polythene waste. To address this issue, specific guidelines and regulations have been established, aiming to create an eco-friendly environment on campus. Circulars and rules have been circulated to ensure the successful implementation of this initiative, encouraging everyone to participate in reducing plastic waste and promoting a greener future.



Figure 1.3: Posters circulated in cafeterias to reduce plastic waste.

1.2.2 Measures to Reuse Plastic Waste

The OUSL has initiated a program for collecting plastic pens, which will be refilled and reused instead of disposing of them (see Figure 1.3). In this program, the Center for Environmental Studies and Sustainable Development (CESSD) of OUSL has introduced waste collection bins for each faculty building to collect finished plastic pens for reuse.



Figure 1.4: Finished-stationary collection bins.

1.2.3 Measures to Recycle Plastic Waste

The CESSD has introduced collection bins for plastic stationery items across university buildings to facilitate recycling efforts.

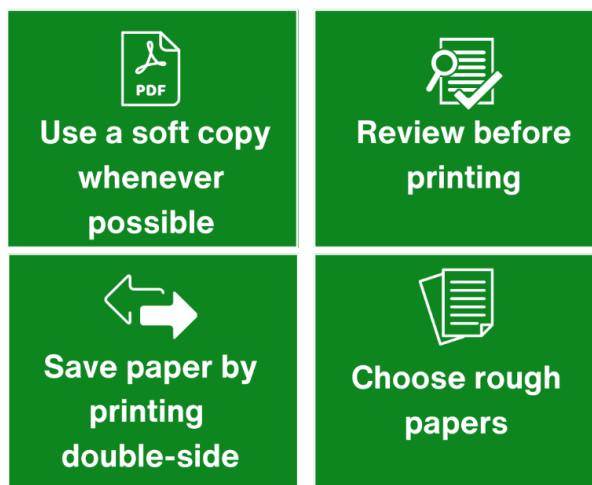
1.3 Paper Waste

The OUSL mainly generates two categories of paper waste: confidential paper waste and normal paper waste. The paper waste in OUSL primarily originates from administrative offices, presses, classrooms, libraries, computer labs, and student activities. Further, administrative documents, classroom materials like handouts and assignments, books, and event-related posters contribute to this waste. Besides, sensitive information handling generates confidential paper waste.

The confidential paper waste is gathered and stored in a designated paper waste storage area, whereas the normal paper waste from segregated bins is collected and taken to the paper waste collection facility.

1.3.1 Measures to Reduce Paper Waste

At the OUSL, various measures have been implemented to reduce paper waste. Embracing digital platforms for administrative tasks, class materials, and communication has significantly minimized paper usage. Additionally, the university encourages double-sided printing and has set the default printers to duplex mode, actively promoting paper conservation. Centralized printing stations have been established, enabling efficient monitoring and control of paper usage across the campus. The OUSL has also implemented efficient document management systems and facilitated digital storage and sharing, thereby reducing the necessity for physical copies. Online submissions for assignments and exams have been encouraged, further contributing to the reduction of paper waste.



"For Green Path of the Open University of Sri Lanka"



Figure 1.5: Stickers pasted on printers to reduce paper waste.

Our university actively conducts awareness campaigns to promote eco-friendly practices among students and staff, fostering a culture of sustainability and minimizing paper waste university-wide. The CESSD has conducted an awareness campaign to reduce paper waste on the university premises (see Figure 1.4). These measures aim to curb paper waste and promote sustainable habits in the university environment.

1.3.2 Measures to Recycle Paper Waste

The accumulated paper waste was periodically delivered to Paper Corporation and Neptune Recyclers of Sri Lanka for the recycling process. Our university has provided approximately 33000 kg of both types of paper waste annually for recyclers.

1.4 Metal Waste

Metal waste in OUSL settings primarily comes from various sources, such as discarded electronics, appliances, metal containers, and construction materials. These items are often replaced, repaired, or disposed of, leading to the generation of metal waste. Recycling metal waste at our university involves several steps. First, metal waste is segregated from other types of waste at the source, for which segregation bins and collection points are placed around the campus. Once collected, the metal waste is transported to recycling facilities.

1.5 Wood Waste

When managing wood waste in the OUSL setting, it's important to prioritize sustainability and environmental responsibility. Instead of discarding damaged wooden furniture or fixtures, we consider repair and restoration options to prolong their use.

2.0 Bio-degradable Waste

2.1 Food Waste

The food waste in OUSL is generated through overproduction, plate waste, unsold and expired food in dining halls and cafeterias, and leftover food from

meetings and functions. This organic food waste is segregated and disposed of in designated bins located throughout the university premises and canteens. The food waste is collected and quantified daily. In OUSL, approximately 45 kg of food waste is generated daily, which is completely reused for biogas production and livestock. Accordingly, 20 kg of food waste is provided to the livestock farm, while the remaining 25 kg is utilized in two biogas plants to boil water in the university canteens. Our biogas plants can generate enough of the energy required for boilers, which is approximately 320 kW per day. Thus, currently, our university has been able to save Rs. 538,000 per month in its electricity charges.



Figure 2.1: Biogas plant

2.2 Green Materials

The green waste generated, including food scraps and landscaping debris, is diverted through a composting program within OUSL. This compost is then used for landscaping and gardens on campus. The Colombo Regional Center (CRC) produces approximately 3000 kg of plant material every month. This waste is then processed in a compost plant, yielding 300 kg of compost monthly.



Figure 2.2: Composting

3.0 Electronic Waste

3.1 Rechargeable Batteries

Rechargeable batteries are a prime source of university e-waste, as they power most portable electronics like cellphones, laptops, digital cameras, camcorders, and PDAs. An on-campus recycling program for batteries is one component of an overall e-waste management strategy that allows facility administration to provide an environmentally sound method for disposing of products that are potentially hazardous to the environment. As OUSL, we are exceptionally aware of e-waste generated at the university. Therefore, all used batteries are collected in each division as a first step. In this regard, the CESSD has provided used-battery collection bins for each division. Once the bins are filled, batteries are handed over to e-waste recyclers through CESSD according to the university e-waste disposal protocol.



Figure 2.3: Introducing used-battery collection bins.

On average, the life cycle of many batteries in UPSs is 3-5 years, even though UPSs can survive for 10+ years. Therefore, the university has implemented an e-waste recycling process. Accordingly, interrupted UPSs are sent to the IT workshop for battery replacement, and dead batteries are collected there. The collected e-waste is handed over to e-waste recycling companies that are registered with the Central Environmental Authority (CEA) through calling tenders. OUSL has arranged more than 500 UPS batteries for disposal with the agreement of CEA-registered licensed e-waste collectors.



Figure 2.4: Disposal of UPS batteries

3.2 Computer E-Waste

In the age of rapid technological advancement, the issue of computer e-waste, or e-waste, has become a significant concern worldwide. Universities, as hubs of innovation and technology, find themselves at the forefront of this challenge. Proper management of computer e-waste is not just a matter of compliance but a moral and environmental imperative.

As OUSL embraces cutting-edge technology to facilitate learning and research, the disposal of outdated computers and electronic devices demands careful attention.



Figure 2.5: Computer e-waste.

Implementing efficient e-waste management practices is crucial not only to mitigate environmental hazards but also to set a precedent for responsible technological consumption. In this context, OUSL is uniquely positioned to lead the way by adopting comprehensive e-waste management strategies that prioritize recycling, refurbishment, and responsible disposal, thereby contributing to a sustainable future while serving as an exemplar for the broader community. To serve this, the OUSL IT workshop plays a major role in refurbishment or maintaining discarded or broken electronic items in the university.

3.3 IT Workshop

Within the realm of the university IT workshop, a commendable initiative revolves around repairing broken computer items to promote their reuse, thereby minimizing electronic waste and maximizing the lifespan of technological resources within the university. This practice involves skilled technicians meticulously diagnosing and repairing malfunctioning laptops, monitors, printers, CPUs, projectors, and other components, ensuring that they are restored to optimal working conditions. By dedicating their expertise to refurbishing these items, the IT division not only saves valuable resources but also significantly reduces the environmental impact associated with electronic waste. Moreover, this approach aligns with sustainability goals by extending the lifespan of electronic devices, allowing the university to derive the maximum utility from its

technological investments. This commitment to repair and reuse not only demonstrates fiscal responsibility but also represents a deep-seated philosophy of environmental stewardship, showcasing the university's dedication to creating a more sustainable and eco-conscious university environment.



Figure 2.6: IT workshop

4.0 Hazardous Waste

A laboratory wastewater treatment plant was developed with different filter media and locally available materials such as Montmorillonite (MMT) clay and biochar to remove contaminants from wastewater. It was initiated as a research study, and now it is treating wastewater generated from laboratories attached to the department of civil engineering. Several publications were published discussing the efficiency of treatment plants. Recycled water is also used for watering garden plants. Further, the hazardous waste generated in laboratories or other research facilities is carefully managed and disposed of in accordance with regulations.



Figure 2.7: Anaerobic baffled reactor (ABR) system

5.0 Awareness Programs

We have successfully implemented the 3R concept, which stands for Reduce, Reuse, and Recycle, which is the framework for managing waste and promoting sustainability in the OUSL. Therefore, we have taken various steps to minimize and reuse our waste, such as awareness programs, waste audits, waste reduction policies, collaborating with local recycling programs, incorporating 3R into the curriculum, etc.

By implementing these recycling and reuse processes, universities can significantly reduce the environmental impact of their operations, conserve resources, and contribute to a more sustainable campus environment.

5.1 “Plastic Free OUSL” Program

To reduce plastic waste and promote sustainability, the “Plastic Free OUSL” program was held on February 23, 2023, at the Open University of Sri Lanka. The event was organized by the university’s Green Committee in collaboration with the CESSD. The aim of the program was to raise awareness about the negative impact of plastic on the environment and encourage participants to adopt more eco-friendly habits. The event was wrapped up with a shramadana campaign to collect plastic waste and clean the university premises.





5.2 I am Eco Smart - One Day Awareness Program for children

The Centre for Environmental Studies and Sustainable Development of the Open University of Sri Lanka organized a one-day activity-based program on sustainable development on the 23rd of August school holiday for children whose parents (academic or non-academic) are working in the OUSL.



This program provided an opportunity for participants to learn about reusing, recycling, resource efficiency (wastage), composting and gardening, and the value of food. We initiated teaching our future generation about the minimization of waste.



This initiative plays a vital role in shaping a sustainable future. By focusing on reusing, recycling, resource efficiency, composting, gardening, and understanding the value of food, participants are equipped with essential knowledge.

Teaching the younger generation about waste minimization instills a sense of responsibility and environmental consciousness from an early age. These lessons not only benefit the environment but also empower individuals to make informed choices, ensuring a greener and more sustainable world for generations to come.



5.3 Less Plastic Movements

“Less Plastic Movement National Campaign 2023” was organized by the CESSD, Open University of Sri Lanka, in collaboration with the Ministry of Environment, Central Environmental Authority, Marine Environment Protection of Public Administration, Home Affairs, provincial councils, and the government. With their immense support, this program was successfully completed from May 10th to June 5th, 2023.

PLASTIC and US

Use of plastic containers for a long period might release undesirable chemicals and microplastics into our food and water.

SWITCH TO ALTERNATIVES WHENEVER POSSIBLE

Collecting and recycling plastic waste from the environment at 50 locations across the island. **JUNE 5**

Organized by:
The Center for Environmental Studies and Sustainable Development,
The Open University of Sri Lanka.

PLASTIC and US

Did you know that 49% of all liquid laundry detergents, and about 77% of powder laundry detergents, contain micro-plastics?

Collecting and recycling plastic waste from the environment at 50 locations across the island. **JUNE 5**

Organized by:
The Center for Environmental Studies and Sustainable Development,
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HELP SAVE OUR MARINE FRIENDS

Our beautiful oceans are home to a diverse range of marine life, but plastic waste, including microplastics, poses a severe threat to their survival. Microplastics are often mistaken for food by marine animals like turtles, Dolphins and even Whales; leading to ingestion and internal damage. Additionally, these tiny particles can accumulate toxins, magnifying the pollution levels in their bodies. Let's end their suffering by minimising plastic usage.

REDUCE AND REUSE PLASTICS

Collecting and recycling plastic waste from the environment at 50 locations across the island. **JUNE 5**

Organized by:
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In the first stage of the program, a nationwide education and awareness campaign was conducted from May 10th to June 4th, 2023. Subsequently, in the second stage, an activity day was scheduled for June 5th, aligning with World Environment Day. On the activity day, a comprehensive initiative was undertaken to collect waste plastics across the entire island.”