[7.2] University Measures Towards Affordable and Clean Energy

[7.2.3] Carbon Reduction and Emission Reduction Process

Emission Reduction Process and Energy Consumption Reduction Plan

The use of energy-efficient equipment at FKUI is implemented gradually through routine maintenance, development, and investment. For routine maintenance, energy-efficient equipment replaces conventional devices. In terms of development and investment, the use of energy-efficient equipment is outlined in planning documents and during the construction phase. As of 2023, 91.37% of FKUI's equipment is energy efficient. To support policies regarding the use of energy-efficient equipment at FKUI, a policy has been issued by the Dean of FKUI, which includes:

1. Surat Keputusan Dekan FKUI Nomor: SK-1569/UN2.F1.D/HKP.02.04/2022 tentang Kebijakan Mitigasi dan Adaptasi Perubahan Iklim Global di Fakultas Kedokteran Universitas Indonesia
2. Surat Keputusan Dekan Nomor: SK-1570/UN2.F1.D/ HKP.02.04/2022 tentang unsur pelaksanaan *green building* (Gedung Hijau) yang tercermin dalam pengembangan dan renovasi ruangan di FKUI;
3. Surat Keputusan Dekan FKUI Nomor: SK-1571/UN2.F1.D/HKP.02.04/2022 tentang Tim Pengelolaan dan Penghematan Energi Listrik;
4. Standard Prosedur Operasional Pelaksanaan Penghematan Pemakaian Tenaga Listrik.

[7.2.5] Energy Wastage Identification

In alignment with the Green Building standards outlined in our construction and renovation policies, systematic and progressive endeavors unfold across various stages, encompassing technical planning, construction execdution, utilization, and ultimately, demolition. Prior to these stages, FMUI initiates the process by the identifying Green Building implementation.

Peralatan Hemat Energi Fakultas Kedokteran UI

Tahun 2023

No	Uraian	Jumlah	Peralatan Hemat Energi	Persentase (%)
1	Lampu	7.172,00	2.550,00	35,55
2	AC Split	215,00	131,00	60,93
3	AC Standing	7,00	7,00	100,00
4	AC celling	11,00	11,00	100,00
5	AC VRV	3,00	3,00	100,00
6	AC Chiller	8,00	8,00	100,00
7	PC all in one	631,00	631,00	100,00
8	Printer sharing	208,00	208,00	100,00
9	Smart TV (LED)	53,00	53,00	100,00
10	Kulkas / Frezer	209,00	209,00	100,00

11	Kran Sensor Otomatis	17,00	17,00	100,00
12	Laptop	80,00	80,00	100,00
Persentase rata - rata				**91,37**

Based on the data above, the use of energy-efficient equipment has been implemented at 100% for standing ACs, ceiling ACs, VRV ACs, all-in-one PCs, shared printers, LED smart TVs, refrigerators, automatic sensor faucets, and laptops.

However, the use of energy-efficient lighting has not yet reached 100%, currently achieving only 35.55% (2,550 out of 7,172 lights), and the split AC systems are at 60.93%.

The transition from conventional lighting to LED (Light Emitting Diode) and the upgrade of conventional split AC units will continue to be implemented through routine maintenance (for broken and non-functional equipment) as well as through development and investment for new equipment.

Below are supporting documents demonstrating the use of energy-efficient equipment at FKUI:

a. The Use of Energy-Efficient Lighting in Indoor and Outdoor Areas is:

PROSENTASI PENGGUNAAN LAMPU LED (PER-GEDUNG)

FAKULTAS KEDOKTERAN UI

No.	Nama Gedung	SUDAH LED (%)
1	Gedung IMERI	25%
2	Gedung Utilitas IMERI	50%
3	Gedung H	80 %
4	Gedung Anatomi	100 %
5	Gedung Parasitologi	20%
6	Gedung ex. Wisma Parasitologi	100 %
7	Gedung Kimia	10 %
8	Gedung Ilmu Gizi (kondisi tidak dihuni)	0
9	Gedung Patologi Anatomi (2 Gedung)	60 %
10	Gedung IKK	100 %
11	Gedung Mikrobiologi (3 gedung)	30 %

12	Gedung KDK Kayu Putih (sedang proses untuk beroperasi Kembali)	0

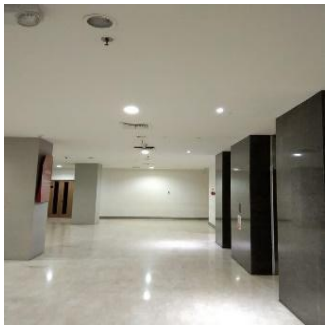
PENGGUNAAN LAMPU LED UNTUK RUANG KULIAH, RUANG LABORATORIUM, RUANG MEETING BESAR DAN SELASAR

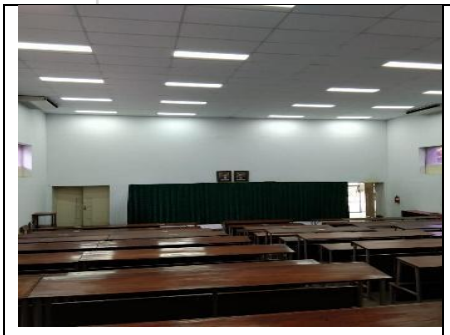
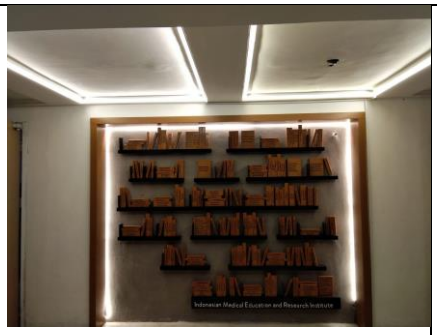
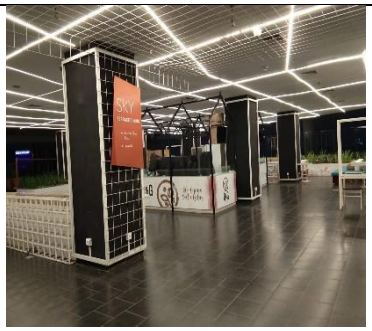
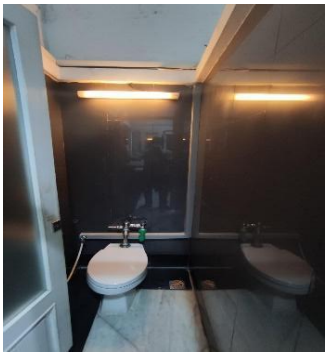
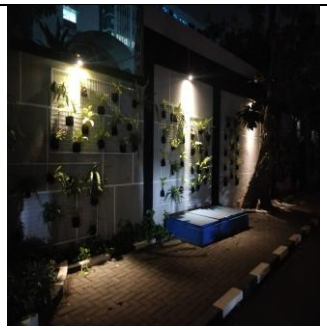
No.	Nama Gedung	SUDAH LED (%)
1	Aula IMERI FKUI	100%
2	Ruang Senat Akademik	100%
3	Ruang Dewan Guru Besar	100%
4	Ruang Kuliah Kimia-1	100%
5	Ruang Kuliah Mikrobiologi	100%
6	Ruang Kuliah IKK	100%
7	Ruang Kuliah Anatomi	100%
8	Ruang Kuliah Fisika	100%
9	Laboratorium Anatomi	100%
10	Laboratorium Gerontologi	100%
11	Laboratorium Farmasi	100%
12	Laboratorium Biologi	100%
13	Laboratorium Histologi	100%
14	Studio Mini	100%
15	Studio RRI	100%
16	Laboratorium Histologi	100%
17	Seluruh salasar di Gedung FKUI	100%

UNIVERSITAS INDONESIA

FAKULTAS KEDOKTERAN

Examples of LED lights in the FKUI environment:

		
Aula IMERI FKUI	**Ruang DGB**	**Ruang SAF**
		
Ruang Laboratorium	**Ruang Diskusi**	**Kantor PAF**
		
Lobi Gedung H	**Seluruh Lobi IMERI**	**Seluruh Selasar Gedung - H**
		
Penggantian Lampu LED di Gedung H	**Penggantian Lampu Konvensional ke LED di Taman FKUI**	**Penggantian Lampu Konvensional ke LED di Taman FKUI**

		
Ruang Kuliah Mikrobiologi	**Papan Nama Lobby**	**Sky Lobby**
		
Lampu Toilet	**Lapangan Multifungsi**	**Taman**
		
Taman Vertikal	**Lampu Fasad Gedung IMERI**	**Lampu Taman FKUI**

b. Use of Air Conditioning (AC)

The air conditioning system throughout the Faculty of Medicine at the University of Indonesia utilizes energy-efficient types, such as inverter split-type ACs, VRV (Variable Refrigerant Volume) systems, standing ACs, ceiling ACs, and chillers. In 2023, FKUI replaced damaged conventional AC units with inverter models in the Parasitology lecture room, the Dean's office, and the office of the Dean's secretary. This transition reflects FKUI's commitment to enhancing energy efficiency and reducing environmental impact.

Kontak: Ramdhoni Ali
Telepon: 082297697389
Email: ramdhoni.ali@gmail.com

Dibuat: Sen 02 Okt 16:25 2023
Lokasi: FKUI SALEMBA
Judul: Pemasangan 4 Unit AC Di Ruang PARASITOLOGI
jumlah item: 24

(9)

Fkui_Pemasang_231005143229_1.jpeg

Dibuat: Kam 05 Okt 14:32 2023
Kelompok: Serial number Indoor AC

E003723

(10)

Fkui_Pemasang_231002162641_1.jpeg

Dibuat: Sen 02 Okt 16:26 2023

(11)

Fkui_Pemasang_231002162642_2.jpeg

Dibuat: Sen 02 Okt 16:26 2023
Kelompok: Before

(12)

Fkui_Pemasang_231002162641.jpeg

Dibuat: Sen 02 Okt 16:26 2023
Kelompok: After

(13)

Fkui_Pemasang_231002162642_1.jpeg

Dibuat: Sen 02 Okt 16:26 2023
Kelompok: Before

(14)

Fkui_Pemasang_231002162642.jpeg

Dibuat: Sen 02 Okt 16:26 2023
Kelompok: After

(15)

Fkui_Pemasang_231005143641.jpeg

Dibuat: Kam 05 Okt 14:36 2023
Kelompok: Before

(16)

Fkui_Pemasang_231005143725.jpg

Dibuat: Kam 05 Okt 14:37 2023
Kelompok: After

Penggantian AC Konvensional ke AC Invert 1.

 **AC Split Inverter di Lab Parasitologi**	 **Standing AC di Gedung H**
 **AC VRV untuk menyuplai Laboratorium Departemen Biologi**	
 **Chiller di Laboratorium Terpadu dan Departemen Fisiologi**	 **Chiller gedung IMERI yang menggunakanm *kondensor michrochannel* yang bisa menghemat energi listrik sbesar 30 – 40 % dari chiller konvensional.**

c. Use of *PC Desktop (All in one)*

The use of all-in-one computers (without a CPU) allows for greater energy efficiency compared to conventional desktop computers. These streamlined systems consume less power while providing

the same functionality, making them a more sustainable choice for both the environment and energy savings.

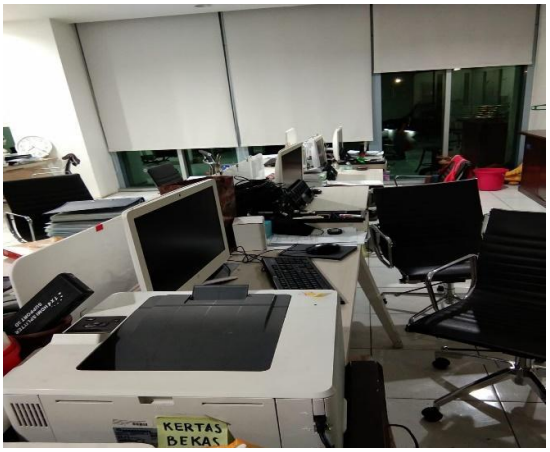

PC desktop sudah digunakan di seluruh Gedung FKUI

d. Laptop/Notebook

Laptops have become increasingly used for lectures, seminars, and meetings, especially during the COVID-19 pandemic.

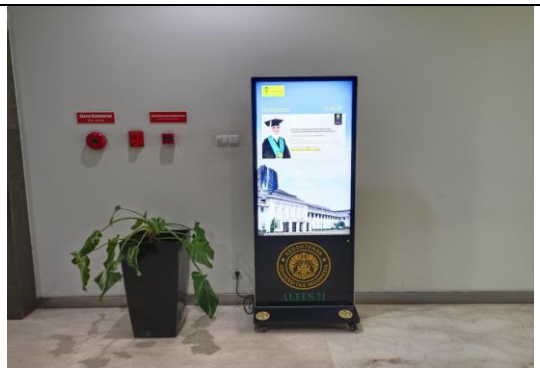

e. *Shared Printer*

Printers are used with a sharing system, allowing them to be accessed by two or more computers. This approach reduces the number of printers needed and helps save energy.



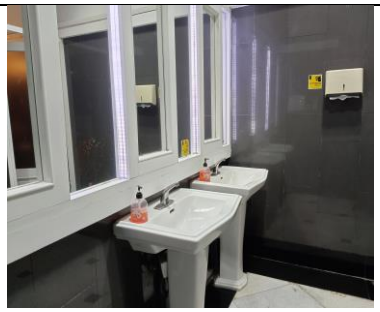
f. *Smart TV (TV LED)*

Smart TVs (LED TVs) are utilized for lectures, meetings, and as digital information media. All buildings at FKUI are equipped with smart TVs, which are energy-efficient and help reduce electricity consumption.

	
TV Papan Informasi	**Standing TV Papan Informasi**
	
TV di Ruang Aula	TV di Ruang Diskusi

g. *Automatic Sensor Faucets*

Automatic sensor faucets are installed in the restrooms of Building H, the Anatomy Building, the Parasitology Building, the Parasitology Dormitory, the Microbiology Building, and the Community Medicine Building.

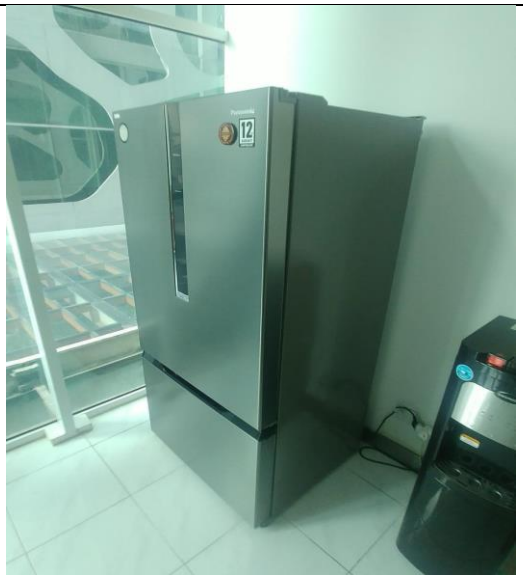
	 Kran wastafel konvensioanal sebelum di ganti.	 Kran wastafel setelah di ganti dengan kran sensor.

Automatic Sink Faucets in Building H and the Microbiology Building

h. Refrigerators and freezers are available in almost all FKUI buildings, serving to store research samples in laboratory spaces and to keep food and beverages for staff.

 **Refrigrator Thermo Plr 386**	 **Frezeer 500 Watt**

	
Freezer Blinder 1100 Watt	**Frezeer Thermo 5100 Watt**
	
Lemari Es LG 110 Watt	**Samsung 225 Watt**

	
Lemari Es Panasonic 230 Watt	**Frezeer F700 500 Watt**

[7.4] Energy and The Community

Faculty programs that impact climate change:

2023		
1	Revitalisasi Pembuatan Taman Prof.Kahar Tahap 2	FKUI/ILUNI
2	Revitalisasi resapan air dan pembuatan limpahan air hujan	FKUI/ILUNI
2	Kegiatan FunBike Paboi 2023	FKUI
3	HIBAH MOBIL LISTRIK UNTUK FKUI	FKUI/ILUNI
4	Green Campaign 2023	BEM FKUI
5	Sekolah Hijau 2023	BEM FKUI
6	Pembuatan Pupuk dari Limbah Susu Kadaluarsa	Rumah Kompos FKUI
7	Penambahan panel surya di Departemen Parasitologi	FKUI
8	Edukasi Bahaya Formalin, Boraks, dan MSG kepada warga Apartemen di Jakarta	PENGMAS
9	Pengabdian Masyarakat Membersihkan Bantaran Sungai di JAKARTA	BEM FKUI
10	Penataan Ruang Terbuka Hijau	FKUI
11	Program 5R untuk Kelestarian Lingkungan dan menciptakan Lingkungan kerja yang nyaman	FKUI
12	Revitalisasi Resapan air dan pengelolaan air hujan di Kampus FKUI Salemba	FKUI
13	Program pengurangan sampah plastik di kalangan lulusan baru FKUI	FKUI
14	Program Kampanye kampus hijau Mahasiswa Baru PPDS dan S1 Kedokteran	FKUI
15	Buletin Tips Kesehatan : Kedokteran Olahraga, Latihan Fisik Di Tengah Polusi Udara https://www.instagram.com/p/Cw7I5IEMkmX/?hl=en&img_index=2	Instagram
16	Webinar Awam : Dampak Polusi udara pada Kesehatan https://www.youtube.com/watch?v=8gkSCOJLEXg	Zoom meeting
17	Sosialisasi Pemilahan Sampah ke Tendik FKUI	Zoom Meeting
18	Pelatihan Pemadam Kebakaran di Lingkungan FKUI	FKUI
19	Pemasangan *Wind Turbin* sebagai energi terbarukan	FKUI
20	Pelatihan Kegawatdaruratan di Lingkungan	*Zoom meeting*
21	Penggunaan air AC yang digunakan untuk penyiraman tanaman di Lingkungan FKUI	FKUI
22	Fogging Rutin	FKUI
23	Pest Control	FKUI
24	Pengadaan *Lady bin* dan pengharum	FKUI
25	Revitalisasi RTH	FKUI

26	Penambahan tanaman di Lingkungan FKUI	FKUI
27	Kampanye pengurangan kertas dan plastic di Lingkungan FKUI	FKUI

Rumah Kompos

Vertical Garden

Water Recycling System

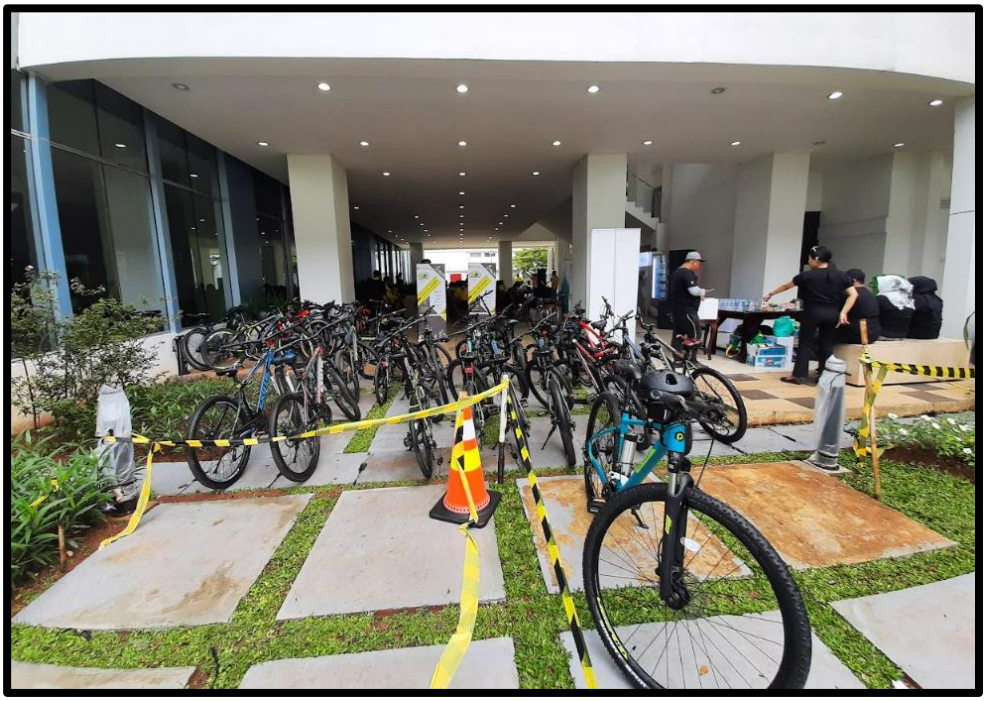
Pemasangan solar panel 15,7 kWp di Gedung Anatomi untuk Hemat Energi Listrik

Disability Path

Green Commitment:

This activity involves providing education and expressing commitment to new students and graduates of FKUI to support the creation of a green campus. Participants are encouraged to bring reusable water bottles, minimize plastic use, and actively maintain and preserve the environment.

KEGIATAN BERSEPEDA:



USE OF TUMBLERS IN THE FKUI ENVIRONMENT:

Students are encouraged to use reusable water bottles during activities, and this habit is hoped to extend beyond the campus environment to their homes and other settings.

CINTA GIZI:


UNIVERSITAS INDONESIA
CINSA
R.E.A.C.H REFUGEES
23 September 2023
"Cinta gizi, cerdas generasi"

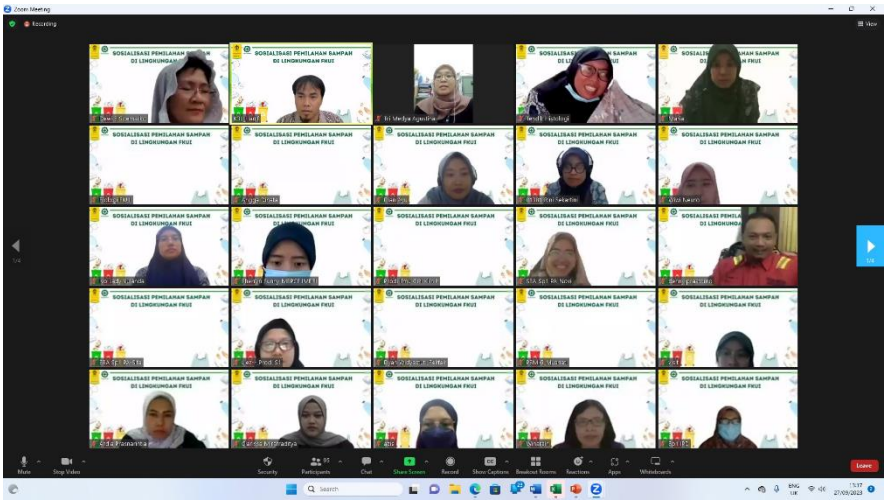

KEDOKTERAN
ILUNI FKUI 1992-1993 "Adisahitya" Berikan Hibah
Revitalisasi Resapan Air dan Pengelolaan Air Hujan di Kampus FKUI

HIBAH REVITALISASI RESAPAN AIR DAN PENGELOLAAN AIR HUJAN

KAMPANYE PENGURANGAN JEJAK KARBON DI FKUI

WEBINAR TINJAUAN GURU BESAR FKUI: DAMPAK POLUSI UDARA

BULETIN TIPS KESEHATAN: LATIHAN FISIK DI TENGAH POLUSI UDARA



SOSIALISASI PEMILAHAN SAMPAH DI LINGKUNGAN FKUI

PERESMIAN REVITALISASI TAMAN FKUI TAHAP 2

PENGOLAHAN AIR AC MENJADI AIR PENYIRAMAN TANAMAN DI LINGKUNGAN FKUI

PERESMIAN DAN SERAH TERIMA HIBAH MOBIL LISTRIK FKUI

PELATIHAN PEMADAM KEBAKARAN DI LINGKUNGAN FKUI

PENGGILINGAN

PENCAMPURAN DENGAN EM4

PROSES FERMENTASI

PENGEMASAN DAN PENIMBANGAN

PUPUK SIAP DIGUNAKAN

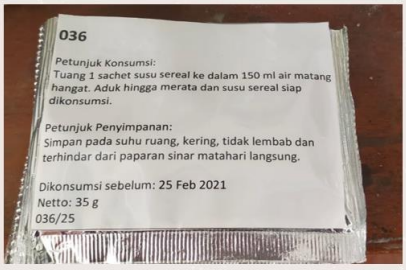
DATA TABEL PEMBUATAN KOMPOS FKUI
TAHUN 2022

	PROSES PEMBUATAN					ESTIMASI HASIL KOMPOS			
NO	TANGGAL	Jumlah karung	Vol. rata-rata (Kg)	Jumlah (Kg)	NO	TANGGAL	Jumlah karung	Vol. rata-rata (Kg)	Jumlah (Kg)
1	24-Jan-22	15	35	525	1	31-Mar-22	15	12	180
2	07-Feb-22	15	35	525	2	27-Apr-22	15	15	225
3	01-Apr-22	15	35	525	3	28-Jun-22	15	17	255
4	30-Jun-22	15	31	465	4	20-Aug-22	15	14	210
5	22-Aug-22	15	34	510	5	25-Oct-22	15	15	215
6	03-Oct-22	6	33	198	6	03-Nov-22	6	15	215
	TOTAL (Kg)			2.748					1.300

Keterangan :
No. 1-5 Proses Manual
No. 6 Sudah menggunakan Mesin giling kompos

PENCATATAN DATA PUPUK

PENGANGKUTAN SUSU DARI TPS



BUNGKUS SUSU SEREAL DAN KETERANGANNYA

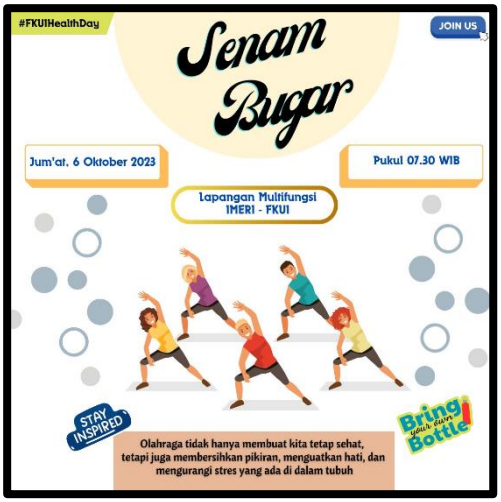
SUSU BUBUK YANG SUDAH DILARUTKAN AIR

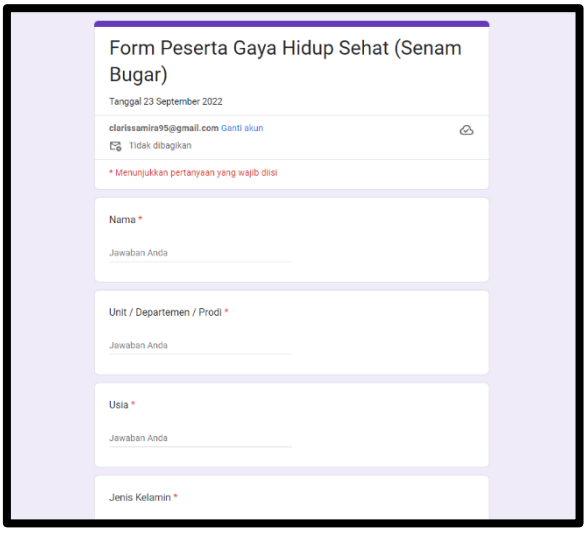
CAIRAN PUPUK YANG TELAH DICAMPUR BAHAN FERMENTASI

PENGOLAHAN LIMBAH MENJADI PUPUK TANAMAN

Jum'at Sehat Acitvities at FKUI (Fitness Exercise and Health Check-Ups Every Friday):

Every Friday at the FKUI Salemba campus, a group exercise session is held, with participation from all academic staff, especially non-academic personnel. The session begins with measurements of blood pressure, pulse, and temperature, followed by the exercise routine. Prior to the workout, health forms are collected to record blood pressure and heart rate. All activities are supervised by resident doctors from the Sports Medicine department of FKUI.


#FKUIHealthDay
JOIN US
Senam Bugar
Jum'at, 6 Oktober 2023
Pukul 07.30 WIB
Lapangan Multifungsi
IMERI - FKUI
STAY INSPIRED
Olahraga tidak hanya membuat kita tetap sehat, tetapi juga membersihkan pikiran, menguatkan hati, dan mengurangi stres yang ada di dalam tubuh
Bring your own Bottle!



[7.4.2] Renewable Energy Pledge

Renewable Energy at the Faculty of Medicine, Universitas Indonesia

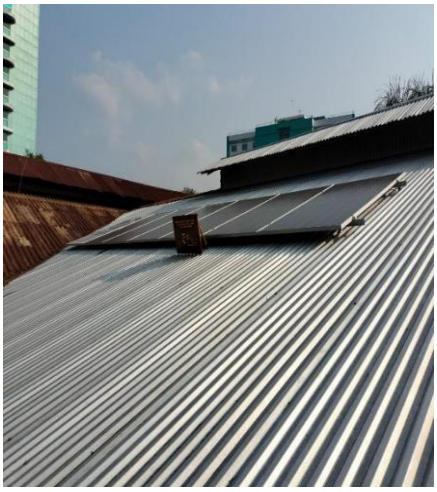
The Faculty of Medicine at UI has two types of renewable energy sources: Solar Power Plants (PLTS) and Wind Power Plants (PLTB).

A. Pembangkit Listrik Tenaga Surya (PLTS)

1. In 2017, FKUI installed solar panels to power lights along the pedestrian pathways in the Salemba 6 area. A total of 10 lights were installed, each with a capacity of 60 watts.

2. The solar panel system in the Utility Building has a capacity of 15 kWp, with 5 kWp installed in 2019 and an additional 10 kWp in 2021. In the Anatomy Building, a solar panel system with a capacity of 15.17 kWp was installed in 2022.

3. In 2023, a solar panel system with a capacity of 3.27 kWp was installed in the Parasitology Building.



4. The maintenance of the solar panel system is conducted every four months by FKUI technicians, who clean the solar panels and check the electrical system.



B. PLTB (Pembangkit Listrik Tenaga Bayu)

In 2023, FKUI installed two wind turbine systems on the rooftop of the LVMDP substation in Building H, each with a capacity of 300 watts.


A. Data on Energy (kWh) Generated from Renewable Energy Sources

Data Energi (Kwh) yang dihasilkan Sumber Energi Terbarukan

No	Sumber Energi	Lokasi PLTS	Kapasitas (Kwp)	Energi yang di hasilkan (Kwh) dalam sehari	Energi yang di hasilkan (Kwh) dalam setahun
1	PLTS	Gedung Utilitas	15	60	21.900
2	PLTS	Gedung Anatomi	15,17	60,68	22.148
3	PLTS	Lampu Solar cell	0,6	2,4	876
4	PLTS	Gedung Parasitologi	3,27	13,08	4.774
5	PLTB	Gardu K-61	0,3	0,58	212
6	PLTB	Gardu K-61	0,3	0,58	212
Total Energi Yang dihasilkan (Kwh)					50.122