



Jumlah pemakaian energi Total energy used (kWh)	2.407.165
Jejak karbon Carbon footprint (metric tons)	12.486

Perubahan iklim memberikan dampak besar bagi dunia, salah satunya menyebabkan kenaikan suhu hingga 1,5 derajat Celcius dibandingkan pada masa revolusi industri tahun 1880.

Risiko yang dapat ditimbulkan dari perubahan iklim, antara lain mencairnya es di kutub, kenaikan permukaan air laut, berkurangnya wilayah pantai dan pesisir, meningkatnya frekuensi kejadian cuaca ekstrem dan bencana hidrometeorologis, mengancam ketersediaan air bersih, kerusakan infrastruktur, mengancam ketahanan pangan, naiknya suhu air laut, serta penurunan Produk Domestik Bruto (PDB).

Climate change significantly impacts the world and has increased the Earth's temperature to 1.5 degrees Celsius compared to the industrial revolution era of 1880.

Climate change may pose some risks, such as melting polar ice caps, rising sea levels, diminishing coastal areas, and increasing the frequency of extreme weather events and hydrometeorological disasters. It also threatens the clean water supply and food security, damages the infrastructure, increases seawater temperature, and declines the Gross Domestic Product (GDP) growth.

Indonesia termasuk negara yang sangat rentan terhadap perubahan iklim. Sehingga perlu adanya upaya nyata untuk mengurangi temperatur dunia supaya tidak semakin menghangat. Kegiatan perekonomian dapat menyebabkan kenaikan suhu karena menciptakan emisi CO₂. Dengan demikian, diperlukan sejumlah inisiatif untuk pengurangan emisi. UI terus mengupayakan berbagai mitigasi untuk menekan dampak perubahan iklim global melalui riset dan inovasi.

Indonesia is among the vulnerable countries to climate change. Concrete efforts need to be made to reduce the Earth's temperature, preventing it from getting warmer. However, daily economic activities can raise the global temperature as it contributes to carbon emissions. Thus, things that can absorb carbon dioxide from the atmosphere are needed. In this regard, UI continues to mitigate the impact of global climate change through research and innovation.

Penggunaan Sumber Energi Terbarukan

Renewable Energy Resources Usage

Energi terbarukan merupakan energi yang ramah lingkungan dan rendah emisi. Sumber energi ini selalu tersedia di alam dan dapat diperbarui secara berkelanjutan. Peran energi terbarukan dinilai mampu menciptakan lingkungan lebih hijau demi menekan dampak negatif perubahan iklim.

Renewable energy is called green energy and offers low emissions. Its sources are always available in nature and can be provided sustainably. It is considered capable of creating a greener environment to reduce the negative impacts of climate change.

Demi terwujudnya Kampus Hijau, UI turut meningkatkan penggunaan sumber Energi Baru dan Terbarukan (EBT) secara merata dan bertahap di seluruh fakultas dan fasilitas kampus. Adapun fasilitas kampus yang telah menerapkan pemanfaatan EBT adalah Gedung Perpustakaan atau lebih dikenal dengan The Crystal of Knowledge yang terletak di Depok, Jawa Barat. Gedung ini menggunakan panel surya pada atap bangunan yang diselimuti hamparan rumput.

To achieve the Green Campus, UI has increased the consumption of new and renewable energy (EBT) sources, which has been implemented gradually in every faculty and facility unit. One of which is the Library Building or known as the Crystal of Knowledge in Depok, West Java. This building has installed a solar panel system on the rooftop coupled with a green roof.

Solar panel mampu menghemat energi listrik konvensional. Sementara itu, rumput di bagian atap berfungsi untuk menurunkan panas sinar matahari, sehingga dapat meringankan beban pendingin ruangan hingga 15 persen.

This solar panel technology aims to save conventional electrical energy. Moreover, the green roof can reduce the heat of sunlight and ease the cooling load of air conditioning units by up to 15%.



Atap hijau gedung Perpustakaan UI yang telah dilengkapi dengan panel surya.

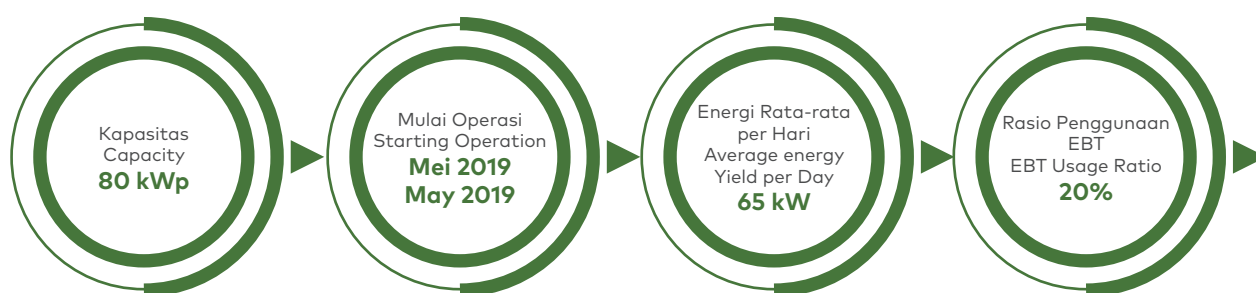
Green roof at the UI Library building coupled with a solar panel system.

Selain itu, di bagian bukit gedung ini juga terpasang jaringan pembuangan air dan kaca bening yang berfungsi untuk memasukkan cahaya ke ruangan. Perpustakaan UI ini dilengkapi pula dengan sistem pengolahan limbah atau *Sewage Treatment Plant* (STP), sehingga airnya dapat digunakan untuk mengairi punggung bangunan.

Di sisi lain, UI telah memasang Pembangkit Listrik Tenaga Surya (PLTS) *On-Grid* pada bagian atap gedung perpustakaan. Tujuannya, untuk menghasilkan energi listrik dengan kapasitas 80 kWp dan dapat memenuhi 20 persen dari kebutuhan energi listrik di Perpustakaan Kampus UI pada siang hari (08.00-16.00). Pembangunan PLTS ini merujuk pada Rencana Strategis UI 2014-2019 di bidang pembangunan berkelanjutan.

On the building's hillside, there is a drainage network and clear glass to get natural light into the room. The UI library building is also equipped with a sewage treatment plant (STP), and the generated water can be used to irrigate its green roof.

In addition, UI has installed an On-Grid Solar Power Plant (PLTS) on the Library Building's rooftop to produce electrical energy with a capacity of 80 kWp and fulfill 20 percent of the electrical energy needs at the library during the day (8 am to 4 pm). This PLTS development referred to the UI Strategic Plan of 2014-2019 in sustainable development.



Rencana PLTS

Selain Gedung Perpustakaan, UI juga tengah merencanakan untuk mengimplementasikan penggunaan PLTS di sejumlah lokasi strategis.

PLTS Plan

Besides the Library Building, UI plans to implement solar power plants (PLTS) in other strategic locations.

Lokasi	Potensi Power Potential	Location
Gedung ILRC	100 kWp	ILRC Building
Fakultas Ilmu Komputer	100 kWp	Faculty of Computer Science
Area Rumpun Ilmu Kesehatan	450 kWp	Health Sciences Cluster
Gedung Parkir RSUI	450 kWp	UI Hospital Parking Building
Fakultas Ilmu Sosial dan Ilmu Politik	80 kWp	Faculty of Social and Political Science
Fakultas Matematika dan IPA	50 kWp	Faculty of Mathematics and Natural Sciences
Fakultas Ekonomi dan Bisnis	150 kWp	Faculty of Economics and Business
Gedung Parkir Salemba	300 kWp	Salemba Parking Building
Area Program Vokasi	200 kWp	Vocational School
Danau Kenanga	120 kWp (Floating)	Lake Kenanga

System: Rooftop On-Grid & Floating
Capacity: 2 mWp

Komitmen terhadap Karbon Netral

Commitment to Carbon Neutral

Karbon netral merupakan keadaan ketika emisi karbon dari kegiatan perekonomian manusia dapat terserap kembali, sehingga tidak sempat menguap ke atmosfer. Krisis iklim terjadi ketika emisi karbon berubah menjadi emisi gas rumah kaca yang membumbung ke atmosfer. Ketika konsentrasinya naik, atmosfer kehilangan kemampuannya untuk menyerap emisi, mengakibatkan karbon itu terpantul kembali ke bumi berupa panas.

Dalam hal ini, UI berkomitmen mencapai karbon netral sesuai Protokol Gas Rumah Kaca. Protokol Gas Rumah Kaca merupakan perangkat akuntansi yang jamak digunakan oleh pemerintah dan pemimpin industri dalam mengelola emisi gas rumah kaca.

Mengacu pada protokol, dilakukan penghitungan emisi CO₂, CH₄, dan N₂O yang dihasilkan dari berbagai aktivitas kegiatan, seperti penggunaan listrik dan transportasi.

UI pun mendukung pengurangan emisi gas rumah kaca melalui berbagai kegiatannya, seperti:

1. Pembuatan SK Kampus Hijau untuk mendukung Sustainable Development Goals (SDGs).
2. Inisiatif UI GreenMetric yang termasuk di dalamnya mengajak peran serta kampus di seluruh dunia untuk bersama-sama menciptakan kampus yang lestari dengan enam indikator, termasuk pengukuran emisi langsung terkait penggunaan listrik (*Energy and Climate Change*), transportasi (*Transportation*), serta pengukuran tidak langsung dari sampah (*Waste*) dan air (*Water*), serta lahan hijau (*Setting and Infrastructure*).

Carbon neutral happens when the carbon emitted from economic activities is balanced by an equivalent amount removed from the atmosphere. Meanwhile, the climate crisis occurs when carbon emissions transform into greenhouse gases that continue to soar into the atmosphere. As the concentration increases, the atmosphere loses its ability to absorb emissions and traps heat instead of releasing it, causing further global warming.

In this regard, UI has committed to achieving carbon neutral under the Greenhouse Gas Protocol. It is the most widely used accounting tool that enables governments and industry leaders to manage greenhouse gases.

In this protocol, the emissions of CO₂, CH₄, and N₂O are calculated using fuel consumption from various activities, including those related to electricity consumption and transportation.

UI supports greenhouse gases reduction through a series of initiatives as follows:

1. Preparation of the Green Campus Decree to support Sustainable Development Goals (SDGs)
2. The UI GreenMetric initiative has encouraged many universities worldwide to participate together in creating a sustainable campus through six indicators, including measurement of direct emissions related to electricity consumption (*Energy and Climate Change*), *Transportation*, and non-direct measurement from *Waste*, *Water*, and green spaces (*Setting and Infrastructure*).

Langkah Edukasi Lingkungan

Environmental Education Initiatives

Pengetahuan atau paparan informasi terhadap perubahan iklim masih sangat terbatas. Oleh karena itu, penting untuk mengedukasi masyarakat terkait fenomena ini. Dari sisi pemenuhan informasi, UI mengadakan berbagai program edukasi lokal, antara lain Sosialisasi UI Zero Plastic, Jakarta Cleanup Day, serta berkolaborasi dengan pemerintah dan BUMN.

Edukasi Pengelolaan Sampah

Berkolaborasi dengan PT DOW Indonesia, UI mengadakan *webinar* bertajuk "Edukasi Pengelolaan Sampah di UI" pada 3 Februari 2021. Kegiatan ini menjadi bagian dari program pengelolaan sampah plastik yang berlangsung pada Januari-Maret 2021. Dalam kesempatan tersebut, Tim Pengabdian Masyarakat dari Teknik Lingkungan UI mengajak masyarakat untuk aktif melakukan Gerakan Kumpul Plastik (Gumpal), yakni memilah dan mengumpulkan sampah plastik dalam satu wadah. Upaya tersebut dapat memudahkan pekerjaan para pengais sampah dan mengurangi tumpukan sampah plastik di Tempat Pembuangan Akhir.



Rencana Kerja Sama dalam Penanganan Dampak Perubahan Iklim

Berdiri sejak 2010, Research Center for Climate Change (RCCC) UI bertujuan untuk memperbaiki, mengembangkan, dan mentransformasikan berbagai penelitian dan pelatihan untuk mengatasi perubahan iklim. RCCC UI juga bertujuan mempertemukan para pemangku kepentingan skala nasional dan global untuk bekerja sama mengadakan berbagai program. Melalui RCCC, UI menjadi anggota Association of Pacific Rim Universities (APRU) yang mencakup 42 universitas riset di lingkaran Pasifik.

Understanding or exposure to information on climate change has been somewhat limited. Therefore, it is essential to educate the public regarding this phenomenon. In terms of information supply, UI organizes local outreach programs, including the UI Zero Plastic Campaign and Jakarta Cleanup Day, and collaborates with the government and SOEs.

Waste Management Training

Collaborating with PT DOW Indonesia, UI held a "Waste Management Training at UI" webinar on February 3, 2021. The event was part of the plastic waste management program, ongoing from January to March 2021. During the webinar, the UI Environmental Engineering Community Service Team asked the community to actively participate in the Plastic Collecting Movement (Gumpal) by sorting and collecting plastic garbage in a container. Those efforts can help scavengers and reduce plastic waste piles in Final Disposal Facilities.

Webinar "Edukasi Pengelolaan Sampah di UI"
Webinar of "Waste Management Training at UI"

Collaboration Plan in Handling the Climate Change Impacts

UI has the Research Center for Climate Change (RCCC) that was founded in 2010. It aims to improve, develop, and transform research and training projects to tackle climate change. RCCC UI also aims to gather national and global stakeholders to collaborate in organizing the related programs. With the establishment of the RCCC, UI has become A member of THE Association of Pacific Rim Universities (APRU), consisting of 42 top research universities in the Pacific Rim.

UI telah mengembangkan kerja sama dengan sejumlah universitas dunia, seperti Cornell University, University of Reading, Center for Environmental, Economy, and Society (CEES) di Columbia University, and Center for Global Field Study di University of Washington. Di lingkup nasional, RCCC UI telah bermitra dengan Dewan Nasional Perubahan Iklim (DNPI), Satgas REDD+, UKP4, Kementerian Lingkungan Hidup, Kementerian Kesehatan, serta Kementerian Kelautan dan Perikanan dalam penelitian, pelatihan, dan simposium.

Penanganan krisis iklim memerlukan kolaborasi multidisipliner. Karena itu, rekan-rekan geografer dari Departemen Geografi UI menggelar *webinar* Geographic National Society Summit (GNSS) 2021 bertajuk "Collaborative Effort and Innovation for Climate Crisis" pada 27 November 2021.

Departemen Geografi telah memublikasikan sejumlah penelitian tentang perubahan iklim, yang umumnya menggunakan metode penginderaan jauh. Di sisi lain, kolaborasi dengan memanfaatkan teknologi informasi juga penting untuk memitigasi dampak perubahan iklim, salah satunya melalui Sistem Informasi Geografis (SIG).

Selain itu, Direktorat Inovasi dan Science Techno Park (DISTP) UI turut menyelenggarakan webinar berjudul "Climate Change Challenge: Preparing for Indonesia's Green and Sustainable Future" pada 11 Juni 2021. Menteri Keuangan RI Sri Mulyani hadir sebagai *keynote speaker*. Ia mengungkapkan, Kementerian Keuangan aktif mendukung dan memfasilitasi berbagai program dan kebijakan terkait, salah satunya melalui *climate budget tagging* untuk pengendalian dampak perubahan iklim.

UI has fostered collaboration with some universities worldwide, such as Cornell University; the University of Reading; the Center for Environmental, Economy, and Society (CEES) of Columbia University; and the Center for Global Field Study of the University of Washington. On a national scale, RCCC UI has partnered with the National Council on Climate Change (DNPI), the REDD+ Task Force, UKP4, the Ministry of Environment, the Ministry of Health, and the Ministry of Marine Affairs and Fisheries in research, training, and symposium events.

Addressing the climate crisis requires multidisciplinary collaboration. Therefore, fellow geographers from the UI Geography Department held the 2021 Geographic National Society Summit (GNSS) webinar titled "Collaborative Effort and Innovation for Climate Crisis" on November 27, 2021.

The UI Geography Department has conducted and published various studies related to climate change, which generally use remote sensing methods. On the other hand, information technology collaboration is mandatory to mitigate climate change impact, one of which is by using Geographic Information Systems (GIS).

Similarly, the Directorate of Innovation and Science Techno Park (DISTP) UI also held a webinar titled "Climate Change Challenge: Preparing for Indonesia's Green and Sustainable Future" on June 11, 2021. The Minister of Finance of Indonesia, Sri Mulyani, was present as a keynote speaker. She revealed that the Ministry of Finance actively supports and facilitates related programs and policies, among others, through climate budget tagging to control the impact of climate change.



Geographic National Society Summit (GNSS) 2021 Webinar



"Climate Change Challenge: Preparing for Indonesia's Green and Sustainable Future" Webinar