

REPORT ON SUSTAINABLE DEVELOPMENT GOAL



SDG 13: Climate Action Year 2022-23

PREAMBLE

To address challenges of environment and development, UN adopted 'Agenda 2030' to ensure Sustainable Development Goals (SDGs) in line of "quadruple helix model". It entails linkages between government, academia, society and business. An approach has been devised to develop academic institutions and new universities as living laboratories for sustainability. Amity University Haryana is finest example of such new university which is developing as living laboratory of sustainability by adopting multipronged approach including Nature Just Development, Green Building, Renewable Energy consumption, sustainability education, 3Rs approach of consumption and many more.

Amity University Haryana is strongly committed to the goal of environmental sustainability and playing an impactful role to ensure compliance in terms of SDGs. The quality and scale of Amity University Haryana's efforts to transform it into a sustainable campus have been duly recognized as India's first University and Asia's 2nd to earn LEED Platinum Certificate from US Green Building Council and among top 200 global campuses in previous Impact Ranking. The University is meaningfully contributing to SDG – 13 i.e. Climate Action, through the following important measures and frameworks:

- Nature Just Development plan of the University to make it a Green Campus
- Low Carbon energy transformation
- Incorporating Environmental and Sustainability components in imparting education
- Integrating climate change measures into university policies, strategies, and planning
- Collaborative education and research to address environmental and climate change impacts, adaptation, impact reduction, and mitigation.
- Promoting environmental consciousness and practices through various outreach programs to the local and regional communities, thus benefiting the society and nation

UNIVERSITY: A LIVING LABORATORY OF SUSTAINABILITY

UNIVERSITY INFRASTRUCTURE

To address challenges of environment and development, UN adopted 'Agenda 2030' to ensure SDGs in line of "quadruple helix model". It entails linkages between government, academia, society and business. An approach has been devised to develop academic institutions and new universities as living laboratories for sustainability. Amity University Haryana is finest example of such new university which is developing as living laboratory of sustainability by adopting multipronged approach including Nature Just Development, Green Building, Renewable Energy consumption, sustainability education, 3Rs approach of consumption and many more.

Amity University Haryana is located in lap of Aravalli range; adopted 'nature just' development approach without converting its natural terrain, native vegetation, natural drainage that ensure maximum ground water recharge. Within a decade of its formation AUH campus is converted into green hub in this semi-arid region. University buildings are LEED Platinum certified; highest global rating for green building by GBCI and US Green Building Council (first university building in India and 2nd only in Asia) with many passive features that minimize heat regime and reduce energy consumption. Extensive plantation of notable native vegetation (Sahtut, Kikad, Lasoda, Neem, Ficus, Amaltash, Chakresia, Tikoma, Pipal along with fruit and nut bearing trees) ensure biodiversity intact and ensure critical ecosystem services including groundwater recharge which is reflected in birds (150 species of native and migratory avifauna) and butterfly diversity (40 different species) in campus.

University also ensures well defined SOP for waste management including segregation, collection and disposal. A small unit of biogas plant (Bio Lamp) and composting plant is operational to manage dairy and other organic waste and provide bio-manure. Similarly to manage waste water 160 KLD STP and ETP are operational that make AUH a zero discharge campus as treated water is further utilized as gardening, irrigation and grey water flushing.

University supplements its energy with solar energy substantially through rooftop solar PVC, along with LED lighting and efficient wiring which further reduce greenhouse footprint and air pollution load in campus. AUH has developed with Indian Institute of Tropical Meteorology (IITM) a well equipped air quality monitoring station on 24*7 basis that monitor 22 different parameters including 8 pollutants of Air Quality, several organic species, trace gases and weather parameters. Atmospheric turbidity is monitored by Nephelometer. AUH is also a field monitoring station of NASA for monitoring of optical, radioactive and physico-chemical states of the atmosphere with help of muti-spectral Sun-Sky Radiometer. Amity University Haryana with well equipped monitoring facility gives control/ background data for comparing air quality status of urban areas including Delhi and Gurgaon. Air quality status of campus is critically better throughout year as compared to Delhi and Gurgaon. Although campus is very near to NH8 and in the way of wind that brought desert sand to NCR periodically but natural green cover provide blanket for particulate matter that reflects in better air quality status of campus.

Air Research facility at University is mainstreaming Air pollution and Atmospheric turbidity study. Both are linked with climatic condition, land use and its vicinity with Thar Desert and populous Delhi-Gurgaon zone. Monitoring of 22 significant chemical species of Air pollutant including eight necessary parameters of AQI (Air Quality Index) shows a significant low AQI usually fall between 0-50 and 50-100 grade, while Delhi and adjoining areas hardly observe Good status for AQI. PM2.5 is dominating parameters in Delhi AQI while PM10 dominates in AUH campus; which is a clear indication of pollution sources. In Delhi and adjoing urban areas, has been showing continuous rise in PM2.5 concentration, which is directly associated with CNG based transportation, while significance of PM10 in AUH campus is linked to surface dust and desert wind that too get regulated by creation of bio-shield of native vegetation in AUH campus.

Atmospheric turbidity study is also very critical for understanding of elevated air pollution in Delhi NCR. NASA based facility provide Aerosol optical depth; vertical concentration of total aerosol and ozone concentration. This monitoring gives idea about dust storms across the region. Since area between NCR and Thar desert are facing rapid loss of natural vegetation cover due to rampart mining and land use change; leading to increase in frequency and intensity of dust storm sources from Thar Desert. Dust storms significantly elevate the AQI of Delhi-NCR and posing a threat of desertification to these areas. So study of atmospheric turbidity at AUH campus is very significant for Air pollution and desertification study

Amity University Haryana has created an exclusive niche for Environment Education and research by developing world class infrastructure for Air pollution study along with integrating it into teaching pedagogy, so that students not only become sensitive to environment and climate change but ready to take challenge for providing solution for contemporary challenges. Environmental study (Core course for all UG programmes) and Environmental Management and Climate Science (Minor degree) are offered along with B.Sc in Earth Science/Geology (First among private university to offer), and M.Sc in Environmental Science & Management and M.Tech Solar energy. Extensive field-based study is inherent part of these programmes; a approach of 'see-learnapply', which brings students more closure to nature. Students are engaged with campus-based assignments and research projects in area of environment, pollution, biodiversity and waste management in UG and PG level in line of experiential learning for better output and to provide solution for contemporary environmental challenges including Air Pollution.

Amity University Haryana meet the challenges of sustainability by adopting best practices with help of maintaining campus as natural landscape with optimal disturbance that is basic for maximum productivity by blending traditional wisdom, technology and its stockholders prospective. In era of climate change signature across landscapes AUH proudly present itself as living laboratory of sustainability.

LOW CARBON ENERGY TRANSITION

Reduction in university carbon footprint is prime action point for climate action. Amity University Haryana is committed to drive low carbon scenario in all its operations including academic delivery, administration, and maintenance through rationalizing direct and indirect emissions. To ensure low carbon transformation university is mandated by a holistic 'Environmental and Sustainability Policy', to ensure carbon neutrality in phase wise manner. The target is set to achieve carbon neutrality which includes direct emission, indirect emission through purchased energy as well a few items from indirect sources in a phase-wise manner by 2028.

Direct energy consumption through grid electricity is a major portion of energy use, which is under substitution with solar PV and at present 8.9% of energy is procured through in-house solar PV plants. In-house solar energy systems of 500 kWp of solar rooftop on academic blocks and a ground solar PV plant, were installed and maintained by CleanMax Solar company under 'OpenX model' commonly known as 'pay as you go' model, which operates with zero breakdowns and generates Solar energy round the year. University has agreement with local gird for supplying surplus solar energy to the grid; if any. All the buildings have multiple windows and glass façades increasing the usage of natural light. 51.1% of lights are LED thus reducing energy consumption in buildings. Over a period of 5 years, it is planned to replace all the lights with LED. To reduce air conditioning energy load during peak seasons, all buildings are provided with sunken areas, which reduces the heat maxima substantially during summer as well as in winter.

At present Amity University Haryana substitutes around one tenth of its energy consumption by low carbon energy mainly from solar PV installed at rooftop and ground plats. University also strives to valorise its biowaste including kitchen and dairy waste into green energy. At present a pilot scale bio-gas plant is operational for demonstration purpose with vision to utilize its full potential as per renewable energy policy.

Indirect carbon neutrality (Partial scope III) is also in the agenda and the university works on paperless mode for all possible operations including day to communication, HR management (including leave) through in-house and external Enterprise Resource Planning (ERP) platforms like Amizone and TCSiON. University encourages the use of public transport/university buses and car pool for daily commuting of day scholars, faculty, and staff.

ENVIRONMENTAL AND SUSTAINABILITY EDUCATION

Teaching Learning

Climate Action; is a critical goal as it is interwoven with majority of other Sustainable Development Goals. Amity University Haryana is very much impactful to integrate the climate action perspective into its academic programs, research, and extension activities. University has a nodal institute i.e. Amity School of Earth and Environmental Science that design, formulate and implement academic programs, course work, and campus-based projects in the area of Environment and sustainability along with other institutes notably the Department of Renewable Energy, Architecture & Planning, Business School. A core course of 'Environmental Studies' for all UG programs provides a basic understanding of environment and sustainability including the 'climate change and SDGs component' in their very first year, while minor degree programs like environmental management, Climate Science, Renewable Energy provide scope for more specialization, while training

in the area of green building (LEED Lab; prestigious capacity building program in collaboration with USGBC and GBCI) and renewable energy (Suryamitra; Skilling programme in solar energy fabrication for rural youth funded by Government of India) further skill up students for green jobs in the sustainability sector. Several campus-based study engagements like Social Awareness Programme (SAP), Biodiversity Survey, Plantation, and cleaning drives give SDGs mandate and compliance across students.

Recently in collaboration with Presidio Graduate School university offers MBA in Sustainability Management; a unique program in the Indian education landscape with the aim to mainstream sustainability education in professional programs. As per programme and course outcome mapping, all programs and their course work has been mapped with current requirement where environment and sustainability are also the parameters.

POLICY SUPPORT AND CLIMATE ACTION

Governance & Mandates

Through the Environmental and Sustainability Policy and Climate Action Plan Amity University Haryana is committed to ensuring Campus Carbon Neutrality by 2028 through a series of action points including the reduction of grid energy dependence by switching to Solar PV. The policy covers major areas of climate action and adaptation and provides an opportunity for the inclusion of appropriate aspects which help to achieve carbon neutrality by 2028. The university's Carbon Neutrality goal covers scope 1 and scope 2 completely while scope 3 partially. Scope 3 covers partial as per the ranking framework which includes direct emissions, indirect emissions from purchased electricity (which happens to be a major source of carbon emissions), and a few indirect emissions including travel, waste and water management, and material procurements. University is functioning in compliance with the Environmental and Sustainability Policy having clear guidelines of the climate action working plan, which addresses local (i.e. rainwater harvesting plan to reduce water footprint), regional (i.e. passive building design to overcome heat regime in the semi-arid region) and global (i.e. shifting to low carbon-based energy sources to reduce the carbon footprint of campus) climate concerns.

University is performing better in terms of wastewater treatment (in-house wastewater and sewage treatment, WTP, and STP), solar energy installation, rainwater harvesting, waste management, material procurement (paperless office and e-governance), transport (community transport for faculty and students). University operates in compliance with the Environmental and Sustainability Policy having clear guidelines of climate action working plan (Evidence 1), which addresses local (i.e. rainwater harvesting plan to reduce water footprint), regional (i.e. passive building design to overcome heat regime in semi-arid region) and global (i.e. shifting to low carbon-based energy sources to reduce carbon footprint of campus) climate concerns. AUH execution of sustainability action plan is dually reflected in university green building ranking (LEED Lab Platinum), NAAC 'A' grade accreditation.

ENVIRONMENTAL QUALITY MONITORING

Emission: University has robust networking with government and national and international research agencies and developed robust monitoring facilities for environmental parameters including Air Quality along with Green House Gases (GHGs) through 24*7 online Air Pollution monitoring and display (SAFAR; Government of India SAFAR program) and Optical based monitoring of Aerosols & other parameters (i.e. AeroNet; NASA, USA Network) to understand climate-related issues. The data set generated through continuous monitoring is shared with these agencies where Amity University Haryana is demarcated as field network stations spread across India for SAFAR in India and the globe for NASA Aeronet.

Ecological: Apart from GHGs and Air quality monitoring, the university also conducts monitoring of the ecological health of the landscape where the university is located. University's Physical landscape is developing into an ecologically healthy system, which is more climate adaptive. Extensive plantation of notable native vegetation (Sahtut, Kikad, Lasoda, Neem, Ficus, Amaltash, Chakresia, Tikoma, Pipal along with fruit and nut bearing trees) ensure biodiversity intact and ensure critical ecosystem services including groundwater recharge. Scope of natural vegetation and native species plantation along with nature just development harbours 150 types of bird species and 40 butterfly species. In collaboration with BNHS and ebird; a global citizen science program of bird, regular monitoring is in practice.

STAKEHOLDERS' ENGAGEMENT AND COOPERATIVE PLANNING

University engages students, faculty, and other stakeholders for greater environmental and climate awareness through academic networking with all possible stockholders including government agencies, civil service organizations, academic institutions, research organizations and NGOs. The mode of action varies as per need which includes inhouse or onsite operations including capacity building, skilling, training programs, awareness drive, academic seminars, and workshops. Although the COVID lockdown restricted operations substantially, virtual mode gave reach out scope.

Capacity building and Skilling: University conducts LEED Lab program for in-house students in area of green Building design and framework in collaboration with USGBC and GBCI for students of Architecture, Planning, Engineering, and Environmental Science.

Amity University Haryana conducts Suryamitra Skill Development Program, funded by the Ministry of New and Renewable Energy for local community students who have completed ITI or a diploma in electrical, electronic, or related fields to create skilled manpower required for the government's ambitious NDC in solar energy sector by 2030 as Paris Climate Change.

Amity University Haryana houses a dedicated 'AYUSH-Amity Herbal and Medicinal Plant Distribution Centre' in collaboration with Ministry of Ayush, Government of India. The center produces herbal plants and local medicines with a view to create public awareness and boost the scientific efforts to make India, a world leader in Ayurvedic, Unani, Naturopathy, Homeopathic and Siddha health care. This conducts capacity building and skilling programmes for the benefit of local farmers and provides vast opportunities for agricultural growth. https://timesofindia.indiatimes.com/ city/gurgaon/herbal-park-opens-in-gurgaon-togive-farmers-tips-on-medicinal-plants/ articleshow/64471004.cms

Climate disaster cooperation: Amity University Haryana strives to function as live 'laboratory of sustainability and incorporates all possible sustainability measures in its action including awareness and capacity building for climate changerelated disasters. University is developing robust academic networking with agencies working on climate disasters at regional and global levels and conducted several knowledge sessions, and training programs of regional and global climate disaster issues in past with the National Institute of Disaster Management (NIDM), the Government of Haryana and the United Nations University on the urban flood, school safety, disaster mitigation etc. Amity University Haryana recently conducted several programmes directly addressing climate action under following headings:

- FDP on Universities & Colleges Leading by Example in Attainment of SDG's: Role of Teachers conducted by experts from UNEP. IIT, Garmin Bank, TISS, AIU and Industry clusters.
- Educational Visit to District Town Planning Office Gurugram to understand planning aspects of disaster management in changing climate.
- A week-long exercise of Multi-Sensor Measurements of Rural Air Quality during Diwali 2022 to understand the air pollution disaster.
- The Future of Weather, Climate, and Water across Generations (Webinar: Indian Meteorological Department (IMD)

Tree Plantation Drive: University maintains natural vegetation-dominated green cover in the campus. As per land use planning 2/3rd area is the green cover which includes the open area (lawn, farming land etc) and tree cover while 1/3rd is the build-up area. Tree plantations in collaboration with NGOs are the most celebrated activity here in Amity on every occasion. The two-tier plantation has been done along the campus boundary. University also maintains all support to sustain the plantation including a nursery, a functional greenhouse, a composting unit to provide organic manure, and trained manpower to carry out horticultural work.

RESEARCH CONTRIBUTIONS

Amity University Haryana developed as a hub of sustainability research. It provides optimal and conducive environment to carry out research in area of sustainability in general and climate science in particular with its robust academic networking with NASA, IITM, JNU, NIDM, IMD. Number of publications has been produced by faculty and students of university found place in high impact journals of Scopus and web of science. Apart of highquality publications significant number of Patents also credited to the scholars of university in area of science of climate change and mitigation. List of Patents and few important publications are appended below:

Patents

- A system for saccharification, gasification and upgradation of lignocellulose waste for production of Green Energy' (Patent application No.- 202211037786)
- 2. "An electrode-based green coal bed gasifier system'. (202211038879)
- 3. A novel composition for sustainable cow dung bricks with Enhanced porosity, strength and method thereof'. (202211054025)
- 4. A solar air dryer assembly' (202211058228)
- 5. A double chamber solar air dryer with solar collector assembly' (202211063953)

Publications:

- 1. Morphology and microstructure of waste material-based geopolymer with flyash, eggshell powder, and soft soil (Materials Letters)
- 2. Size-separated aerosol chemical characterization over Ny-Ålesund during the Arctic summer of 2010 (Sustainable Chemistry for Climate Action)
- 3. COVID-19 Lock-down in Delhi: Understanding Trends of Particulate Matter in Context of Land-Use Patterns, GIS Mapping, and Meteorological Traits. (Environmental Engineering Science)
- 4. An Overview of Stratospheric Ozone and Climate Effects. (Earth and Planetary Science)

- 5. Multisite Scenarios of Black Carbon and Biomass Burning Aerosol Characteristics in India. (Aerosol and Air Quality Research)
- 6. Computational Study of the Photovoltaic Performance of CdS/Si Solar Cells: Anti-reflective Layers Effect. (J.Nano- and Electronic Physics)
- 7. Recent progress in biohydrogen production: Challenges and Perspectives. (Bulletin For Technology And History Journal)
- 8. Variance of parameters involved in leachate pollutant and assessment of leachate pollution index from five landfills in India. (International Journal of Environment and Waste Management)
- 9. A review study on the design and control of optimised greenhouse environments. (Journal of Tropical Ecology)
- 10. Systematic exploration of heat wave impact on mortality and urban heat island: A review from 2000 to 2022. (Urban Climate)
- 11. Effects of stubble burning and firecrackers on the air quality of Delhi. (Environmental Monitoring and Assessment)
- 12. Utilization of Burkholderia sp. ISTR5 for enhanced saccharification and fermentation of agricultural waste for production and upgradation of biogas by calcite-based bio-composite materials. (Bioresource Technology Reports)
- 13. Air Pollution as a Risk for Mental Health Problems: An Exploratory Study of Direct and Indirect Pathways. (European Economic Letters)
- 14. Assessment of meteorological parameters on air pollution variability over Delhi. (Environmental Monitoring and Assessment)
- 15.Environmental Education and Its Policies Implementation in Indian Education System: A Perspective. (Plant Archives)

EVENTS AND SOCIAL OUTREACH

Amity University Haryana mandates outcome-based education through structured teaching learning and value addition through training, workshop, seminar, symposium, conference and many awareness exercises. University conducts such capacity building and learning activities on regular basis by engaging all its stakeholders including community as well. A list of activities in area of climate action is appended below:

Climate Action Activity 2022-23

S. No	Event Title	Date	Туре
1	World Environment Day 2022 (Only One Earth)	05/06/2022	Lecture
2	Universities & Colleges Leading by Example In Attainment of SDG's: Role of Teachers	18-22 July 2022	FDP
3	National Seminar on Promoting Human Values and Culture for Peaceful Co – Existence	22/07/2022	Seminar
4	Plantation Drive	05/09/2022	Activity
5	Educational Visit to District Town Planning Office Gurugram	13/09/2022	Education visit
6	Innovative Urban trends and Critiques on the National Environmental Policy 2006	23/09/2022	Policy dialogues
7	Symposium on Recycling of Waste Products	26/09/2022	Symposium
8	Multi-Sensor Measurements of Rural Air Quality during Diwali 2022	22-27 Oct. 2022	Monitoring expedition
9	Indo-Danish Workshop on Agro-forestry & Hydroponic	07/11/2022	Workshop
10	Awareness week on Waste Management	14/11/2022	Social awareness
11	Circular Economy & Zero Waste Campus Program.	22/11/2022	Workshop
12	Industrial visit to TERI Retreat	22/11/2022	Field visit
13	Agricultural Transformation: A Study of Farming Households in Eight Villages of Haryana	09/12/2022	Field visit
14	Tropical Architecture & Sustainable Architecture: Perspectives from Florida	12/12/2022	Expert Lecture
15	Light and its interaction with airborne particles - how we measure air pollution in Philippine cities	07/02/2023	Expert Lecture
16	The Future of Mobility in IndiaThe Metro Experience, Emerging Trends and Opportunities	21/02/2023	Expert Lecture
17	One Earth, One Family, One Future "Vasudhaiva Kutumbakam"-the Essence of India's G2O Presidency	02/03/2023	Poster Competition
18.	The Future of Weather, Climate, and Water across Generations	23/03/2023	Webinar
19	Awareness week on waste management	17-23 April 2023	Social awareness
20	Science and Technology for Sustainable Development	20/04/2023	E Lecture
21	India's Science 20 Thrust during the G20 Presidency	31/05/2023	Lecture

GLIMPSES OF CLIMATE ACTION AT AMITY UNIVERSITY HARYANA





SAFAR's Air Quality Monitoring Centre



NASA-AERONET



The IET India Awards 2004 open for nominations RBI policy quote (ALL Inauguration of Bio Lamp at Amity University Haryana Published on August 6, 2025

GLIMPSES OF CLIMATE ACTION AT AMITY UNIVERSITY HARYANA



TREE PLANTATION DRIVE 'MISSION GREEN'

COLLABORATIONS, AWARDS & RECOGNITIONS

Amity University Haryana offers a conducive environment for sustainability in its all sphere including teaching-learning, operation and maintenance via strong academic engagements and outreach. For same university received several awards and recognition specially in area of climate action. The notable recognition is listed below:

LEED Platinum

Amity University Haryana is recognized and awarded LEED Platinum certificate for building operation and management under existing building category. It is highest rating for green building by USGBC and GBCI. Amity University Haryana has distinction of being first university building of India and second only in ASIA to be ranked LEED Platinum (O &M) certification.

LEED Lab

A unique skilling and capacity building industry and academia programme in area of sustainability is offered by Amity University Haryana in collaboration with GBCI. Again, Amity University Haryana have distinction to be second academic institute to offer LEED Lab programme.

University developed strong academic collaboration also in area of climate action with prestigious research institutes at national and international level. Some of the important collaborative programmes are listed below:

SAFAR Air Quality monitoring

A well-equipped air quality monitoring laboratory is functioning at campus in collaboration with Indian Institute of Tropical Meteorology (IITM), Pune.

NASA-Aeronet

Amity University Haryana developed optical based monitoring of air quality components in collaboration with NASA, USA, NASA-Aeronet network at Amity University Haryana is testament of robust academic collaborative effort.



Climate Action is a very holistic goal that is interconnected with the majority of SDGs directly or indirectly. It encompasses all the efforts made to reduce the impact of climate change and increase the capacity to combat the impact of climate change. Amity University Haryana is an oasis in semi-arid region of south Haryana and Rajasthan not just in terms of elevated greenery but also in terms of clean energy infrastructure, sustainability education, climate action plan with commitment to carbon neutrality and robust cooperative networking with community. Hens it is acting like a working Laboratory of Sustainability





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