



Evidence

UI GreenMetric Questionnaire

University : Universitas Muhammadiyah Semarang
Country : Semarang, Central Java, Indonesia
Web Address : <https://greenmetric.unimus.ac.id/>

[3] Waste (WS)

[3.1] 3R (Reduce, Reuse and Recycle) Program for University Waste



3R Programm





Waste Sorting Program at the Campuss



sim surat.unimus.ac.id/sk

Beranda Kode Surat Surat Diaposisi Unit 2025/2025 Administrator Rektor

Surat Keluar

PEMBERITAHUAN!
Penomoran surat yang baru dimulai dari Bulan September 2025 s.d Agustus 2026 dengan periode tahun 2025/2026. Dimohon kepada pengguna untuk mencermati dan memastikan kembali periode yang aktif agar tidak terjadi kesalahan saat input ke dalam sistem.

+ Tambah Surat Rekap Surat Keluar

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TANGGAL KELUAR	NO. SURAT	KEPADA	KEPADA INTERNAL	PERIHAL	TTD PEMBUAT	PEMBAUT	AKSI
28-10-2025	0780/UNIMUS/KP/2025	Kepala Lembaga Layanan Pendidikan Tinggi Wilayah VI Jawa Tengah	-	Permohonan Ralat Inpassing a.n. Swasty	Rektor	Ka. Dag. Kepegawaian	Bincan Ubah Hapus
10-10-2025	0779/UNIMUS/PD/2025	Kepala LL Dikti Wilayah VI Jawa Tengah	-	Permohonan Berita Acara Pemeriksaan	Wakil Rektor 1	Biro Administrasi Akademik (BAA)	Bincan Ubah Hapus
27-10-2025	0778/UNIMUS/ST/KP/2025	WR III	-	Ujian Doktor	Rektor	Sekretariat	Bincan Ubah Hapus
30-10-2025	0777/UNIMUS/UND/2025	Penitia QS	-	Workshop QS	Rektor	Kepala Kantor Rektorat	Bincan Ubah Hapus

Reduce Papperless Administration





Reduce Program







Organic Waste Processing





In Organik Waste Processing

3R Program for Waste (University of Muhammadiyah Semarang (UNIMUS))

Description:

(Please describe the 3R program on your campus. The following is an example of the description. You can describe more related items if needed.)

University of Muhammadiyah Semarang (UNIMUS) has implemented the 3R program (Reduce, Reuse, and Recycle) as part of its commitment to becoming a green and sustainable campus. This program is carried out in an integrated manner by the Business Assurance and Management Unit (UPPU) with active support from faculties, students, and educational staff.

1. **Reduce (Reduce)**

UNIMUS strives to reduce waste through a **“paperless administration”** policy and the use of digital documents in the academic system (SIM-SURAT), e-office, e-learning. In addition, the campus implements a policy of restricting the use of plastic in faculties, laboratories, and canteens. **“Zero Plastic Campus”** socialization activities are routinely carried out by students and lecturers as part of the Healthy Campus Movement.

Link policy Zero Waste:

<https://drive.google.com/file/d/1-FqgLc3errbKogcxiLPGEmIusEGLP6m6/view?usp=sharing>

2. **Reuse**

Office supplies and equipment that are still usable, such as folders, stationery, and used cardboard boxes, are collected for reuse in other work units. UNIMUS also manages an internal waste bank under the coordination of UPPU, where plastic bottles, paper, and cardboard are sorted for reuse or distributed to recycling partners. Additionally, creative reuse activities are carried out by students through recycling competitions and the creation of art products from inorganic waste.

3. **Recycle**

Organic waste from the cafeteria and green areas is collected and processed into compost using simple composting equipment in the campus garden. The compost produced is reused to fertilize plants in the university's green areas. Meanwhile, inorganic waste such as paper and plastic is sent to recycling partners in collaboration with the Semarang City Environment Agency.

4. **Digital Support and Monitoring**

UNIMUS has utilized an ICT (Information and Communication Technology) based system to support the implementation of the 3R program. Through internal applications and digital reporting systems, each faculty can record waste volume, waste types, and reduction progress. The data is integrated into a campus environmental monitoring dashboard managed by UPPU.

<http://192.168.111.107/wasteunimus/index.php?page=input>

5. **Education and Awareness**

The 3R program is also part of **Environmental Education and Environmental Health and Safety activities** for students and the academic community. Activities such as waste management training, recycling innovation competitions, and regular green action activities are held annually.

Link video sosialisasi:

https://drive.google.com/file/d/199uQBJT-EDuLqJHIEfxgBuGGxFAo6yE6/view?usp=drive_link

6. **Partnership and Community Engagemnt**

UNIMUS collaborates with local environmental communities and city governments in waste management and public education activities. Community Service (PkM) activities are also focused on 3R education around the campus and Muhammadiyah affiliated schools.



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[3] Waste (WS)

[3.2] Total volume of paper and plastic produced this year

Type of waste	amount (ton)		
	Produced		Reduced
	Last year (2025)	This Year (2026)	
Plastic	63.2	60	3.2
PET (Polyethylene Terephthalate) Bottles: Mineral water bottles, juice bottles, beverage packaging	11	10.7	0.3
HDPE (High-Density Polyethylene) Plastic: Refillable water gallons, soap bottles	9	8.3	0.7
LDPE (Low-Density Polyethylene) plastic: Clear plastic bags, plastic food wrap	16.5	16	0.5
PP (Polypropylene) Plastic: Food containers, plastic drinking cups, straws	13.7	13	0.7
PS (Polystyrene) Plastic: Styrofoam, plastic spoons, snack food containers, coffee sachets.	13	12	1.0
Paper	81	69.2	11.8
HVS paper: Administrative documents (invitation letters), student reports, exam reports.	23	18	5
Cardboard/Duplex Paper: Stationery packaging, printer cardboard, archive folders	18	15.5	2.5
Brochure Paper: Magazines, promotional leaflets, campus activity information	14	12.7	1.3
Laminated or Glossy Paper: Magazine covers, event posters, banners	12	10	2
Tissue Paper: Toilet Tissue, Lecturer's Room, Canteen	14	13	1

Description:

(Please describe total volume of paper and plastic produced this year on your campus. The following is an example of the description. You can describe more related items if needed.)



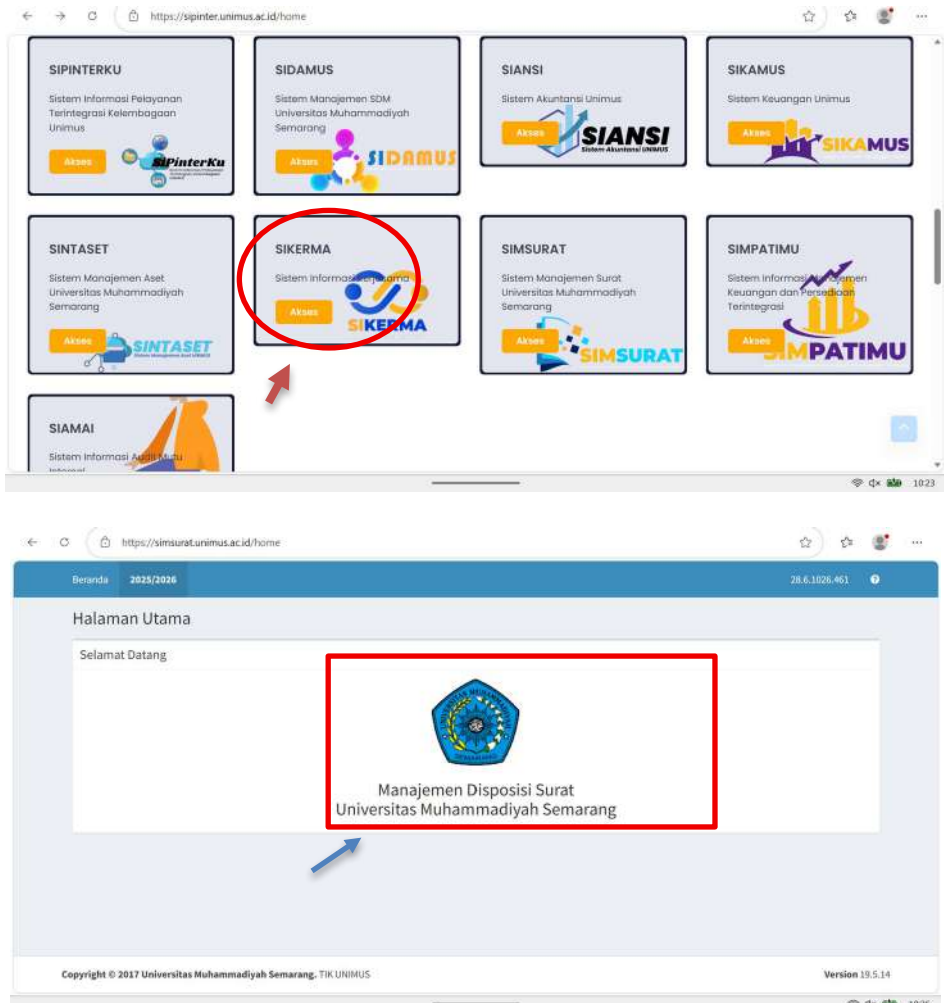
Based on the waste audit conducted this year, Universitas Muhammadiyah Semarang (UNIMUS) produced a total of **60 tons of plastic waste** and **69.2 tons of paper waste**. This amount reflects the continuous effort of the university to reduce waste generation through its **3R (Reduce, Reuse, Recycle)** program and ICT-based waste management initiatives.

Plastic Waste Interpretation:

The total plastic waste generated this year (2026) is **60 tons**, dominated by food and beverage packaging materials. The largest contributor is **LDPE (Low-Density Polyethylene) plastic (16 tons)** mostly from canteen food wrappers and clear plastic bags and **PP plastic (13 tons)** used for disposable food containers and drinking cups and **PS bottles (12 tons)** from bottled beverages. This is followed **PET (Polyethylene Terephthalate) Bottles (10.7 tons)** from mineral water bottles, juice bottles, beverage packaging, **HDPE (High-Density Polyethylene) Plastic (8.3 tons)** such as refillable water gallons, soap bottles.

Paper Waste Interpretation:

Paper waste generated this year (2026) reached **69.2 tons**, with the majority coming from **HVS paper (18 tons)** used for administrative documents, examinations, and reports. **Cardboard and duplex paper (15.5 tons)** originated from office packaging materials and archived files, while **brochure and leaflet paper (12.7 tons)** came from promotional and information materials. **Laminated or glossy paper (10 tons)** was generated from posters, banners, and publications, and **tissue paper (13 tons)** was used in sanitation facilities across campus.

No	Program	Evidence
1	E-office / electronic correspondence:	



simourat.unimus.ac.id/sk

Beranda Kode Surat Surat Disposisi Unit 2025/2026 Administrator Rektor

Surat Keluar

PEMBERITAHUAN!
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10-10-2025	0779/UNIMUS/PD/2025	Kepala LLDikti Wilayah VI Jawa Tengah	-	Permohonan Berita Acara Pemeriksaan	Wakil Rektor I	Biro Administrasi Akademik (BAA)	Brisikan Ubah Hapus
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30-10-2025	0777/UNIMUS/UND/2025	Panitia QS	-	Workshop QS	Rektor	Kepala Kantor Rektorat	Brisikan Ubah Hapus

E OFFICE ELECTRONIC

2 SIAMUS for academic services

Unimus SSO RWayat Masuk HI, Ismi Dya Wirdati, SKM, M.Kes

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Sistem Informasi Penelitian dan Pengabdian Masyarakat Internal Unimus
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https://siamus.unimus.ac.id/?token=KWVqqGxkQN4IE56Ni5oN5ZaiqQf3b6TRTebqba3gg94emrh8XvbiOnNIMDo1YiRFLxSvu0eFikV...

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Verifikasi

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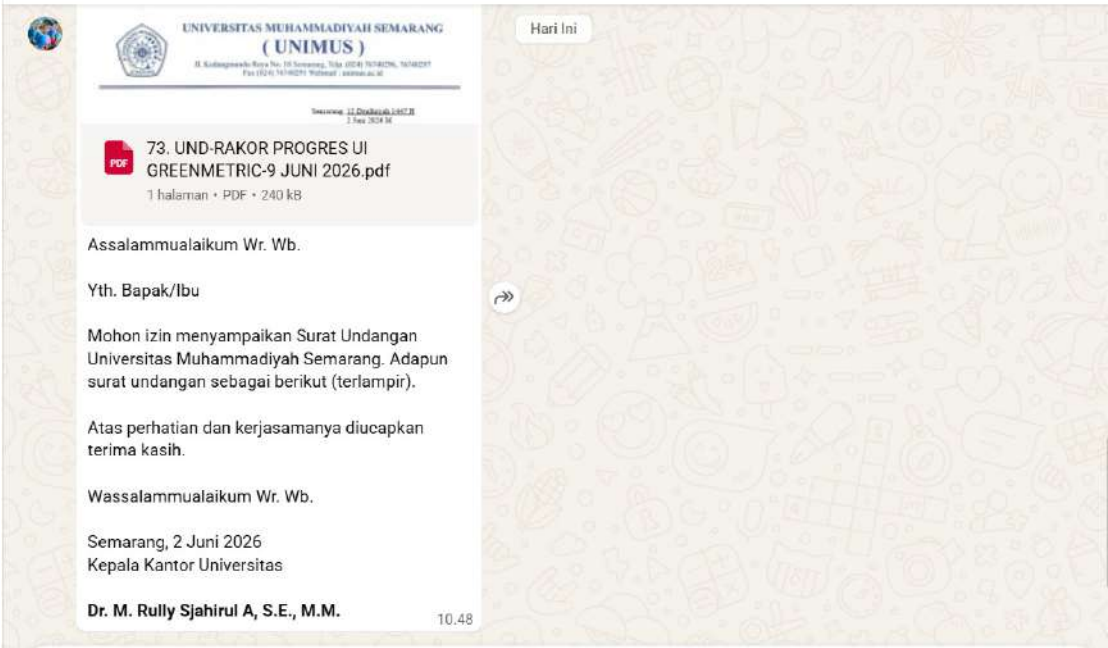


3 E-learning for course materials and assignments:

The screenshot displays the IFKM | Elearning Fakultas Kesehatan Masyarakat website. The top navigation bar includes 'IFKM', 'Dashboard', and 'My courses'. A red box highlights the header area, and a red arrow points to the user profile '0611039302 Ismi Elya Wirdati, S.K.M., M.Kes'. The main content area shows a 'Course overview' section with three course cards: 'Demografi Terapan S1 Kesehatan Masyarakat MKP ...', 'Hygiene Lingkungan Kerja dan Keselamatan Kerja S1 ...', and 'Ilmu Kependudukan S1 Kesehatan Masyarakat REG A ...'. A right sidebar contains a 'Navigation' menu with links to 'Dashboard', 'Site home', 'Site pages', 'My courses', 'Site blogs', 'Site badges', 'Tags', and 'INFORMASI'. Below the course overview, the 'HIGIENE LINGKUNGAN KERJA' course is selected, showing its description and a list of resources including 'FORUM Announcements' and 'FILE RPS HLK'. An 'Administration' sidebar on the right lists options like 'Course administration', 'Settings', 'Course completion', 'Users', 'Filters', 'Reports', 'Gradebook setup', 'Badges', 'Import', 'Backup', 'Restore', and 'Copy course'. A modal window titled 'Add an activity or resource' is open, displaying a grid of icons for various activities and resources such as 'Assignment', 'Attendance', 'Book', 'Chat', 'Choice', 'Database', 'External tool', 'Feedback', 'File', 'Folder', 'Forum', 'Glossary', 'HSP', 'IMS content package', 'Lesson', 'Page', 'Quiz', and 'SCORM package'.

E-Learning Course

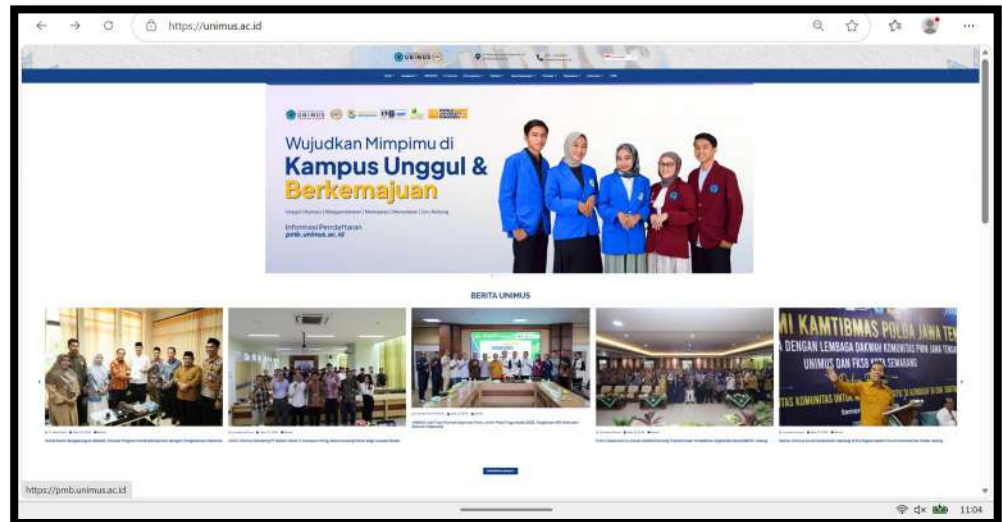


4	Reducing printed meeting documents	 Meet Announcement
5	Electronic signature:	 Barcode Signature



6

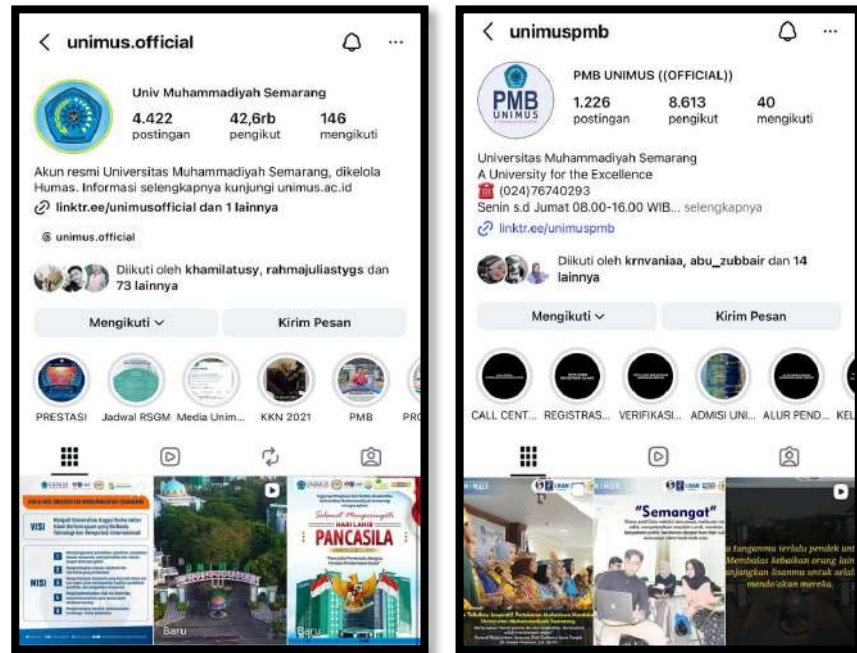
Reducing printed brochures to digital publications



<https://unimus.ac.id/> Website



<https://pmb.unimus.ac.id/> Website



Unimus Social Media (Instagram)

7 Zero Single-Use Plastic Campaign


KEPUTUSAN REKTOR
UNIVERSITAS MUHAMMADIYAH SEMARANG
Nomor : 010/UNIMUS/SC/KG/2024
tentang:
PEMBATASAN KEMASAN MAKANAN DAN MINUMAN
YANG MENGADUNG BAHAN BERBAHAYA DAN BERACUN (B3)
DI LINGKUNGAN UNIVERSITAS MUHAMMADIYAH SEMARANG
DENGAN RAHMAT Allah SUBHANAHU WA TA'ALA
REKTOR UNIVERSITAS MUHAMMADIYAH SEMARANG

Menimbang :

- a. bahwa semakin banyak dan meluasnya penggunaan kemasan makanan dan minuman yang mengandung bahan berbahaya dan beracun perlu dibatasi dalam rangka kelestarian manusia dan perlindungan lingkungan hidup;
- b. bahwa cukup banyak kasut/wangun rumah makan di lingkungan Universitas Muhammadiyah Semarang yang masih menggunakan kemasan makanan dan minuman yang mengandung bahan berbahaya dan beracun;
- c. bahwa sebagai "Kampus Hijau" Universitas Muhammadiyah Semarang diharapkan membatasi penggunaan kemasan makanan dan minuman yang mengandung bahan berbahaya dan beracun;
- d. bahwa berdasarkan pertimbangan sebagaimana dimaksud pada huruf a, huruf b, dan huruf c, perlu menetapkan Keputusan Rektor Universitas Muhammadiyah Semarang tentang Pembatasan Kemasan Makanan dan Minuman yang mengandung Bahan Berbahaya dan Beracun (B3) di Lingkungan Universitas Muhammadiyah Semarang

Mengingat :

- 1. Undang-Undang Republik Indonesia Nomor 29 Tahun 2007, tentang Sistem Pendidikan Nasional;
- 2. Undang-Undang Republik Indonesia Nomor 17 Tahun 2023 tentang Kesehatan;
- 3. Peraturan Pemerintah Republik Indonesia Nomor 4 Tahun 2014 tentang Penyelenggaraan Pendidikan Tinggi dan Pengelolaan Perguruan Tinggi;
- 4. Peraturan Pemerintah Nomor 19 Tahun 2005 tentang Standar Nasional Pendidikan;
- 5. Peraturan Pemerintah Republik Indonesia Nomor 22 Tahun 2021 tentang Penyelenggaraan Perlindungan dan Pengelolaan Lingkungan Hidup;
- 6. Keputusan Mendikbud Nomor 139/Dit/1999, tentang Pendidikan Universitas Muhammadiyah di Semarang;
- 7. Peraturan Menteri Lingkungan Hidup dan Kehutanan Nomor 6 Tahun 2021 Tentang Tata Cara dan Penyelenggaraan Limbah Bahan Berbahaya dan Beracun;
- 8. Keputusan PP Muhammadiyah Nomor 433/KEP/10/D/2023 tentang Pengangkatan Rektor Universitas Muhammadiyah Semarang Masa Jabatan 2023-2027;

MEMUTUSKAN:

Menetapkan :

KEPUTUSAN REKTOR UNIVERSITAS MUHAMMADIYAH SEMARANG TENTANG PEMBATASAN KEMASAN MAKANAN DAN MINUMAN YANG MENGADUNG BAHAN BERBAHAYA DAN BERACUN (B3) DI LINGKUNGAN UNIVERSITAS MUHAMMADIYAH SEMARANG;

KESATU : Menetapkan pembatasan penggunaan kemasan makanan dan minuman yang mengandung bahan berbahaya dan beracun di lingkungan Universitas Muhammadiyah Semarang;

KEDUA : Mendorong penggunaan kemasan makanan dan minuman yang mengandung bahan yang ramah lingkungan seperti daun untuk pembungkusan makanan, kardus, boks, dan gelas plastik yang eco-friendly serta mengurangi penggunaan bahan kemasan yang mengganggu kelestarian manusia dan lingkungan;

KETIGA : Mendorong kegiatan daur ulang kemasan makanan dan minuman;

KEEMPAT : Mendorong melakukan sosialisasi bahan kemasan yang ramah lingkungan kepada para penjual makanan dan minuman di lingkungan Universitas Muhammadiyah Semarang;

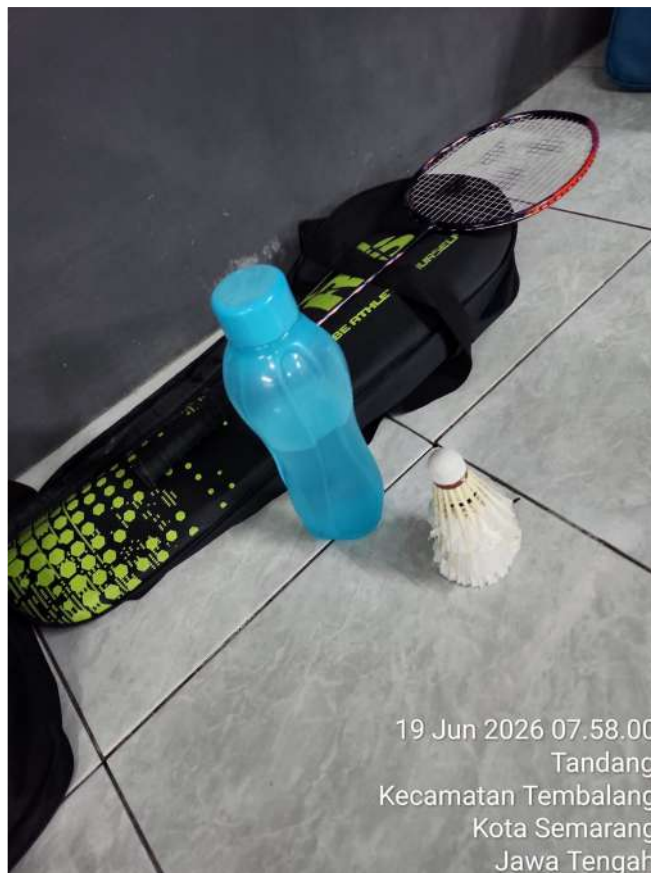
Rule Zero Single Use Plastic



8	Use of tumblers for students/ lecturers/ employees:	  
9	Provision of water refill stations	 Student filling a tumbler



10 Restricting single-use plastic bottles during campus activities:



Sport Tumbler

11 Sorting plastic



and paper waste



Trash bins categorized by type



12 Collaboration with waste banks/recycling partners:

Kota Semarang

Reverse Vending Machine Ubah Sampah Plastik Jadi Rupiah Makin Mudah, Komitmen Menjaga Lingkungan

Fikto Novianti, Suara Merdeka - Selasa, 10 Desember 2024 | 17:00 WIB

f x w t i s



Universitas Muhammadiyah Semarang (Umsu) mendapatkan Reverse Vending Machine (RVM) dari PT Bank Syariah Indonesia Tbk (BSI), bersama sama ini (suaramerdeka.com/Fikto Novianti)

SEMARANG, suaramerdeka.com - Sampah bukan lagi barang bekas tidak bernilai.

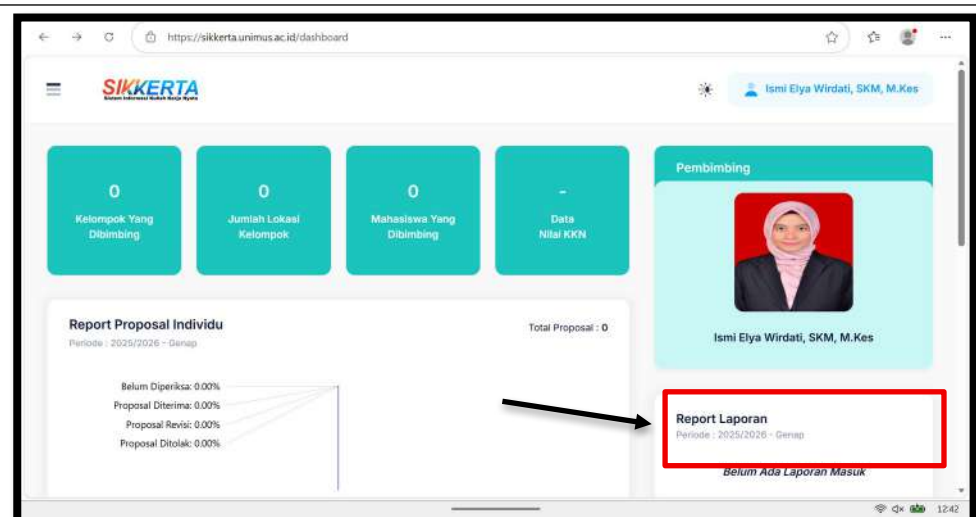
Dengan reverse vending machine, siapa saja bisa mengubah sampah menjadi pundi uang sembari menjaga bumi agar tetap layak ditinggali hingga waktu yang lama.



Collaboration waste with bank

Source : [UNIMUS MOU BSI MACHINE BOTOL - Google Search](#)

13 Digitizing academic and administrative reports



Digital academic and administration



Evidence(s)

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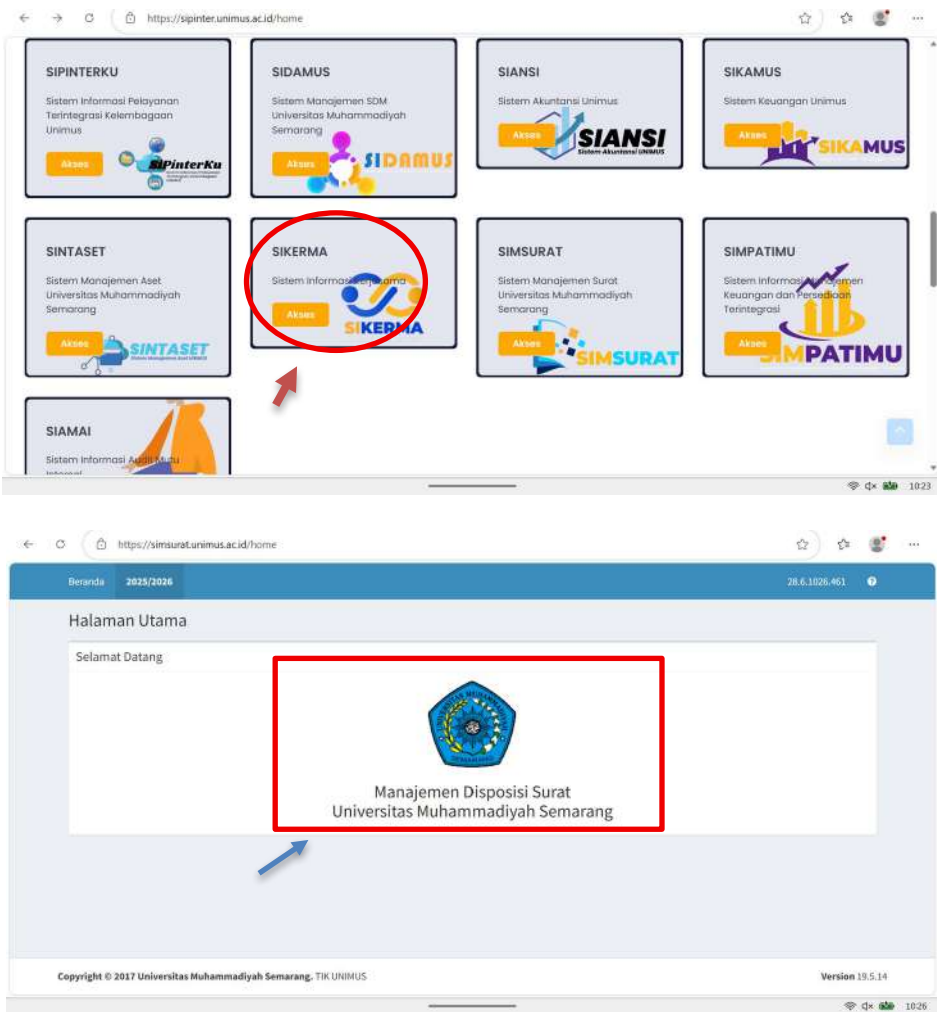


Based on the waste audit conducted for the previous year, University of Muhammadiyah Semarang produced a total of **144.2 tons of paper and plastic waste**, consisting of **63.2 tons of plastic waste** and **81 tons of paper waste**. The plastic waste was mainly generated from food and beverage packaging, including PET bottles, HDPE containers, LDPE plastic bags and food wrap, PP food containers and drinking cups, and PS/styrofoam-based packaging. Among these categories, LDPE plastic was the largest contributor with **16.5 tons**, followed by PP plastic with **13.7 tons**, PS plastic with **13 tons**, PET bottles with **11 tons**, and HDPE plastic with **9 tons**.

Paper waste generated in the previous year reached **81 tons**, mostly from HVS paper used for administrative documents, student reports, examination documents, and academic reports. Other sources included cardboard and duplex paper from packaging and archive folders, brochure paper from campus information and promotional materials, laminated or glossy paper from posters and banners, and tissue paper from sanitation facilities, lecturer rooms, and canteens.

Compared with the current year, the total volume of paper and plastic waste decreased from **144.2 tons to 129.2 tons**, showing a total reduction of **15 tons**. This reduction indicates the university's continuous effort to minimize paper and plastic waste through digitalization, paperless administration, e-learning, electronic correspondence, waste segregation, recycling practices, and programs to reduce single-use plastics on campus.

The gradual decline in total paper waste this year reflects the effectiveness of the university's. **UNIMUS has more than 10 paper and plastic reduction programs**, including:

No	Program	Evidence
1	E-office / electronic correspondence:	



sim surat.unimus.ac.id/sk

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2 SIAMUS for academic services

Unimus SSO Riwatya Masuk Hi, Irmil Elya Wirdati, SKM, M.Kes

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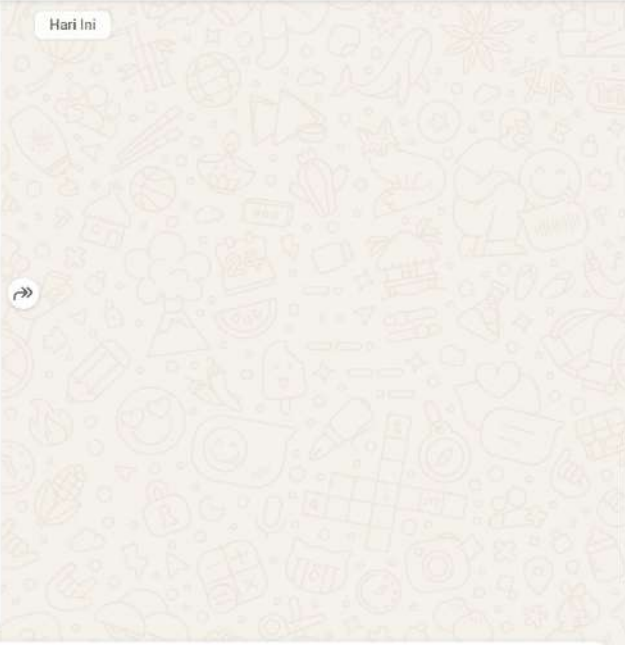
3

E-learning for course materials and assignments:

The screenshots illustrate the IFKM E-learning platform interface. The first screenshot shows the course overview page with a red box highlighting the header "IFKM | Elearning Fakultas Kesehatan Masyarakat" and an arrow pointing to it. The second screenshot shows the course administration page for "HIGIENE LINGKUNGAN KERJA" with a sidebar menu. The third screenshot shows the "Add an activity or resource" modal window with various activity icons like Assignment, Attendance, Book, Chat, Choice, Database, External tool, Feedback, File, Folder, Forum, Glossary, H5P, IMS content package, Lesson, Page, Quiz, and SCORM package.

E-Learning Course



4	Reducing printed meeting documents	UNIVERSITAS MUHAMMADIYAH SEMARANG (UNIMUS) Jl. Kedungmundu Raya No. 18 Semarang, Telp. (024) 76740296, 76740297 Fax (024) 76740291 Website : unimus.ac.id Tuesdays, 12 Dzulhijah 1447 H 2 Jun 2026 16  73. UND-RAKOR PROGRES UI GREENMETRIC-9 JUNI 2026.pdf 1 halaman • PDF • 240 kB Assalamualaikum Wr. Wb. Yth. Bapak/Ibu Mohon izin menyampaikan Surat Undangan Universitas Muhammadiyah Semarang. Adapun surat undangan sebagai berikut (terlampir). Atas perhatian dan kerjasamanya diucapkan terima kasih. Wassalamualaikum Wr. Wb. Semarang, 2 Juni 2026 Kepala Kantor Universitas Dr. M. Rully Sjahirul A, S.E., M.M. 10.48 Hari Ini  Meet Announcement
5	Electronic signature:	UNIVERSITAS MUHAMMADIYAH SEMARANG Fakultas Ilmu Keperawatan dan Kesehatan Jl. Kedungmundu Raya No. 18 Semarang, Telp. (024) 76740297 Semarang, 50273 Jawa Tengah, e-mail : tik@unimus.ac.id Nomor : 2/UNIMUS.G/KM/2026 Perihal : Surat Keterangan Grading Letter Semarang, 05 Februari 2026 Assalamualaikum Wr. Wb. Yang bertanda tangan di bawah ini: Nama : Dr. Ali Rosidi S.KM, M.Si Jabatan : Dekan NIK : 28.6.1026.021 Menerangkan bahwa yang tersebut di bawah ini: Nama : ANITA PUSPITA SARI NIM : G2A003009 Tempat, Tanggal Lahir : SEMARANG, 30 Januari 1985 Adalah benar lulusan Program Studi S1 Ilmu Keperawatan Universitas Muhammadiyah Semarang. Yang bersangkutan telah LULUS pada : Tanggal Lulus : 29 September 2007 Nomor Ijazah : No.F.1343/S.KEP No.U.228/KEP Program Studi : S1 Ilmu Keperawatan IPK : 3.12 Demikian surat keterangan ini dikeluarkan untuk dapat dipergunakan sebagaimana mestinya Wabillahi taufiq wal hidayah Wassalamualaikum Wr. Wb. Dekan  Dr. Ali Rosidi S.KM, M.Si 28.6.1026.021 Barcode Signature



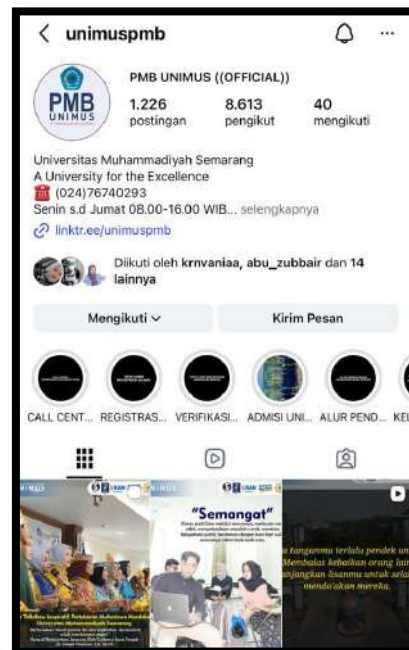
6	Reducing printed brochures to digital publications
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<https://unimus.ac.id/> Website



<https://pmb.unimus.ac.id/> Website



Unimus Social Media (Instagram)

7 Zero Single-Use Plastic Campaign



Rule Zero Single Use Plastic

8	Use of tumblers for students/ lecturers/ employees:	  
9	Provision of water refill stations	

Figure 9. Student filling a tumbler

10	Restricting single-use plastic bottles during campus activities:
11	Sorting plastic



Figure 10. Sport Tumbler



and paper waste



Figure 11. Trash bins categorized by type



12 Collaboration with waste banks/recycling partners:

Kota Semarang

Reverse Vending Machine Ubah Sampah Plastik Jadi Rupiah Makin Mudah, Komitmen Menjaga Lingkungan

Fikto Novianti, Suara Merdeka - Selasa, 10 Desember 2024 | 17:00 WIB

[f](#) [x](#) [w](#) [t](#) [i](#) [o](#)



Universitas Muhammadiyah Semarang (Umsu) mendapatkan Reverse Vending Machine (RVM) dari PT Bank Syariah Indonesia Tbk (BSI), bekerja sama ke [suaramerdeka.com](#) (Fikto Novianti)

SEMARANG, suaramerdeka.com – Sampah bukan lagi barang bekas tidak bernilai.

Dengan reverse vending machine, siapa saja bisa mengubah sampah menjadi pundi uang sembari menjaga bumi agar tetap layak ditinggali hingga waktu yang lama.

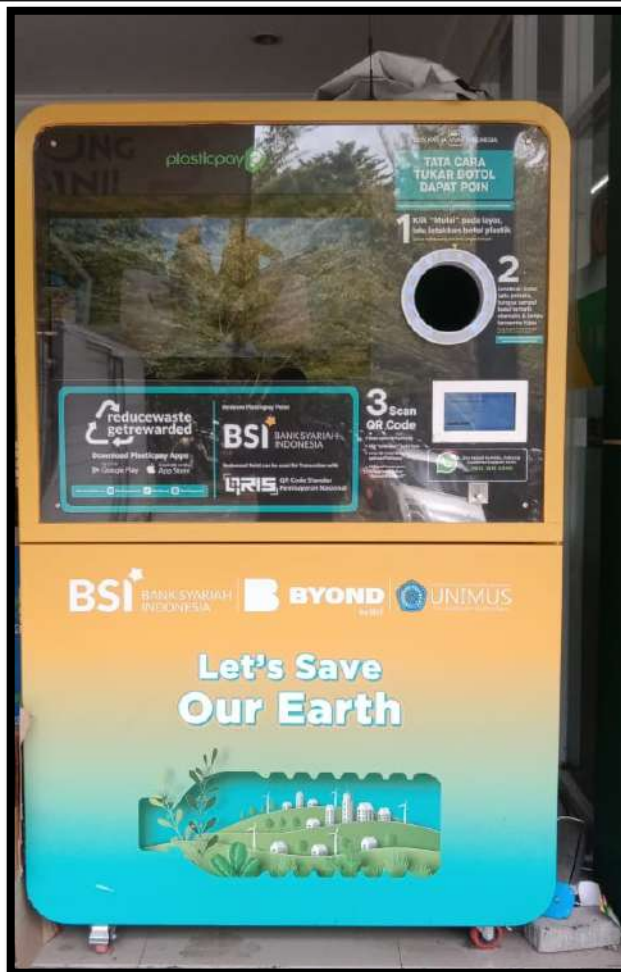


Figure 12 Collaboration waste with bank

Source : [UNIMUS MOU BSI MACHINE BOTOL - Google Search](#)

13 Digitizing academic and administrative reports

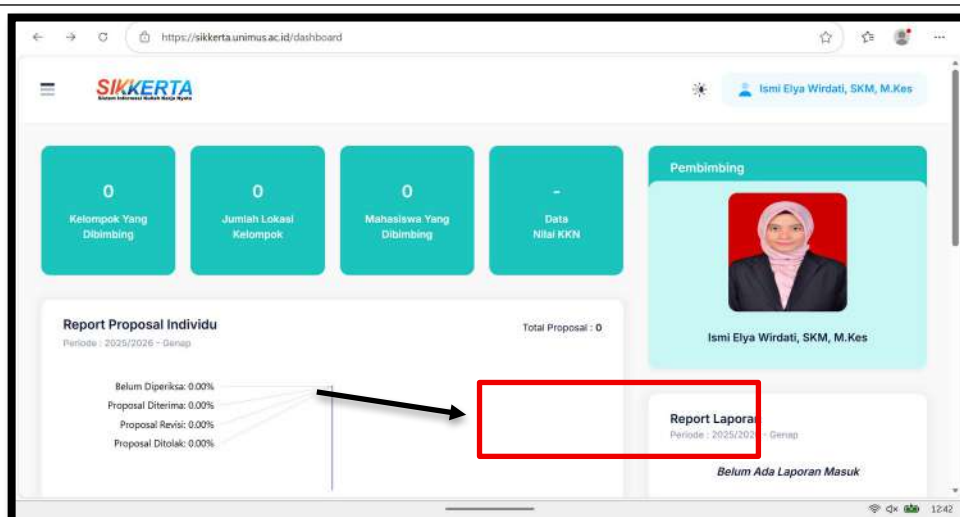


Figure 13. Digital academic and administration



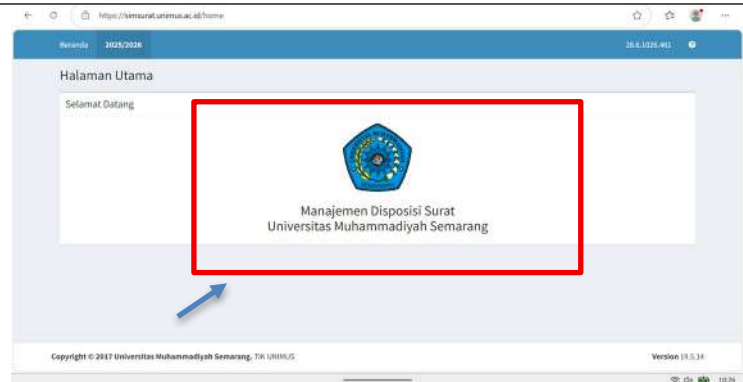
Evidence UI GreenMetric Questionnaire

University : University of Muhammadiyah Semarang
 Country : Semarang, Central of Java, Indonesia
 Web Address : <https://greenmetric.unimus.ac.id/>

[3] Waste (WS)

[3.4] Program to Reduce the Use of Paper and Plastic on Campus (WS.2)

No	Program Name	type of reduction	implementation unit,	evidence	quantitative achievements
1	Paperless Academic Administration through SIAMUS	Reduction of HVS paper used for academic documents, student academic records, course registration, schedules, and academic services	Academic Administration, Study Programs, Faculties		Contributed to the reduction of HVS paper from 23 tons to 18 tons, reducing 5 tons



ummaurmat.unimus.ac.id/uk

Beranda Kode Surat Surat Disposisi Unit 2025/2026 Admin/Inkator Rektor

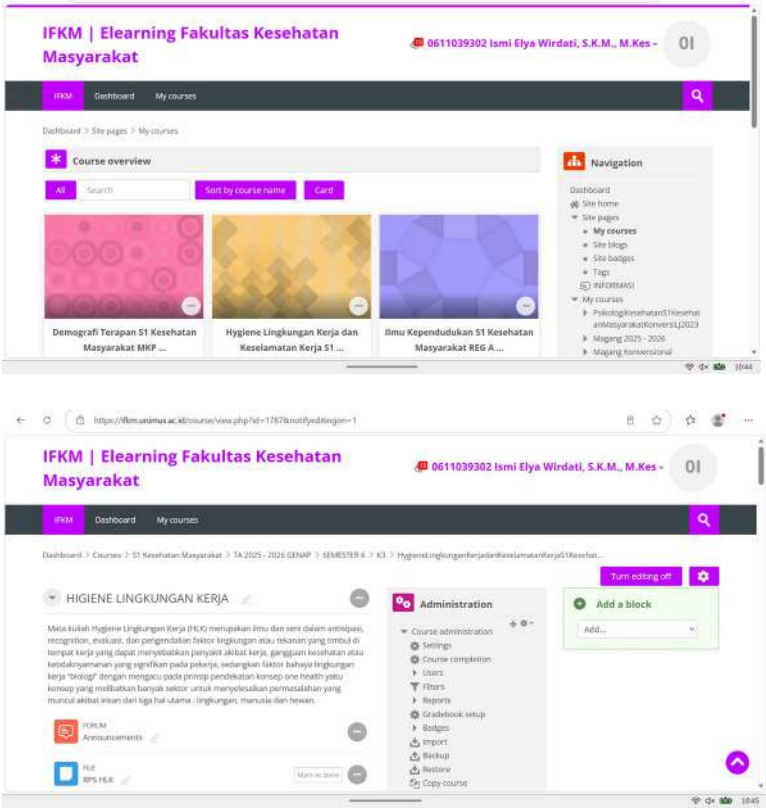
Surat Keluar

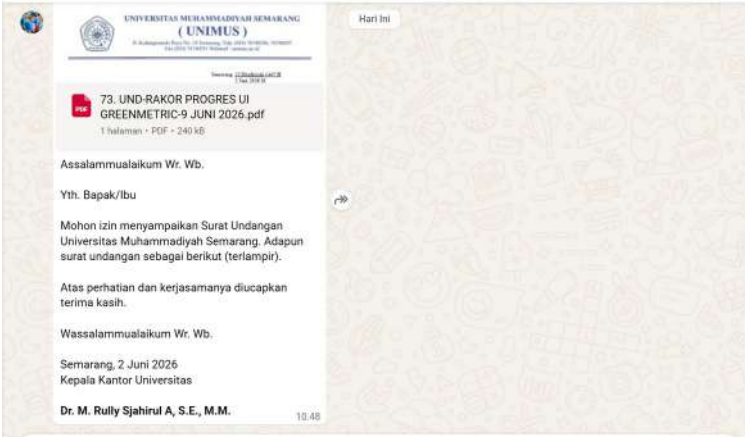
PEMBERITAHUAN!
Penomoran surat yang baru dimulai dari Bulan September 2025 s.d Agustus 2026 dengan periode tahun 2025/2026. Dimohon kepada pengguna untuk mencermati dan memastikan kembali periode yang aktif agar tidak terjadi kesalahan saat input ke dalam sistem.

[+ Tambah Surat](#) [\[?\] Backup Surat Keluar](#)

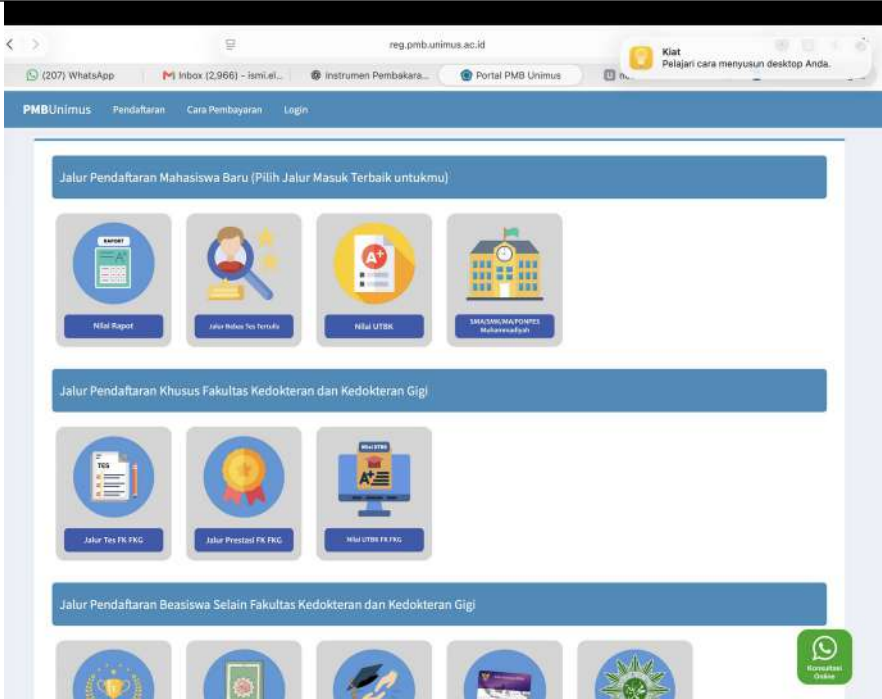
Show 12 entries Search

TANGGAL KELUAR	NO. SURAT	KERAPADA	REPRODA INTERNAL	PERINAL	TTO PERBUAT	PEMBUAT	AKSI
26-10-2025	0780/UMHUS/PO/2025	Kepala Lembaga Layanan Pendidikan Tinggi Wilayah VI Jawa Tengah	-	Permohonan Ralat Inpassing a.n. Swasty	Rektor	Ka. Bag. Kepegawaian	Detail Edit Hapus
10-10-2025	0778/UMHUS/PO/2025	Kepala LLD Bad Wilayah VI Jawa Tengah	-	Permohonan Berita Acara Pemeriksaan	Wakil Rektor 1	Biro Administrasi Akademik (BAA)	Detail Edit Hapus
27-10-2025	0775/UMHUS/SKAP/2025	WR III	-	Ujian Doktor	Rektor	Sekretariat	Detail Edit Hapus
30-10-2025	0777/UMHUS/UMK/2025	Panitia QS	-	Workshop QS	Rektor	Kepala Kantor Rektorat	Detail Edit Hapus

2	E-Learning for Digital Teaching Materials and Assignments	Reduction of HVS paper used for printed teaching materials, student assignments, reports, and learning evaluation	IT Unit, Faculties, Study Programs, Lecturers		Supported the reduction of HVS paper by 5 tons
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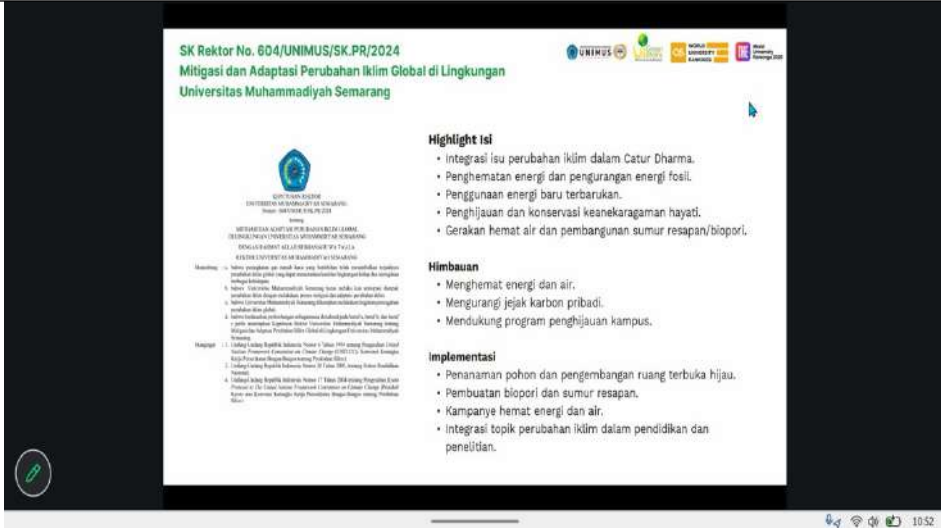
3	Electronic Correspondence / E-Office System	Reduction of HVS paper used for official letters, memos, dispositions, and administrative archives	Rectorate, University Secretariat, Faculties, Administrative Units		Supported the reduction of HVS paper from 23 tons to 18 tons
4	Digital Meeting Documents and Paperless Meetings	Reduction of paper used for meeting invitations, agendas, attendance lists, minutes, and printed meeting materials	Rectorate, Dean Offices, Study Programs, Bureaus, Institutes		Supported the reduction of HVS paper by 5 tons and brochure paper by 1.3 tons

5	Electronic Signature for Official Documents	Reduction of HVS paper and printed archives for official documents	Rectorate, Dean Offices, Administrative Bureau, ICT Unit	 RULE OF ELECTRONIC SIGNATURE	Supported the reduction of HVS paper by 5 tons
---	---	--	--	---	--

6	Online Registration and Digital Forms	Reduction of printed forms, registration documents, brochures, and manual administrative sheets	Admission Office, Faculties, Study Programs, Event Committees	 Source : https://reg.pmb.unimus.ac.id/index2.php?hal=LTx6F4YM6QOLQdyIIOGMHubs6HU6Vd5pYLnRmxA1KOvniCpB5YUCqEcPs0deDxZ0	Supported the reduction of brochure paper from 14 tons to 12.7 tons, reducing 1.3 tons
---	---------------------------------------	---	---	--	--

7	Digital Publication and Online Promotion Campaign	Reduction of printed brochures, leaflets, posters, magazines, and physical promotional materials	Public Relations Office, Admission Office, Faculties, Study Programs, Media Center	 Source. https://pmb.unimus.ac.id/ Website	supported the reduction of brochure paper by 1.3 tons and eliminated/glossy paper
---	---	--	--	---	---

8	Double-Sided Printing and Print Only When Necessary Policy	Reduction of HVS paper through double-sided printing and limitation of unnecessary printing	All administrative units, laboratories, faculty offices, library	 Rule Reduction of HVS	Supported the reduction of HVS paper by 5 tons
---	--	---	--	---	--

9	Reuse of Used Paper for Internal Drafts	Reuse of one-sided used paper for internal drafts, notes, document corrections , and temporary administrative records	Administrative Offices, Laboratories , Library, Study Programs	 Paper Reuse Guidelines	Supported the reduction of HVS paper by 5 tons and cardboard/duplex paper by 2.5 tons
10	Zero Single-Use Plastic Campaign	Reduction of single-use plastics such as plastic bags, straws, plastic cups, food packaging, and disposable containers	Rectorate, Faculties, Canteens, Student Organizations, Green Campus Team	 Campaign Posters Zero Plastic to civitas academic	Supported the reduction of total plastic waste from 63.2 tons to 60 tons, reducing 3.2 tons

11

Reusable
Bottle and
Tumbler
Campaign

Reduction
of PET
plastic
bottles
from
packaged
drinking
water

Students,
Lecturers,
Staff,
Canteens,
University
Events



Photos of students and staff using tumblers

Supported the reduction
of PET bottles from 11
tons to 10.7 tons,
reducing 0.3 tons

12	Reduction of Plastic Bottled Water in Campus Events	Reduction of PET bottles, PP plastic cups, plastic straws, and disposable drinking water packaging in meetings, seminars, and campus events	Rectorate, Faculties, Study Programs, Event Committees		Supported the reduction of PET bottles by 0.3 tons and PP plastic from 13.7 tons to 13 tons, reducing 0.7 tons
----	---	---	--	--	--



Photos of events without plastic bottled water, use of dispensers and reusable glasses

13

Refill Water
Station on
Campus

Reduction
of bottled
drinking
water, PET
bottles,
and
several
plastic
water
containers

Lecture
Buildings,
Faculties,
Library,
Rectorate,
Canteens



Photos of refill water stations, list of locations

Supported the reduction
of PET bottles by 0.3
tons and HDPE plastic
from 9 tons to 8.3 tons,
reducing 0.7 tons

Reusable Food Containers and Eco-Friendly Packaging in Canteens

Reduction of LDPE, PP, and PS/styrofoam from food wrappers, plastic cups, straws, and disposable food containers

Campus Canteens, Cooperatives, Food Vendors, Building Management Units



Supported the reduction of LDPE by 0.5 tons, PP by 0.7 tons, and PS by 1 ton



Photos of canteen practices → eco-friendly packaging samples

15

Paper and Plastic Waste Segregation and Recycling Partnership

Reduction of paper and plastic residual waste through segregation, waste bank activities, and recycling partnership

Green Campus Team, Cleaning Service, UNIMUS Waste Bank / Recycling Partners, Faculties



Photo of waste weighing reports, MoU or cooperation documents, collection documentation

Supported the total reduction of paper waste by 11.8 tons and plastic waste by 3.2 tons, with a total reduction of 15 tons

16	Prohibition of Styrofoam-Based Flower Boards and Replacement with Living Trees or Fresh Orchid Flowers	Reduction of PS / polystyrene waste from conventional styrofoam-based congratulatory flower boards by replacing them with living trees, ornamental plants, or fresh orchid flowers	Rectorate, Public Relations Office, General Affairs Unit, Faculties, Event Committees, Flower Vendors	 KEPUTUSAN REKTOR UNIVERSITAS MUHAMMADIYAH SEMARANG Nomor : 010/UNMUS/SK/PG/2024 Semarang PEMBATASAN KEMASAN MAKANAN DAN MINUMAN YANG MENGADUNG BAHAN BERBAHAYA DAN BERACUN (B3) DI LINGKUNGAN UNIVERSITAS MUHAMMADIYAH SEMARANG DENGAN RAHMAT ALLAH SUBHANAHU WA TA'ALA REKTOR UNIVERSITAS MUHAMMADIYAH SEMARANG Menimbang : a. bahwa semakin banyak dan meluasnya penggunaan kemasan makanan dan minuman yang mengandung bahan berbahaya dan beracun perlu dibatasi dalam rangka keselamatan manusia dan perlindungan lingkungan hidup; b. bahwa cukup banyak kantin/warung/rumah makan di lingkungan Universitas Muhammadiyah Semarang yang masih menggunakan kemasan makanan dan minuman yang mengandung bahan berbahaya dan beracun; c. bahwa sebagai "Kampus Hijau" Universitas Muhammadiyah Semarang diharapkan membatasi penggunaan kemasan makanan dan minuman yang mengandung bahan berbahaya dan beracun; d. bahwa berdasarkan pertimbangan sebagaimana dimaksud pada huruf a, huruf b, dan huruf c, perlu menetapkan Keputusan Rektor Universitas Muhammadiyah Semarang tentang Pembatasan Kemasan Makanan dan Minuman yang mengandung Bahan Berbahaya dan Beracun (B3) di Lingkungan Universitas Muhammadiyah Semarang. Mengingat : 1. Undang-Undang Republik Indonesia Nomor 20 Tahun 2003, tentang Sistem Pendidikan Nasional; 2. Undang-Undang Republik Indonesia Nomor 17 Tahun 2023 tentang Kesehatan; 3. Peraturan Pemerintah Republik Indonesia Nomor 4 Tahun 2014 tentang Penyelenggaraan Pendidikan Tinggi dan Pengelolaan Perguruan Tinggi; 4. Peraturan Pemerintah Nomor 19 Tahun 2005 tentang Standar Nasional Pendidikan; 5. Peraturan Pemerintah Republik Indonesia Nomor 22 Tahun 2021 tentang Penyelenggaraan Perlindungan dan Pengelolaan Lingkungan Hidup; 6. Keputusan Menteri Pendidikan dan Kebudayaan Nomor 139/DK/1999, tentang Pendidikan Universitas Muhammadiyah di Semarang; 7. Peraturan Menteri Lingkungan Hidup dan Kehutanan Nomor 6 Tahun 2021 Tentang Tata Cara dan Persyaratan Pengelolaan Limbah Bahan Berbahaya dan Beracun; 8. Keputusan PP Muhammadiyah Nomor 43/UK/PUU-D/2023 tentang Pengangkatan Rektor Universitas Muhammadiyah Semarang Masa Jabatan 2023-2027; MEMUTUSKAN: Menetapkan : KEPUTUSAN REKTOR UNIVERSITAS MUHAMMADIYAH SEMARANG TENTANG PEMBATASAN KEMASAN MAKANAN DAN MINUMAN YANG MENGADUNG BAHAN BERBAHAYA DAN BERACUN (B3) DI LINGKUNGAN UNIVERSITAS MUHAMMADIYAH SEMARANG. KESATU : Mewajibkan penggunaan kemasan makanan dan minuman yang mengandung bahan berbahaya dan beracun di lingkungan Universitas Muhammadiyah Semarang; KEDUA : Mendukung penggunaan kemasan makanan dan minuman yang mengandung bahan yang ramah lingkungan seperti daun untuk pembungkusan makanan, kardus, boks, dan gelas plastik yang eco-friendly serta mengurangi penggunaan bahan kemasan yang mengganggu keselamatan manusia dan lingkungan; KETIGA : Mendukung kegiatan daur ulang kemasan makanan dan minuman; KEEMPAT : Mendukung melakukan sosialisasi bahan kemasan yang ramah lingkungan kepada para penjual makanan dan minuman di lingkungan Universitas Muhammadiyah Semarang;	Supported the reduction of PS / polystyrene plastic from 13 tons to 12 tons, reducing 1 ton
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UNIVERSITAS MUHAMMADIYAH SEMARANG

(UNIMUS)

Jl. Kedungmundu Raya No. 18 Semarang, Telp. (024) 76740296, 76740297
Fax (024) 76740291 Webmail : unimus.ac.id

Nomor : 2811/UNIMUS/EDR/2025
Lampiran : -
Hal : Edaran Penggunaan Tumbler

Semarang, 18 Rabi'ul Akhir 1447 H
10 Oktober 2025 M.

Yth.
Seluruh Civitas Akademika
Universitas Muhammadiyah Semarang
Di - Semarang

Assalamu'alaikum WY. WB.

Bismilla salim, segala puji bagi Allah SWT, shalawat serta salam semoga senantiasa terlimpahkan bagi Rasulullah Muhammad SAW, Aamin.

Dalam rangka mewujudkan lingkungan kampus yang bersih, sehat, dan berkelanjutan serta mendukung upaya pengurangan sampah plastik sekali pakai, Universitas Muhammadiyah Semarang (Unimus) berkomitmen untuk menerapkan budaya ramah lingkungan di seluruh aktivitas kampus. Hal ini sejalan dengan komitmen Unimus dalam menciptakan lingkungan belajar yang berkualitas dan berkelanjutan.

Selubungan dengan hal tersebut, diumumkan kepada seluruh civitas akademika Universitas Muhammadiyah Semarang, *unilipit down*, berupa kepedulian, mahasiswa, serta tamu yang beraktivitas di lingkungan kampus, untuk memperhatikan ketentuan sebagai berikut:

1. Menggunakan *tumbler* (botol minum pakai ulang) dalam setiap kegiatan di lingkungan kampus.
2. Mengurangi dan menghindari penggunaan botol air minum plastik sekali pakai.
3. Memanfaatkan fasilitas pengisian ulang air minum (*refill station*) yang tersedia di lingkungan kampus.
4. Setiap unit kerja, fakultas, dan program studi agar mendukung implementasi kebijakan ini dalam penyelenggaraan rapat, seminar, pelatihan, kegiatan kemahasiswaan, dan acara lainnya dengan meminimalkan penggunaan kemasan plastik sekali pakai.
5. Panitia kegiatan di lingkungan Unimus diimbau untuk tidak menyediakan air minum dalam kemasan botol plastik sekali pakai, melainkan menyediakan dispenser atau galon beserta gelas pakai ulang atau mendorong peserta membawa *tumbler* masing-masing.
6. Seluruh civitas akademika diharapkan menjadi teladan dalam penerapan gaya hidup ramah lingkungan sebagai bagian dari budaya kampus.

Melalui kebijakan ini diharapkan dapat:

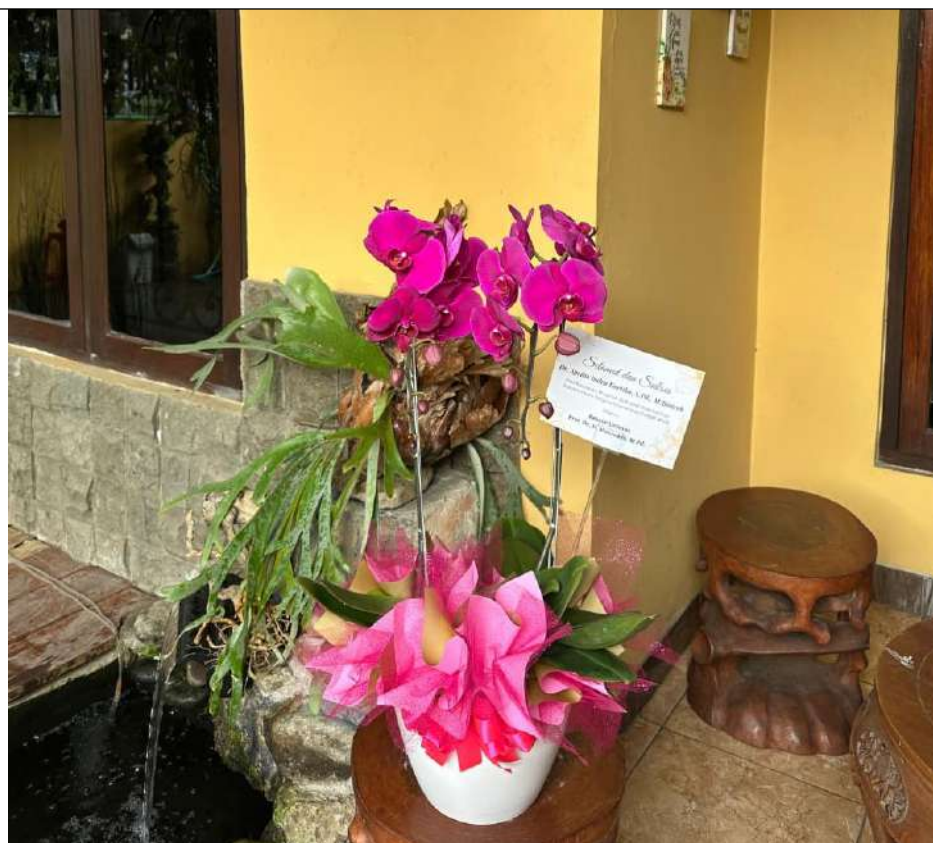
- Mengurangi volume sampah plastik di lingkungan kampus.
- Menumbuhkan kesadaran dan kepedulian terhadap pelestarian lingkungan.
- Mendukung terwujudnya kampus yang hijau, bersih, sehat, dan berkelanjutan.

Surat Edaran ini mulai berlaku sejak tanggal ditetapkan. Atas perhatian dan kerja sama seluruh civitas akademika, kami mengucapkan terima kasih.

Wassalamu'alaikum WY. WB.



Rule Zero Single Use Plastic





Description:

(Please describe the program to reduce the use of paper and plastic on your campus. The following is an example of the description. You can describe more related items if needed.)

Universitas Muhammadiyah Semarang (UNIMUS) has implemented various initiatives to reduce paper and plastic usage across campus operations as part of its *Green Campus* and *Sustainable Environment Program*. The university integrates digital transformation, waste reduction, and eco-friendly behavior into academic and administrative systems.

Through these continuous efforts, UNIMUS has significantly reduced its dependency on paper and single-use plastic materials, aligning with its commitment to environmental sustainability and **SDG 12 – Responsible Consumption and Production**.



Evidence

UI GreenMetric Questionnaire

University : University of Muhammadiyah Semarang
Country : Semarang, Central Java, Indonesia
Web Address : <https://greenmetric.unimus.ac.id/>

[3] Waste (WS)

[3.5] Total volume organic waste produced this year

Type of waste	amount (ton)					
	Produced		reduced	Treated		
	Last year (2025)	This Year (2026)		reused	down-cycled	up-cycled
Organic	232	221	11	35	120	40
Food Waste (Canteen): Egg, fruits, Coffee and tea grounds, Fish or chicken bones from leftover food, etc	75	70	5	20	35	10
Organic Waste from Laboratories and Practicals (Faculty of Health, Nutrition, and Food Technology)	28	26	2	5	15	5
Organic Waste from Campus Parks and Green Areas	72	70	2	5	50	15
Organic Waste from Dormitory Household Activities & Campus Units	57	55	2	5	20	10

Total treated = 35 + 120 + 40 = 195 ton

Treatment percentage = $195/221 \times 100 = 88,24\%$

Universitas Muhammadiyah Semarang (UNIMUS) continuously monitors and records the generation of organic waste as part of its integrated Green Campus and Circular Economy Program. Organic waste is generated from campus cafeterias, teaching laboratories, campus parks and green areas, student dormitories, and other supporting facilities. All organic waste is measured through a routine weighing system, documented in the campus waste management database, and analyzed periodically to evaluate waste reduction performance and treatment efficiency.

<https://sustainability.unimus.ac.id/waste>

In 2026, UNIMUS generated a total of **221 tons of organic waste**, representing a reduction of **11 tons (4.74%)** compared with **232 tons** generated in 2025. This reduction reflects the successful implementation of various waste prevention initiatives, including food waste minimization campaigns, efficient landscape maintenance, source segregation, digital awareness programs, and sustainable consumption practices across the university.

The organic waste generated during 2026 originated from four main sources: **70 tons** from campus cafeterias, **26 tons** from teaching laboratories and practical activities in the Faculties of Health,



Nutrition, and Food Technology, **70 tons** from campus parks and landscape maintenance, and **55 tons** from student dormitories and other campus operational units.

https://drive.google.com/file/d/1JWjEtCk36CsR3EWa_c8eQsV3RtKW03ts/view?usp=share_link

To support the implementation of a circular economy, UNIMUS successfully treated **195 tons (88.24%)** of the total organic waste generated. Organic waste was managed through several environmentally sustainable treatment methods, including **35 tons reused, 120 tons processed through composting and other down-cycling activities, and 40 tons converted into higher-value products through up-cycling initiatives**, such as Black Soldier Fly (BSF) cultivation, eco-enzyme production, and other organic resource recovery programs. Only a small portion of organic waste remained untreated due to unavoidable operational losses and contamination.

https://drive.google.com/file/d/1JWjEtCk36CsR3EWa_c8eQsV3RtKW03ts/view?usp=sharing

The compost produced is fully utilized within the university for tree planting, landscape maintenance, greenhouse cultivation, and soil improvement programs, while BSF products and eco-enzymes support sustainable waste management education and community engagement activities. These initiatives significantly reduce the amount of organic waste sent to landfill, improve soil fertility, reduce greenhouse gas emissions, and strengthen biodiversity within the campus environment.

(<https://drive.google.com/file/d/1exEV21hIW3BPRwGwGbnnQ0sIB9g2Tx0E/view?usp=sharing>)

The implementation of an integrated organic waste management system at UNIMUS follows the **Plan–Do–Check–Act (PDCA)** approach through routine monitoring, monthly performance evaluation, internal audits, management reviews, and digital KPI dashboards. Waste generation, treatment performance, compost production, material flow analysis, and environmental impacts are continuously monitored using an ICT-based management system to support evidence-based decision-making and continuous improvement.

(<https://drive.google.com/file/d/1aXmDyb1aGiOHMR7seypMvujRuB8BPNe/view?usp=sharing>)

Overall, the organic waste management program demonstrates UNIMUS' commitment to sustainable campus operations, circular economy principles, and environmental stewardship while contributing directly to the achievement of **SDG 2 (Zero Hunger), SDG 3 (Good Health and Well-being), SDG 6 (Clean Water and Sanitation), SDG 11 (Sustainable Cities and Communities), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), SDG 15 (Life on Land), and SDG 17 (Partnerships for the Goals)**.

Supporting documents, performance dashboards, Material Flow Analysis (MFA), compost production reports, utilization reports, internal audit reports, management review reports, and photo documentation are available at: <https://sustainability.unimus.ac.id/waste>



Evidence

UI GreenMetric Questionnaire

University : University of Muhammadiyah Semarang
Country : Semarang, Central Java, Indonesia
Web Address : <https://greenmetric.unimus.ac.id/>

[3] Waste (WS)

[3.6] Total volume organic waste produced last year

Type of waste	amount (ton)					
	Produced		reduced	Treated		
	Last year (2025)	This Year (2026)		reused	down-cycled	up-cycled
Organic	232	221	11	35	120	40
Food Waste (Canteen): Egg, fruits, Coffee and tea grounds, Fish or chicken bones from leftover food, etc	75	70	5	20	35	10
Organic Waste from Laboratories and Practicals (Faculty of Health, Nutrition, and Food Technology)	28	25	2	5	15	5
Organic Waste from Campus Parks and Green Areas	72	70	2	5	50	15
Organic Waste from Dormitory Household Activities & Campus Units	57	55	2	5	20	10

Description:

(Please describe total organic waste produced last year on your campus. The following is an example of the description. You can describe more related items if needed.)

In 2025, Universitas Muhammadiyah Semarang (UNIMUS) generated a total of 232 tons of organic waste from various campus activities. The organic waste originated from campus canteens, teaching laboratories and practical activities, campus parks and green areas, student dormitories, and other campus operational units.

The largest sources of organic waste were food waste from canteens with 75 tons, followed by organic waste from campus parks and green areas with 72 tons, organic waste from dormitory household activities and campus units with 57 tons, and organic waste from laboratories and practical activities with 28 tons. In 2026, UNIMUS reduced its organic waste generation to 221 tons, showing a reduction of 11 tons compared with the previous year. This reduction was achieved through food waste prevention, source segregation, composting, reuse, BSF processing, eco-enzyme production, and improved green campus waste management practices.

The recorded data shows that UNIMUS has developed a more systematic organic waste management approach by integrating waste reduction, reuse, down-cycling through composting, and up-cycling



through innovative organic waste recovery programs. These efforts support circular economy implementation, reduce waste sent to landfill, and strengthen UNIMUS' contribution to sustainable campus development and UI GreenMetric Waste Management criteria.



Evidence

UI GreenMetric Questionnaire

University : University of Muhammadiyah Semarang
Country : Semarang, Central of Java, Indonesia
Web Address : <https://greenmetric.unimus.ac.id/>

[3] Waste (WS)

[3.8] Organic Waste Treatment (WS.3)





Waste Sorting Program at the Campuss



Weighing Waste



Waste Shredding Area



Waste Composting Area





Compost Ready To Use





Maggot BSF (Black Soldier Fly)





Eco Enzyme Product



Biogas Digester



Utilization of Bio Slurry



Students provide training to local residents and schools around UNIMUS on composting

Example of Organic Waste Treatment UNIMUS

Description:

(Please describe the program to treat organic waste on your campus. The following is an example of the description. You can describe more related items if needed.)

Universitas Muhammadiyah Semarang (UNIMUS) has implemented several programs and facilities to manage and treat organic waste as part of its *Green Campus* initiative. The treatment focuses on reducing organic waste from canteens, laboratories, dormitories, and campus green areas through composting, reuse, and eco-enzyme production

1. **Composting Program for Garden and Food Waste**

Organic waste such as leaves, grass clippings, and food scraps from canteens and dormitories is collected and processed through **aerobic composting**. The resulting compost is used for campus landscaping, tree planting, and gardening projects around the university. Faculties and student environmental organizations actively participate in collecting and sorting organic materials.

2. **Eco-Enzyme and Liquid Fertilizer Production**

Food waste such as fruit peels, vegetable residues, and coffee grounds are treated through **fermentation processes** to produce **eco-enzymes** and **organic liquid fertilizers**. These products are utilized in maintaining campus gardens and distributed for community outreach programs related to sustainable waste management.

3. **Laboratory-Based Organic Waste Processing**

In the Faculty of Health, Nutrition, and Food Technology, laboratory waste from practical sessions (such as leftover food samples and plant residues) is processed into compost and liquid fertilizer.



Students learn sustainable waste management practices through project-based learning and research activities.

4. **Integration with Green Campus and SDGs Education**

Organic waste treatment is also integrated into environmental education through seminars, workshops, and *service learning* projects. These programs help raise awareness among students and staff about responsible consumption and waste reduction, aligning with **Sustainable Development Goals (SDG) 12 and SDG 13**.

📺 Video link: [UNIMUS Biogas Documentation](#)

5. **Organic Waste Sorting and Collection System**

Each faculty and dormitory applies a **waste segregation system**, using green-labeled bins for organic waste. Collected organic waste is transferred to a central **Organic Waste Treatment Station**, ensuring consistent monitoring and reducing contamination between waste types.

6. **Campus Garden Compost Application Program**

Compost and bio-fertilizer produced from organic waste treatment are **reused in campus gardens**, particularly at the UNIMUS Green Park, herbal garden, and vertical plant projects. This initiative promotes a **closed-loop system** where organic waste returns to nature as a nutrient source.

7. **Community-Based Organic Waste Training**

Through the **Green Campus Community Service Program (KKN Tematik Lingkungan)**, students provide **training to local residents** and schools around UNIMUS on composting, eco-enzyme making, and household waste reduction, extending environmental awareness beyond the university.

8. **Integration of Organic Waste Management into Education and Research**

Organic waste management is integrated into **curriculum, seminars, and student research projects** related to environmental health, green technology, and sustainable food systems. This approach embeds sustainability values into academic culture and innovation.

Universitas Muhammadiyah Semarang (UNIMUS) has developed an innovative program for **organic waste treatment through biogas production**, as part of its commitment to sustainable waste management and renewable energy development. This initiative transforms organic waste from canteens, student dormitories, and laboratory activities into useful energy resources while reducing the amount of waste sent to landfills.

The **biogas installation** utilizes food residues such as rice, vegetables, fruit peels, and leftover meals collected from the campus canteen and dormitory kitchens. These organic materials are processed in a **biogas digester** through an **anaerobic fermentation process**, in which microorganisms break down organic matter to produce **methane gas (CH₄)** and **bio-slurry**. The methane gas is then captured and used as a **renewable energy source for cooking and heating water** in several campus facilities, while the bio-slurry by-product is used as **organic fertilizer** for UNIMUS's green areas and community farming projects.

This program is managed collaboratively by the **Faculty of Health, Nutrition, and Food Technology** together with the **Green Campus Team**, involving students in **research-based learning and environmental projects**. The biogas initiative not only reduces organic waste volume but also contributes to reducing greenhouse gas emissions and fossil fuel consumption within the campus.

Through this initiative, UNIMUS demonstrates a concrete effort to integrate **waste-to-energy technology** into university operations, supporting **Sustainable Development Goals (SDG) 7 – Affordable and Clean Energy, SDG 12 – Responsible Consumption and Production, and SDG 13 – Climate Action**

Link Video Documentation Biogas :

https://drive.google.com/file/d/1w_oG4bFcLn2iJMn3WT4cOsdvzyLncmlR/view?usp=drive_link



Evidence

UI GreenMetric Questionnaire

University : Universitas Muhammadiyah Semarang
Country : Semarang, Central Java, Indonesia
Web Address : <https://greenmetric.unimus.ac.id/>

[3] Waste (WS)

[3.9] Total volume inorganic waste produced this year

Type of waste	amount (ton)					
	Produced		reduced	Treated		
	Last year (2025)	This Year (2026)		reused	down-cycled	up-cycled
inorganic non-toxic	100	86	14,5	33,5	23	15
Paper and Similar Products: Copy paper, exam paper, student assignment sheets Old archival paper, office documents Used cardboard (for packaging equipment/materials) Brochures, leaflets, and posters for campus activities Unused magazines, books, or printed documents	28	24	4	8	10	2
Soft Plastic: Plastic bags, plastic food wrap Plastic drinking cups, straws, plastic mica, and plastic lids Plastic lining for non-hazardous laboratory equipment Plastic from stationery packaging and non-infectious medical equipment	24	20	4	5	6	5
Hard Plastic:	15	13	2	6	2	3



Mineral water bottles (PET, HDPE) Laboratory plastic containers (non-hazardous and hazardous materials) Buckets, damaged gallon jugs, and material storage containers Used food and drink containers						
Hard Plastic Mineral water bottles (PET, HDPE) : Laboratory plastic containers (non-hazardous and hazardous materials) Buckets, broken gallon jugs, and other material storage containers Used food and drink containers	14	12	2	5	3	2
Light Metal and Cans (Metal Waste): Drink and snack cans Metal bottle caps Wire and non-contaminant light metal Leftover office equipment (metal clips, broken staplers)	9	8	1	5	1	1
Non-B3 Glass and Broken Glass : Used glass bottles for non-toxic lab materials Glass from non-chemical laboratory equipment Glass cups and jars from the cafeteria Non-mercury glass lamps	6	5	1	3	1	0
Non-Toxic Textiles and Mixed Materials: Banners or event banners (PVC, flexy) Uniforms or used fabrics/	2	2	0.5	0.5	0	1



Sacks, raffia rope, or other equipment wrapping materials						
Non-B3 Small Electronics (Non-Toxic Light E-Waste) Damaged cables, adapters, mice, and keyboards Remotes, chargers, or other hazardous non-battery electronic devices	2	2	0	1	0	1

Description:

(Please describe total inorganic waste produced this year on your campus. The following is an example of the description. You can describe more related items if needed.)

Universitas Muhammadiyah Semarang (UNIMUS) implements an integrated inorganic waste management system based on the principles of Reduce, Reuse, Recycle (3R) and the Circular Economy. The program is supported by waste segregation at source, routine waste collection, digital monitoring, waste bank operations, material recovery activities, recycling partnerships, and continuous performance evaluation through the Green Campus Management System.

In 2026, UNIMUS generated a total of 86 tons of non-hazardous inorganic waste, representing a reduction of 14 tons (14%) compared with 100 tons generated in 2025. This achievement reflects the successful implementation of waste reduction initiatives, including paperless administration, double-sided printing policies, digital learning systems, reusable tumbler campaigns, plastic reduction programs, waste segregation, and campus-wide environmental awareness activities.

The inorganic waste generated during 2026 consisted of 24 tons of paper and paper-based products, 20 tons of soft plastics, 13 tons of PET/HDPE bottles and rigid plastics, 12 tons of laboratory plastic containers and other rigid plastic materials, 8 tons of light metals and beverage cans, 5 tons of non-B3 glass, 2 tons of textiles and mixed materials, and 2 tons of non-toxic electronic waste (small e-waste). All waste streams were systematically recorded through routine weighing and categorized according to the university's waste inventory system.

To maximize resource recovery and minimize landfill disposal, UNIMUS successfully managed inorganic waste through multiple treatment approaches. During 2026, 33.5 tons of inorganic materials were reused, 23 tons were recycled through down-cycling processes, and 15 tons were up-cycled into higher-value products, resulting in a total of 71.5 tons of inorganic waste being diverted from final disposal facilities. Paper waste was reused and recycled into office paper and packaging materials, plastics were processed through recycling and waste bank programs, banners were transformed into reusable products such as shopping bags and educational media, glass and metal were sent to certified recycling partners, while non-toxic electronic waste was collected and transferred to authorized recyclers through scheduled collection programs.



UNIMUS continuously strengthens its circular economy implementation through the establishment of waste collection points, a campus waste bank, plastic shredding facilities, temporary storage areas for recyclable materials, partnerships with licensed recycling companies, and ICT-based monitoring systems. Waste generation, recovery rates, recycling performance, and environmental indicators are monitored using digital KPI dashboards, Material Flow Analysis (MFA), monthly performance reports, internal environmental audits, and Management Review Meetings (MRM) under the Plan–Do–Check–Act (PDCA) framework : <https://sustainability.unimus.ac.id/waste>

These initiatives significantly reduce landfill dependency, conserve natural resources, promote responsible consumption, and increase environmental awareness among students, lecturers, staff, and the surrounding community. The integrated inorganic waste management program demonstrates UNIMUS' strong commitment to sustainable campus development and directly contributes to the achievement of **SDG 3 (Good Health and Well-being), SDG 4 (Quality Education), SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure), SDG 11 (Sustainable Cities and Communities), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), SDG 14 (Life Below Water), SDG 15 (Life on Land), SDG 16 (Peace, Justice and Strong Institutions), and SDG 17 (Partnerships for the Goals).**



Evidence UI GreenMetric Questionnaire

University : Universitas Muhammadiyah Semarang
Country : Semarang, Central Java, Indonesia
Web Address : <https://greenmetric.unimus.ac.id/>

[3] Waste (WS)

[3.10] Total volume inorganic waste produced last year

Type of waste	amount (ton)					
	Produced		reduced	Treated		
	Last year (2025)	This Year (2026)		reused	down-cycled	up-cycled
inorganic non-toxic	100	86	14,5	33,5	23	15
Paper and Similar Products: Copy paper, exam paper, student assignment sheets Old archival paper, office documents Used cardboard (for packaging equipment/materials) Brochures, leaflets, and posters for campus activities Unused magazines, books, or printed documents	28	24	4	8	10	2
Soft Plastic: Plastic bags, plastic food wrap Plastic drinking cups, straws, plastic mica, and plastic lids Plastic lining for non-hazardous laboratory equipment Plastic from stationery packaging and non-infectious medical equipment	24	20	4	5	6	5
Hard Plastic: Mineral water bottles (PET, HDPE)	15	13	2	6	2	3



Laboratory plastic containers (non-hazardous and hazardous materials) Buckets, damaged gallon jugs, and material storage containers Used food and drink containers						
Hard Plastic Mineral water bottles (PET, HDPE) : Laboratory plastic containers (non-hazardous and hazardous materials) Buckets, broken gallon jugs, and other material storage containers Used food and drink containers	14	12	2	5	3	2
Light Metal and Cans (Metal Waste): Drink and snack cans Metal bottle caps Wire and non-contaminant light metal Leftover office equipment (metal clips, broken staplers)	9	8	1	5	1	1
Non-B3 Glass and Broken Glass : Used glass bottles for non-toxic lab materials Glass from non-chemical laboratory equipment Glass cups and jars from the cafeteria Non-mercury glass lamps	6	5	1	3	1	0
Non-Toxic Textiles and Mixed Materials: Banners or event banners (PVC, flexy) Uniforms or used fabrics/ Sacks, raffia rope, or other equipment wrapping materials	2	2	0.5	0.5	0	1



Non-B3 Small Electronics (Non-Toxic Light E-Waste) Damaged cables, adapters, mice, and keyboards Remotes, chargers, or other hazardous non-battery electronic devices	2	2	0	1	0	1
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Description:

(Please describe total inorganic waste produced last year on your campus. The following is an example of the description. You can describe more related items if needed.)

Universitas Muhammadiyah Semarang (UNIMUS) has established a comprehensive inorganic waste management system to support the implementation of the Green Campus policy and Circular Economy principles. During 2025, the university generated a total of 100 tons of non-hazardous inorganic waste **from** academic, administrative, laboratory, student, and campus operational activities. All inorganic waste was systematically weighed, recorded, categorized, and monitored through the University's Environmental Management System to provide an accurate baseline for future waste reduction initiatives.

The major sources of inorganic waste consisted of 28 tons of paper and paper-based products, 24 tons of soft plastics, 15 tons of PET/HDPE bottles and rigid plastic packaging, 14 tons of laboratory plastic containers and other rigid plastic materials, 9 tons of light metals and beverage cans, 6 tons of non-B3 glass, 2 tons of textiles and mixed materials, and 2 tons of non-toxic electronic waste (small e-waste). These waste streams were generated from classrooms, offices, laboratories, cafeterias, campus events, maintenance activities, and student facilities.

To minimize landfill disposal and maximize material recovery, UNIMUS implemented integrated waste treatment strategies through reuse, recycling (down-cycling), and up-cycling. During 2025, 33.5 tons of inorganic waste were reused, 23 tons were processed through down-cycling and recycling, and 15 tons were converted into higher-value products through up-cycling initiatives, resulting in a total diversion of 71.5 tons of inorganic waste from landfill disposal. Paper waste was reused and recycled into office paper and packaging materials, plastics were processed through the campus waste bank and recycling partners, banners were repurposed into reusable products, metals and glass were sold to licensed recyclers, while non-toxic electronic waste was collected and transferred to authorized recycling partners.

The 2025 data became the baseline for continuous improvement in 2026. Based on this evaluation, UNIMUS strengthened paperless administration, digital learning systems, waste segregation at source, reusable packaging campaigns, campus waste bank operations, recycling partnerships, plastic shredding facilities, and environmental awareness programs. These initiatives successfully reduced inorganic waste generation from 100 tons in 2025 to 86 tons in 2026, equivalent to a 14% reduction.

The performance of inorganic waste management is continuously monitored through routine weighing, Material Flow Analysis (MFA), ICT-based KPI Dashboards, monthly waste reports, internal environmental audits, and Management Review Meetings (MRM) under the Plan–Do–Check–Act



(PDCA) framework. These monitoring systems ensure continuous improvement in waste reduction, recycling performance, resource efficiency, and environmental sustainability.

Overall, the integrated inorganic waste management program demonstrates UNIMUS' commitment to sustainable campus development, responsible resource management, and circular economy implementation. The program contributes directly to **SDG 3 (Good Health and Well-being)**, **SDG 4 (Quality Education)**, **SDG 8 (Decent Work and Economic Growth)**, **SDG 9 (Industry, Innovation and Infrastructure)**, **SDG 11 (Sustainable Cities and Communities)**, **SDG 12 (Responsible Consumption and Production)**, **SDG 13 (Climate Action)**, **SDG 14 (Life Below Water)**, **SDG 15 (Life on Land)**, **SDG 16 (Peace, Justice and Strong Institutions)**, and **SDG 17 (Partnerships for the Goals)**.



Evidence UI GreenMetric Questionnaire

University : University of Muhammadiyah Semarang
Country : Semarang, Central of Java, Indonesia
Web Address : <https://greenmetric.unimus.ac.id/>

[3] Waste (WS)

[3.11] Total volume inorganic waste treated this year

Type of waste	amount (ton)					
	Produced		reduced	Treated		
	Last year (2025)	This Year (2026)		reused	down-cycled	up-cycled
inorganic non-toxic	100	86	14,5	33,5	23	15
Paper and Similar Products: Copy paper, exam paper, student assignment sheets Old archival paper, office documents Used cardboard (for packaging equipment/materials) Brochures, leaflets, and posters for campus activities Unused magazines, books, or printed documents	28	24	4	8	10	2
Soft Plastic: Plastic bags, plastic food wrap Plastic drinking cups, straws, plastic mica, and plastic lids Plastic lining for non-hazardous laboratory equipment Plastic from stationery packaging and non-infectious medical equipment	24	20	4	5	6	5
Hard Plastic: Mineral water bottles (PET, HDPE)	15	13	2	6	2	3



Laboratory plastic containers (non-hazardous and hazardous materials) Buckets, damaged gallon jugs, and material storage containers Used food and drink containers						
Hard Plastic Mineral water bottles (PET, HDPE) : Laboratory plastic containers (non-hazardous and hazardous materials) Buckets, broken gallon jugs, and other material storage containers Used food and drink containers	14	12	2	5	3	2
Light Metal and Cans (Metal Waste): Drink and snack cans Metal bottle caps Wire and non-contaminant light metal Leftover office equipment (metal clips, broken staplers)	9	8	1	5	1	1
Non-B3 Glass and Broken Glass : Used glass bottles for non-toxic lab materials Glass from non-chemical laboratory equipment Glass cups and jars from the cafeteria Non-mercury glass lamps	6	5	1	3	1	0
Non-Toxic Textiles and Mixed Materials: Banners or event banners (PVC, flexy) Uniforms or used fabrics/ Sacks, raffia rope, or other equipment wrapping materials	2	2	0.5	0.5	0	1



Non-B3 Small Electronics (Non-Toxic Light E-Waste) Damaged cables, adapters, mice, and keyboards Remotes, chargers, or other hazardous non-battery electronic devices	2	2	0	1	0	1
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Description:

(Please describe total inorganic waste treated this year on your campus. The following is an example of the description. You can describe more related items if needed.)

Universitas Muhammadiyah Semarang (UNIMUS) implements an integrated inorganic waste treatment system as part of its Green Campus and Circular Economy initiatives. The system follows the principles of **Reduce, Reuse, Recycle (3R)** and is supported by waste segregation at source, routine waste collection, temporary storage, material recovery, waste bank operations, partnerships with licensed recycling companies, and ICT-based monitoring to maximize resource recovery while minimizing landfill disposal.

During **2026**, UNIMUS generated **86 tons of non-hazardous inorganic waste** and successfully diverted **71.5 tons (83.14%)** from final disposal through reuse, recycling (down-cycling), and up-cycling activities. Specifically, **33.5 tons were reused, 23 tons were processed through recycling and down-cycling, and 15 tons were converted into higher-value products through up-cycling initiatives**. This achievement demonstrates the University's strong commitment to resource efficiency and sustainable waste management.

The inorganic waste treated consisted of **24 tons of paper and paper-based materials, 20 tons of soft plastics, 13 tons of PET/HDPE bottles and rigid plastics, 12 tons of laboratory plastic containers and other rigid plastic materials, 8 tons of light metals and beverage cans, 5 tons of non-B3 glass, 2 tons of textiles and mixed materials, and 2 tons of non-toxic electronic waste (small e-waste)**. Each waste stream was managed using the most appropriate recovery method based on its material characteristics and recycling potential.

The implementation of these programs has contributed to significant environmental benefits, including reduced landfill dependency, conservation of natural resources, increased recycling performance, lower greenhouse gas emissions, and enhanced environmental awareness among students, lecturers, staff, and the surrounding community. Furthermore, the program supports the achievement of **SDG 3 (Good Health and Well-being), SDG 4 (Quality Education), SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure), SDG 11 (Sustainable Cities and Communities), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), SDG 14 (Life Below Water), SDG 15 (Life on Land), SDG 16 (Peace, Justice and Strong Institutions), and SDG 17 (Partnerships for the Goals)**



Evidence

UI GreenMetric Questionnaire

University : Universitas Muhammadiyah Semarang
Country : Semarang, Central of Java, Indonesia
Web Address : <https://greenmetric.unimus.ac.id/>

[3] Waste (WS)

[3.12] Inorganic Waste Treatment (WS.4)



Plastic waste collection



Unimus Banner Warehouse



Plastic Shredder Machine (1)



Plastic Shredder Machine (1)



Plastic Waste Processing (2)



Plastic Waste Processing (3)



Collection And Sorting Of Plastic Waste



Plastic Waste Grinding



Weighing of plastic waste banks



Packaging of plastic shreds



Plastic processed products



Partnership with Authorized Waste Contractors

Waste Treatment UNIMUS (Inorganic)

Description:

(Please describe the program to treat inorganic waste on your campus. The following is an example of the description. You can describe more related items if needed.)

Universitas Muhammadiyah Semarang (UNIMUS) implements an integrated Inorganic Waste Treatment Program as part of the Green Campus initiative. The program focuses on reducing, sorting, reusing, recycling, and up-cycling non-hazardous inorganic waste generated from academic, administrative, laboratory, student, and campus operational activities.

The treatment process begins with waste segregation at source, where paper, plastic, metal, glass, textile, banner, and non-toxic electronic waste are separated using designated collection points.



Recyclable inorganic waste is then collected, weighed, sorted, recorded, and transported to the UNIMUS Waste Bank and temporary storage area for further treatment.

Plastic waste is processed through several stages, including collection, sorting, cleaning, shredding using a plastic shredder machine, weighing, packaging, and storage. The shredded plastic materials are then reused, recycled, or transferred to recycling partners for further processing. Used banners and PVC materials are stored in the UNIMUS Banner Warehouse and reused or up-cycled into useful products and educational materials. Paper, cardboard, glass, metal, and non-toxic e-waste are also managed through reuse, recycling, and authorized partner handover mechanisms.

The evidence shows several inorganic waste treatment activities at UNIMUS, including plastic waste collection, banner warehouse management, plastic shredder machines, plastic waste processing, sorting, grinding, weighing at the waste bank, packaging of plastic shreds, processed plastic products, and partnership with authorized waste contractors.

In 2026, UNIMUS generated **86 tons of non-hazardous inorganic waste**, with **33.5 tons reused, 23 tons down-cycled**, and **15 tons up-cycled**, resulting in **71.5 tons of inorganic waste treated** through resource recovery activities. These initiatives support waste reduction, landfill diversion, circular economy implementation, and environmental education for students, staff, and the campus community. UNIMUS continuously monitors the inorganic waste treatment program through waste weighing records, documentation, KPI dashboards, internal evaluation, and cooperation with authorized waste management partners. **The program supports SDG 11, SDG 12, SDG 13, SDG 15, and SDG 17**



Evidence UI GreenMetric Questionnaire

University : Universitas Muhammadiyah Semarang
Country : Semarang, Central Java, Indonesia
Web Address : <https://greenmetric.unimus.ac.id/>

[3] Waste (WS)

[3.13] Total volume toxic waste produced this year

Type of waste	amount (ton)					
	Produced		reduced	Treated		
	Last year	This Year		reused	down-cycled	up-cycled
toxic	2.8	1.75	0.19	0	0	0
Chemical and Biochemical Laboratory Waste: Remains of hazardous chemicals (HCl, H ₂ SO ₄ , NaOH, formalin, ethanol, acetone)	0.3	0.27	0.03	0	0	0
Biological/Infectious Waste: Leftover biological specimens (blood, tissue, feces, urine, sputum, etc.), Culture media and microorganism test results from student labs, used cotton swabs, gloves, masks, and pipettes from biological testing activities.	0.5	0.45	0.05	0	0	0
Waste from Teaching Hospitals/Healthcare Units: Used syringes, syringes, infusion sets, medical gloves, cotton and gauze Infusion bottles, used glass vials for injectable medications Sharps waste from medical procedures by interns or nurses	0.7	0.63	0.07	0	0	0



Liquid medical waste from clinical practice rooms						
Hazardous Electronic Waste (E-waste B3): Used batteries (AA, AAA, laptop, cell phone, and portable lab equipment) Neon/fluorescent lamps (contain mercury) Damaged computers or monitors (contain heavy metals Pb, Cd) Used printer cartridges and ink	0.16	0.15	0.01	0	0	0
Cleaning and Disinfectant Waste: Disinfectant fluids (NaOCl, alcohol >70%, Lysol, etc.) Remaining laboratory detergents and equipment cleaners containing active chemicals Tissue preservatives and fixatives	0.28	0.25	0.028	0	0	0

Description:

(Please describe total toxic waste treated this year on your campus. The following is an example of the description. You can describe more related items if needed.)

In 2025, Universitas Muhammadiyah Semarang (UNIMUS) produced a total of 1.94 tons of toxic waste, showing a reduction from 2.8 tons recorded in the previous year. The decline reflects the university's continuous efforts to strengthen hazardous waste management, promote green laboratory practices, and ensure the safe handling of chemical and biological materials across all faculties.

The toxic waste generated this year consisted of several main categories:

- 1. Chemical and Biochemical Laboratory Waste (0.03 tons):**

Originated from laboratory experiments involving acids, bases, solvents, and chemical reagents such as HCl, H₂SO₄, NaOH, ethanol, and formalin. A small portion (0.01 tons) was neutralized or reused for educational demonstrations under controlled conditions, while the remainder was safely stored and transported to licensed hazardous waste facilities.

- 2. Biological and Infectious Waste (0.05 tons):**

Generated from microbiology, parasitology, and biomedical laboratories, including specimens, culture media, and contaminated materials such as gloves and masks. Approximately 0.02 tons were sterilized through autoclaving before disposal, ensuring compliance with biosafety standards.

- 3. Hospital and Medical Waste (0.07 tons):**

Derived from the UNIMUS teaching hospital and clinical training units, including syringes, infusion sets, cotton, and sharp wastes. Around 0.05 tons were reduced through strict segregation and



collection systems, while the rest was treated by third-party licensed contractors using incineration and sterilization processes.

4. Electronic Hazardous Waste (0.01 tons):

Included batteries, fluorescent lamps, and damaged electronic devices containing heavy metals (Pb, Cd, Hg). About 0.07 tons were collected and recycled through cooperation with authorized e-waste handlers to recover reusable components.

5. Cleaning Agents and Disinfectant Waste (0.028 tons):

Generated from laboratory and facility sanitation activities. Approximately 0.15 tons were treated through neutralization and dilution methods under laboratory supervision to minimize environmental contamination.

UNIMUS ensures that all hazardous and toxic waste is handled in accordance with environmental and safety regulations issued by the Ministry of Environment and Forestry. Waste segregation, temporary storage in the Hazardous Waste Storage Facility (TPS Limbah B3), and disposal via licensed third-party waste treatment companies are standard procedures across the campus.

The reduction in total toxic waste demonstrates the university's commitment to promoting sustainable laboratory management, enhancing awareness among staff and students, and supporting Sustainable Development Goals (SDG) 12 – Responsible Consumption and Production and SDG 13 – Climate Action.



Evidence UI GreenMetric Questionnaire

University : Universitas Muhammadiyah Semarang
Country : Semarang, Central Java, Indonesia
Web Address : <https://greenmetric.unimus.ac.id/>

[3] Waste (WS)

[3.14] Total volume toxic waste produced last year

Type of waste	amount (ton)					
	Produced			Treated		
	Last year (2025)	This Year (2026)		reused	down-cycled	up-cycled
toxic	2.8	1.75	0.19	0	0	0
Chemical and Biochemical Laboratory Waste: Remains of hazardous chemicals (HCl, H ₂ SO ₄ , NaOH, formalin, ethanol, acetone)	0.3	0.27	0.03	0	0	0
Biological/Infectious Waste: Leftover biological specimens (blood, tissue, feces, urine, sputum, etc.), Culture media and microorganism test results from student labs, used cotton swabs, gloves, masks, and pipettes from biological testing activities.	0.5	0.45	0.05	0	0	0
Waste from Teaching Hospitals/Healthcare Units: Used syringes, syringes, infusion sets, medical gloves, cotton and gauze Infusion bottles, used glass vials for injectable medications	0.7	0.63	0.07	0	0	0



Sharps waste from medical procedures by interns or nurses Liquid medical waste from clinical practice rooms						
Hazardous Electronic Waste (E-waste B3): Used batteries (AA, AAA, laptop, cell phone, and portable lab equipment) Neon/fluorescent lamps (contain mercury) Damaged computers or monitors (contain heavy metals Pb, Cd) Used printer cartridges and ink	0.16	0.15	0.01	0	0	0
Cleaning and Disinfectant Waste: Disinfectant fluids (NaOCl, alcohol >70%, Lysol, etc.) Remaining laboratory detergents and equipment cleaners containing active chemicals Tissue preservatives and fixatives	0.28	0.25	0.028	0	0	0

Description:

(Please describe total toxic waste produced last year on your campus. The following is an example of the description. You can describe more related items if needed.)

Universitas Muhammadiyah Semarang (UNIMUS) implements a controlled and regulation-based hazardous and toxic waste management system to ensure that all toxic waste generated from laboratories, health facilities, teaching hospital activities, and campus sanitation practices is properly identified, segregated, recorded, stored, and transferred to licensed third-party waste management providers.

In **2025**, UNIMUS generated a total of **2.8 tons of toxic waste**. This volume became the baseline for strengthening hazardous waste reduction, green laboratory practices, chemical substitution, medical waste segregation, and safe handling procedures across campus units. In **2026**, the total toxic waste generated decreased to **1.75 tons**, showing a significant reduction of approximately **1.05 tons** compared with the previous year.

The toxic waste generated in 2025 consisted of several categories, including **0.30 tons of chemical and biochemical laboratory waste**, **0.50 tons of biological and infectious waste**, **0.70 tons of teaching hospital and healthcare unit waste**, **0.16 tons of hazardous electronic waste**, and **0.28 tons**



of cleaning and disinfectant waste. These waste streams originated from laboratory experiments, biological testing activities, clinical practice rooms, teaching hospital operations, sanitation activities, and electronic equipment maintenance.

UNIMUS does not conduct final treatment of hazardous and toxic waste internally. Instead, all toxic waste is managed through a safe and compliant process consisting of source segregation, labeling, weighing, temporary storage in designated hazardous waste storage facilities, documentation, and handover to an authorized third-party hazardous waste management company. This approach ensures that hazardous chemical waste, infectious waste, medical waste, hazardous e-waste, and disinfectant residues are handled responsibly and in accordance with applicable environmental and occupational health and safety requirements.

The reduction of toxic waste from **2.8 tons in 2025** to **1.75 tons in 2026** was achieved through improved chemical inventory control, reduced use of hazardous reagents, better laboratory planning, safer biological waste handling, improved medical waste segregation, controlled use of disinfectants, and regular awareness programs for laboratory staff, students, and healthcare personnel. In 2026, UNIMUS recorded **0.19 tons of toxic waste reduction**, while no toxic waste was classified as reused, down-cycled, or up-cycled because hazardous waste requires specialized treatment by licensed external providers.

To strengthen governance and compliance, UNIMUS maintains supporting evidence such as hazardous waste SOPs, laboratory waste logbooks, temporary storage documentation, weighing records, waste manifests, handover reports, vendor cooperation documents, staff training records, internal audit reports, and Management Review Meeting records. These documents demonstrate that toxic waste management at UNIMUS is implemented through a traceable, accountable, and continuous improvement-based system.

The toxic waste management program supports **SDG 3 – Good Health and Well-being, SDG 6 – Clean Water and Sanitation, SDG 11 – Sustainable Cities and Communities, SDG 12 – Responsible Consumption and Production, SDG 13 – Climate Action, SDG 16 – Peace, Justice and Strong Institutions, and SDG 17 – Partnerships for the Goals.**



Evidence UI GreenMetric Questionnaire

University : Universitas Muhammadiyah Semarang
Country : Semarang, Central of Java, Indonesia
Web Address : <https://greenmetric.unimus.ac.id/>

[3] Waste (WS)

[3.15] Total volume toxic waste treated this year

Type of waste	amount (ton)					
	Produced			Treated		
	Last year (2025)	This Year (2026)		reused	down-cycled	up-cycled
toxic	2.8	1.75	0.19	0	0	0
Chemical and Biochemical Laboratory Waste: Remains of hazardous chemicals (HCl, H ₂ SO ₄ , NaOH, formalin, ethanol, acetone)	0.3	0.27	0.03	0	0	0
Biological/Infectious Waste: Leftover biological specimens (blood, tissue, feces, urine, sputum, etc.), Culture media and microorganism test results from student labs, used cotton swabs, gloves, masks, and pipettes from biological testing activities.	0.5	0.45	0.05	0	0	0
Waste from Teaching Hospitals/Healthcare Units: Used syringes, syringes, infusion sets, medical gloves, cotton and gauze Infusion bottles, used glass vials for injectable medications	0.7	0.63	0.07	0	0	0



Sharps waste from medical procedures by interns or nurses Liquid medical waste from clinical practice rooms						
Hazardous Electronic Waste (E-waste B3): Used batteries (AA, AAA, laptop, cell phone, and portable lab equipment) Neon/fluorescent lamps (contain mercury) Damaged computers or monitors (contain heavy metals Pb, Cd) Used printer cartridges and ink	0.16	0.15	0.01	0	0	0
Cleaning and Disinfectant Waste: Disinfectant fluids (NaOCl, alcohol >70%, Lysol, etc.) Remaining laboratory detergents and equipment cleaners containing active chemicals Tissue preservatives and fixatives	0.28	0.25	0.028	0	0	0

Description:

(Please describe total toxic waste treated this year on your campus. The following is an example of the description. You can describe more related items if needed.)

Universitas Muhammadiyah Semarang (UNIMUS) implements a comprehensive hazardous (toxic) waste management system to ensure that all hazardous waste generated from academic, research, healthcare, and campus operational activities is managed safely and in full compliance with Indonesian environmental regulations. The system follows the principles of **identification, segregation, labeling, weighing, temporary storage, documentation, transportation, and final treatment by licensed hazardous waste management companies.**

During **2026**, UNIMUS generated **1.75 tons of hazardous (toxic) waste**, consisting of chemical laboratory waste, biological and infectious waste, teaching hospital and healthcare waste, hazardous electronic waste (B3 e-waste), and cleaning and disinfectant waste. Through Green Laboratory initiatives, chemical inventory management, laboratory optimization, waste segregation, and awareness programs, UNIMUS successfully reduced hazardous waste generation by **0.19 tons** compared with the baseline year.



As UNIMUS does not operate its own hazardous waste treatment facility, **100% of hazardous waste is managed through partnerships with licensed hazardous waste management companies, namely PT ARAH**. After segregation and temporary storage in the designated Hazardous Waste Temporary Storage Facility (TPS B3), all hazardous waste is weighed, recorded, labeled, documented through waste manifests, and transported by licensed hazardous waste transporters to PT ARAH and PT WASTEC for final treatment, recovery, or environmentally sound disposal in accordance with national regulations.

MoU/PKS dengan PT ARAH :

https://drive.google.com/file/d/1w1gEUIWMlekGhX9HrNQ_BGo7dBwxPwza/view?usp=sharing

Supporting documents include Standard Operating Procedures (SOPs), hazardous waste inventories, laboratory logbooks, weighing records, waste manifests, temporary storage records, transportation documents, contracts and cooperation agreements with **PT ARAH**, internal audit reports, Management Review Meeting minutes, staff training records, and comprehensive photo documentation.

The implementation of this integrated hazardous waste management program ensures that **100% of hazardous waste generated by UNIMUS is handled safely by licensed hazardous waste treatment facilities**, preventing environmental contamination and protecting public health while maintaining full regulatory compliance.

This program contributes directly to the achievement of **SDG 3 (Good Health and Well-being), SDG 6 (Clean Water and Sanitation), SDG 11 (Sustainable Cities and Communities), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), SDG 16 (Peace, Justice and Strong Institutions), and SDG 17 (Partnerships for the Goals)**.



Evidence

UI GreenMetric Questionnaire

University : Universitas Muhammadiyah Semarang
Country : Semarang, Central of Java, Indonesia
Web Address : <https://greenmetric.unimus.ac.id/>

[3] Waste (WS)

[3.16] Toxic Waste Treatment (WS.5)



TOXIC WASTE TREATMENT



WASTE TREATMENT (2)





Toxic Waste Treatment (Muhammadiyah University, Semarang)

Description:

(Please describe the program to treat toxic waste on your campus. The following is an example of the description. You can describe more related items if needed.)

1. Segregation and Labeling at the Source

All hazardous wastes (chemical, biological, and medical) are **segregated at the point of generation** in laboratories and hospital units. Each waste container is **clearly labeled** according to its type (acidic, flammable, toxic, infectious) and packed following KLHK standards.

2. Temporary Hazardous Waste Storage (TPS Limbah B3)

UNIMUS operates a dedicated **Hazardous Waste Temporary Storage Facility (TPS B3)** located within the main campus. This facility is equipped with safety signage, containment systems, and ventilation. Waste from various faculties is collected and stored temporarily before being transferred to PT ARAH Lingkungan for further treatment.

3. Partnership with PT ARAH Lingkungan (Licensed B3 Handler)

PT ARAH Environmental Indonesia is the licensed third-party partner that handles the treatment of toxic and hazardous waste (B3 waste) from Universitas Muhammadiyah Semarang (UNIMUS). The waste management process complies with the requirements of ISO 9001:2015 (Quality Management), ISO 14001:2015 (Environmental Management), ISO 45001:2018 (Occupational Health and Safety), and relevant Indonesian environmental regulations issued by the Ministry of Environment and Forestry (KLHK).

The treatment process at PT ARAH is carried out using a high-temperature incineration system that ensures the complete destruction and neutralization of hazardous substances, while minimizing environmental impact.

- a. Waste Preparation (Pre-Incineration Handling) : Before burning, the B3 waste is prepared, sorted, and recorded:

- 1) Each type of hazardous waste (chemical, biological, medical, or e-waste) is segregated on racking pallets according to its category.



- 2) Waste is weighed and logged using a Tallysheet (FM.AEI.116) and Form (FM.AEI.PLK-PROD-04).
- 3) Operators use full Personal Protective Equipment (PPE) including respirators, gloves, aprons, and safety boots to ensure safe handling.
- 4) Waste packaging integrity is checked — no leaks or damages are allowed before feeding the incinerator.
- b. **Waste Composition and Loading**
The next step is to regulate the composition and quantity of waste that enters the incinerator:
 - 1) The waste is placed on the incinerator platform and weighed according to the combustion chamber capacity.
 - 2) The operator adjusts the mixture of waste types to ensure efficient combustion and balanced heat generation.
 - 3) The waste is manually fed into the ram feeder once the combustion chambers reach the required temperature.
- c. **Incineration Operation (Combustion Process)**
The core of PT ARAH's process involves two-stage incineration under controlled high-temperature conditions:
 - 1) Primary chamber operates at 800–1,000°C, and Secondary chamber operates at 1,000–1,200°C.
 - 2) Waste is introduced gradually to maintain temperature stability.
 - 3) The operator continuously monitors and records temperatures, smoke conditions, and ash quality every 10 minutes using the Operational Log Form (FM.AEI.PLK-PROD-04).
 - 4) Emissions and combustion efficiency are observed to ensure compliance with environmental standards.
 - 5) This high-temperature dual combustion ensures that toxic organic compounds, pathogens, and hazardous chemicals are fully destroyed or rendered inert.
- d. **Post-Treatment Management (Ash and Residue Handling)**
After combustion:
 - 1) The remaining ash (incineration residue) and wastewater treatment sludge (WWTP cake) are collected and managed in accordance with SOP AEI.PLK-PROD-03.
 - 2) These residues are temporarily stored in a secured hazardous residue storage area before being sent to a final disposal site licensed by the Ministry of Environment.
 - 3) Records of all waste quantities and treatment results are maintained for audit and regulatory reporting.
4. **Chemical and Laboratory Waste Treatment**
Low-risk chemical waste is **neutralized** in the laboratory before disposal. For example, acid and base wastes undergo pH neutralization, and solvents are reused for laboratory teaching where feasible.
5. **Biological and Infectious Waste Treatment**
Medical and biological wastes from the Faculty of Medicine, Faculty of Health Sciences, and Teaching Hospital are sterilized using **autoclaving or disinfection** before being packed and sent to PT ARAH Lingkungan for incineration.
6. **Electronic and Hazardous Equipment Waste (E-waste)**
Broken laboratory instruments, fluorescent lamps, and batteries containing heavy metals are collected and sent to **authorized e-waste recovery facilities** to prevent contamination.
7. **Documentation, Monitoring, and Training**
Each faculty is required to record waste volume, type, and disposal frequency in the university's **Environmental Monitoring Logbook**. The Environmental Safety Unit conducts regular **training on waste handling and emergency response** for staff and laboratory assistants.
8. **Integration with Green Campus Policy**
This program aligns with UNIMUS's *Green Campus Policy* under the "Sustainable Waste Management" pillar and directly contributes to **SDG 12 (Responsible Consumption and Production)** and **SDG 13 (Climate Action)**.





Template for Evidence(s) UI GreenMetric Questionnaire

University : University of Muhammadiyah Semarang
Country : Semarang, Central of Java, Indonesia
Web Address : <https://unimus.ac.id>

[3] Waste (WS)

[3.17] Sewage Disposal (WS.6)



SEWAGE DISPOSAL (1)



SEWAGE DISPOSAL (2)



SEWAGE DISPOSAL (3)



PIPA EFFLUENT



The condition of live fish using IPAL works well, there is no water pollution





IPAL conditions at Unimus



Waste checks by the Environmental Agency (DLH) once a month to ensure it is not contaminated when disposed of in water bodies.

Sewage Disposal

Description:

(Please describe the sewage disposal on your campus. The following is an example of the description. You can describe more related items if needed.)



Universitas Muhammadiyah Semarang (UNIMUS) manages its **sewage and wastewater disposal** through a centralized **Wastewater Treatment Plant (WWTP/IPAL)** system to ensure that all liquid waste from laboratories, dormitories, canteens, and the teaching hospital is treated before being released into the environment.

The IPAL system is designed to comply with the national standard of water quality discharge (Peraturan Menteri LHK No. 68 Tahun 2016) and aims to minimize environmental pollution, promote water reuse, and support campus sustainability.

Stages of IPAL Process at UNIMUS HOSPITAL

1. **Preliminary Treatment (Screening and Equalization)**
 - a. Wastewater from various campus sources (toilets, laboratories, canteens, and hospitals) first passes through a **screening unit** to remove large solids such as plastics, paper, and food residues.
 - b. The flow then enters the **equalization tank**, where the wastewater volume and concentration are stabilized before further processing.
2. **Primary Treatment (Sedimentation)**
 - a. In this stage, wastewater enters a **sedimentation tank** to separate suspended solids and sludge from the liquid phase.
 - b. The heavier organic and inorganic materials settle at the bottom and are collected periodically as **primary sludge** for further handling.
3. **Secondary Treatment (Biological Treatment)**
 - a. The clarified liquid flows into the **aeration tank**, where microorganisms (activated sludge) biologically decompose organic pollutants.
 - b. Oxygen is supplied using blowers or diffusers to support microbial activity.
 - c. The effluent then passes into a **secondary clarifier**, allowing biological flocs to settle, producing treated water and secondary sludge.
4. **Tertiary Treatment (Filtration and Disinfection)**
 - a. The treated wastewater is further refined through **sand filtration and activated carbon filters** to remove fine particles and odor.
 - b. The final stage involves **disinfection using chlorine or UV** to eliminate harmful bacteria before the water is discharged.
5. **Sludge Management and Reuse**
 - a. The sludge collected from sedimentation and clarification tanks is thickened and stabilized.
 - b. Dried sludge is used as an **organic soil conditioner** in green campus areas, following safety standards.
6. **Effluent Reuse**
 - a. Treated water from IPAL is reused for **gardening, irrigation, and toilet flushing** around campus facilities.
 - b. Regular **water quality testing** is conducted to ensure compliance with environmental discharge standards BOD (Biological Oxygen Demand), COD (Chemical Oxygen Demand), TSS (Total Suspended Solids), pH.

Monitoring and Supervision

- The IPAL unit is operated by the **Teaching Hospital**
- Regular sampling and analysis are conducted at the university's laboratory to ensure compliance with **regulations**.
- Periodic maintenance and operator training are carried out to maintain optimal system performance.



Evidence

UI GreenMetric Questionnaire

University : Universitas Muhammadiyah Semarang
Country : Semarang, Central Java, Indonesia
Web Address : <https://greenmetric.unimus.ac.id/>

[3] Waste (WS)

[3.18] Planning, implementation, monitoring and/or evaluation of all programs related to Waste Management through the utilization of Information and Communication Technology (ICT) (WS.7)





2

EXECUTIVE KPI DASHBOARD

ORGANIC WASTE
PRODUCED



221
ton

2026

ORGANIC WASTE
REDUCED



10
ton
(4.33%)



ORGANIC WASTE
TREATED



195
ton

2026

TREATMENT RATE



88.24%

2026

COMPOST PRODUCED



48
ton

2026

COMPOST UTILIZATION



100%

2026



ACHIEVEMENT STATUS: EXCELLENT



KPI DASHBOARD

3

KPI SCORECARD

KPI	TARGET	ACHIEVEMENT (2026)	STATUS
1. Organic Waste Produced	≤ 230 ton	221 ton	Achieved
2. Organic Waste Reduction	$\geq 4\%$	10 ton (4.33%)	Achieved
3. Organic Waste Treated (Treatment Rate)	$\geq 85\%$	88.24%	Achieved
4. Compost Production	≥ 45 ton	48 ton	Achieved
5. Compost Utilization	100%	100%	Achieved
6. BSF & Up-cycling Program	Operational	Operational	Achieved
7. Documentation & Monitoring	Complete	Complete	Achieved



Achieved



In Progress



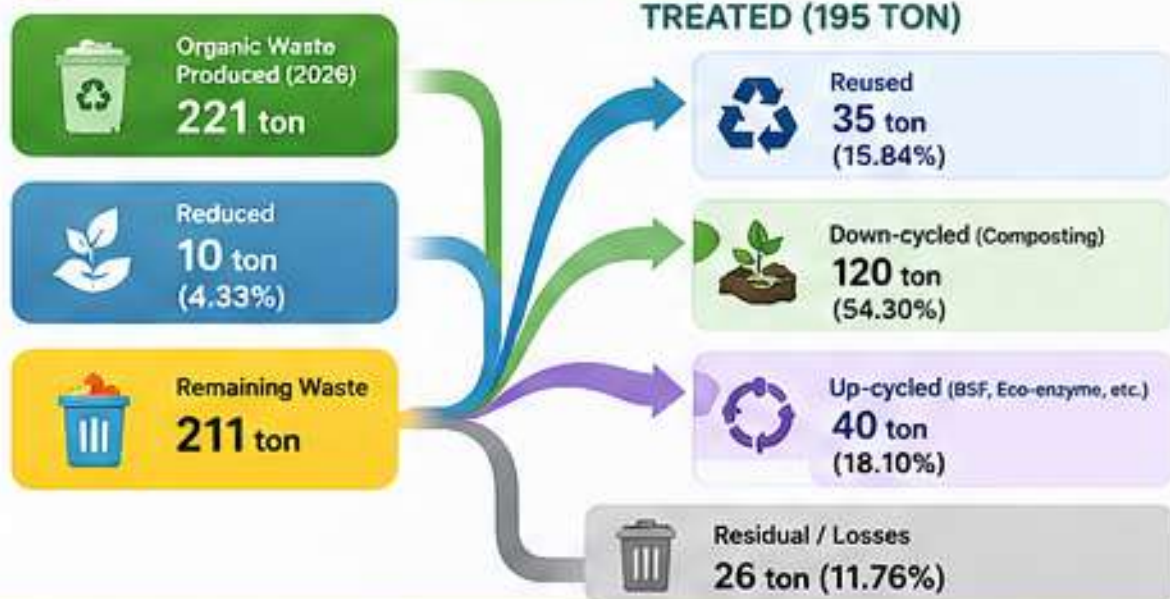
Not Achieved

KPI SCORECARD



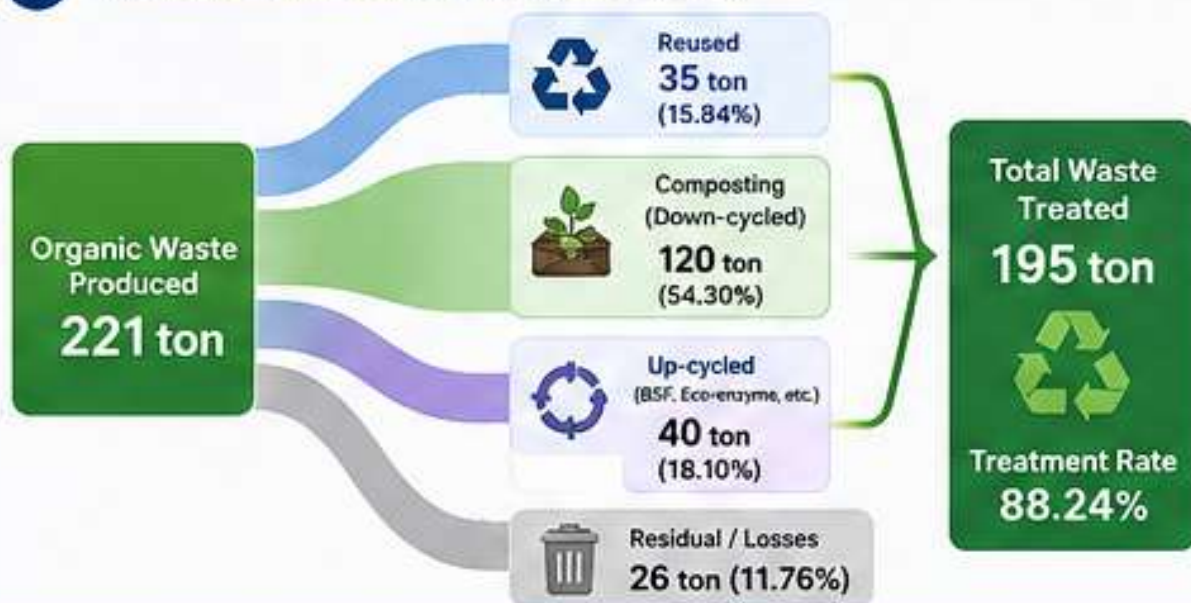
UI GreenMetric
Sustainable University Rankings

4 ORGANIC WASTE DASHBOARD



ORGANIC WASTE DASHBOARD

5 MATERIAL FLOW ANALYSIS (MFA)

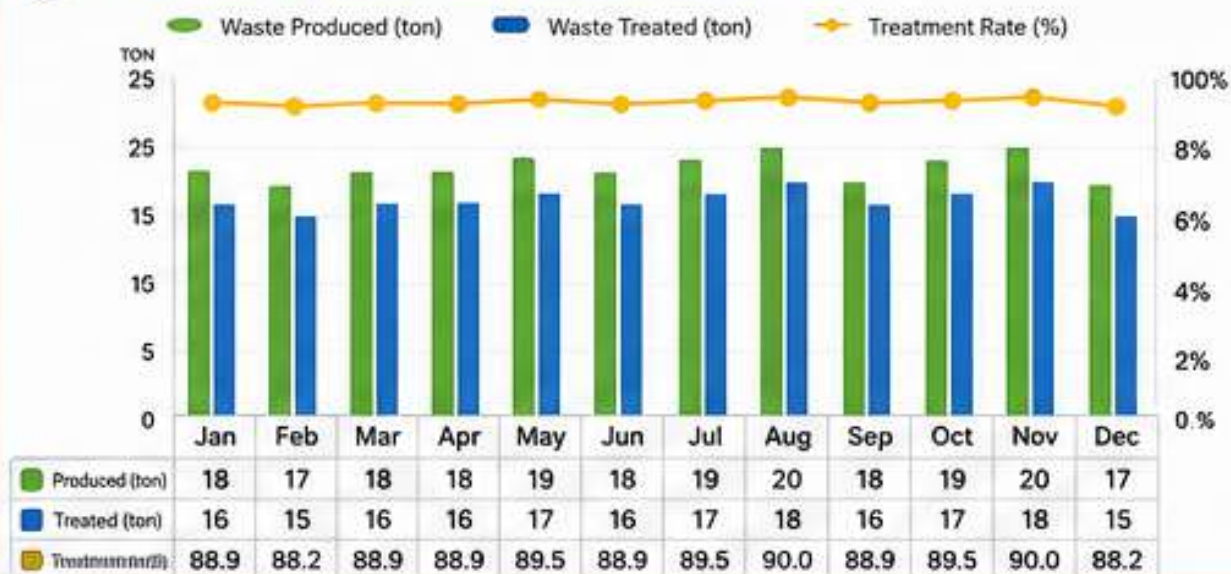


MATERIAL FLOW ANALYSIS



UI GreenMetric
Sustainable University Rankings

6 MONTHLY PERFORMANCE DASHBOARD



MONTHLY PERFORMANCE DASHBOARD

7 COMPOST PRODUCTION DASHBOARD



COMPOST PRODUCTION DASHBOARD



8 COMPOST UTILIZATION DASHBOARD

Total Finished Compost Utilized: 48 ton (100%)



	Landscape & Garden 16.8 ton (35%)
	Greenhouse & Urban Farming 12.0 ton (25%)
	Tree Planting & Reforestation 9.6 ton (20%)
	Medicinal & Educational Garden 4.8 ton (10%)
	Community & Other Activities 4.8 ton (10%)

Utilization
Rate

100%



COMPOST UTILIZATION DASHBOARD

9 CIRCULAR ECONOMY DASHBOARD



Organic Waste
Generation



Composting



Finished Compost



Used in
Campus



Healthy Plants
& Green Area



Sustainable Campus • Resource Recovery • Zero Waste Goal

ECONOMY DASHBOARD

10 ENVIRONMENTAL IMPACT DASHBOARD

Landfill Diversion
(2026)



195 ton

Organic waste diverted
from landfill

Compost Produced
(2026)



48 ton

High quality compost
produced

Chemical Fertilizer
Reduced



22%

Estimated reduction in
chemical fertilizer use

Green Area
Maintained



15
hectares

Campus green area
supported

Trees Supported
(Estimation)



± 2,500
trees

Supported by compost
application



UNIMUS is committed to sustainable waste management and a greener future.

ENVIRONMENTAL IMPACT DASHBOARD



GreenMetric
Sustainable University Rankings

11 SDGs CONTRIBUTION DASHBOARD



Organic fertilizer supports food security



Healthy campus environment for all



Sustainable campus and community development



Responsible waste management & resource use



Reduce methane emission from organic waste



Protect terrestrial ecosystems and increase greenery

SDGs CONTRIBUTION DASHBOARD

Smart waste bins with real-time tracking software to monitor waste collection

Description:

(Please describe planning, implementation, monitoring and/or evaluation of all programs related to Waste Management through the utilization of Information and Communication Technology (ICT). You can describe more related items if needed.)

Universitas Muhammadiyah Semarang (UNIMUS) integrates Information and Communication Technology (ICT) into the planning, implementation, monitoring, evaluation, and continuous improvement of its campus waste management programs. The digital platform supports data-driven decision-making by recording waste generation, treatment, recycling performance, compost production, utilization, and environmental impacts in real time.

The UNIMUS Green Campus Waste Information System consists of several integrated digital dashboards, including the Executive KPI Dashboard, KPI Scorecard, Organic Waste Dashboard, Material Flow Analysis (MFA), Monthly Performance Dashboard, Compost Production Dashboard, Compost Utilization Dashboard, Circular Economy Dashboard, Environmental Impact Dashboard, and SDGs Contribution Dashboard. These dashboards provide comprehensive monitoring of waste management performance, allowing university leaders and operational units to evaluate achievements against annual targets and identify opportunities for continuous improvement.

Organic waste generated from cafeterias, landscape maintenance, laboratories, and campus activities is digitally recorded and monitored throughout the treatment process, including composting, Black Soldier Fly (BSF) processing, eco-enzyme production, and other resource recovery activities. The system also tracks inorganic waste collection, waste bank activities, hazardous waste management, and wastewater treatment to ensure compliance with environmental regulations and institutional sustainability policies.

The digital monitoring platform supports the implementation of the Plan–Do–Check–Act (PDCA) cycle through periodic reporting, KPI evaluation, internal audits, management reviews, and evidence-based corrective actions. Monthly and annual reports generated by the system enable continuous performance assessment and strengthen institutional transparency and accountability.



The implementation of ICT-based waste management has significantly improved operational efficiency, data accuracy, reporting quality, and strategic decision-making. **The platform also supports the achievement of Sustainable Development Goals (SDGs), particularly SDG 3 (Good Health and Well-being), SDG 6 (Clean Water and Sanitation), SDG 7 (Affordable and Clean Energy), SDG 11 (Sustainable Cities and Communities), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), SDG 15 (Life on Land), and SDG 17 (Partnerships for the Goals).**

Further information regarding UNIMUS Green Campus waste management programs, digital monitoring systems, performance dashboards, reports, and supporting evidence is available at: <https://sustainability.unimus.ac.id/waste>