THE - Impact Ranking 2025

Low-carbon energy use

By utilizing solar streetlights, the University reduces its dependence on fossil fuel-based electricity and decreases its carbon footprint. This transition to low-carbon energy sources aligns with SDG 13's objective of combating climate change and promoting sustainable energy practices. It demonstrates the University's commitment to adopting clean and renewable energy technologies to mitigate the impacts of climate change.

1. Energy produced by Solar Plant and Solar Street lights

To tap the alternate energy sources, KARE has installed 934kWp rooftop solar power panels on top of nine blocks. About 45% of the energy consumption is met by the solar energy leading to the reduction in carbon foot print. The institution has also installed 152 solar street lights throughout the campus which amounts to a saving of about 9.56 kWh per annum. Further, solar water heaters are installed in the hostels and solar pumps are installed in the agriculture farms to tap solar energy.

Total energy consumption (Gigajoules) = 11817.6264

Building area of university buildings (square meters) = 2,43,910

Energy consumption per sqm = (11817.6264 / 243910)

= 0.04845

Amount of Energy generated through solar and consumption of energy through EB

Months 2022-2023	Solar power generation				Solar generation	HT EB	Total = EB+Solar
	Library	5th block	ADMIN & 8,9th block	Core building			
Jul-22	36360	26820	69710	41060	173950	274673	448623
Aug-22	27760	14730	38200	50380	131070	89295	220365
Sep-22	17460	13360	28790	32310	91920	57718	149638
Oct-22	17050	12633	34310	31060	95053	47710	142763

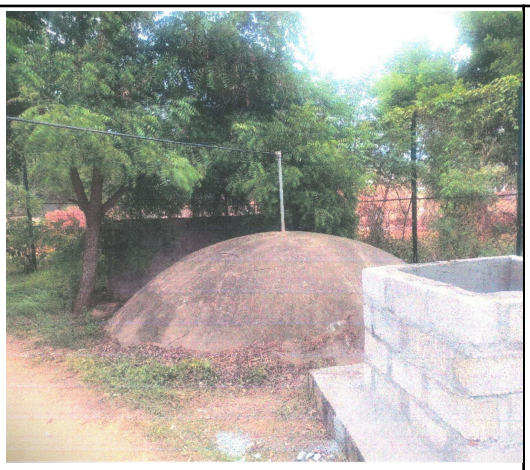
Nov-22	22510	15770	27860	28640	94780	59610	154390
Dec-22	23940	15250	40180	28640	108010	73801	181811
Jan-23	29070	18360	49780	31978	129188	135221	264409
Feb-23	28280	18230	51540	30590	128640	214116	342756
Mar-23	28440	17980	53210	27480	127110	287244	414354
Apr-23	26001	20360	63220	34670	144251	271262	415513
May-23	26000	15540	49200	31400	122140	121342	243482
Jun-23	23700	18970	58460	31220	132350	172220	304570
				Total	**1478462**	**1804212**	**3282674**

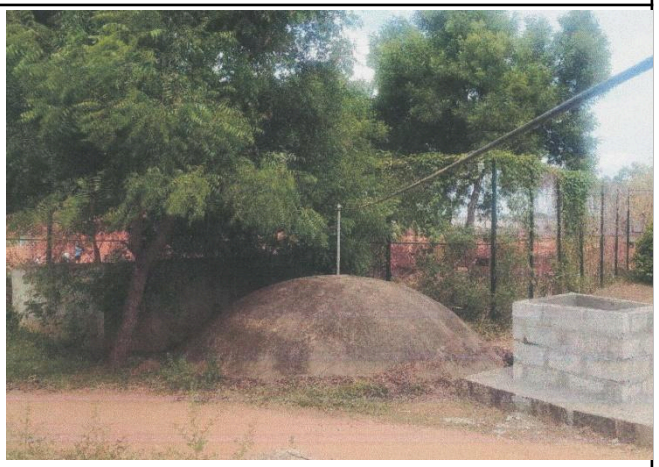
No of solar lights	152
Wattage of solar light	125 numbers 74W and balance 27 numbers 25W
No of days burning	365
No of working hrs/day	10 hr
Total energy used from solar	(50*40+ 117*20) * 10* 365
	34,875 kWh

2. Energy produced by Biogas Plant

There are totally 7 hostels in the campus and approximately 3400 students are residing in the campus at any point of time. The food is prepared in a common kitchen and distributed to the various hostels. The fresh vegetable peels are collected from the cooking area and part of it was utilized for biogas production. The collected waste is chopped into small pieces using a mixer and fed into the digester.

For the production of biogas, a fixed dome digester was constructed to utilize part of the kitchen waste. The radius of the digester is 1.25 m and its height 2.5 m. The total volume of the digester is 12 m^3. About 1500 kg of kitchen waste is processed everyday resulting in the production of **4.6 kg of biogas per day**. This results in savings in the usage of LPG in the kitchen.





Biogas Plant

Biogas generally has an energy content of around **6 kWh per cubic meter (m^3)**. For mass-to-volume conversion, **1 kg of biogas is roughly 0.5 to 0.6 m^3**, depending on the composition of the gas.

Assuming the average value of 1 kg = 0.55 m^3,

Calculate the volume of biogas produced per day:

$$\text{Volume} = 4.6\ \text{kg/day} \times 0.55\ m^3/\text{kg} = 2.53\ m^3/\text{day}$$

Calculate the energy produced from the biogas:

$$\text{Energy per day} = 2.53\ m^3/\text{day} \times 6\ \text{kWh}/m^3 = 15.18\ \text{kWh/day}$$

Adjust for conversion efficiency:

Biogas-to-electricity conversion efficiency in a generator can be around **30-40%**. Assuming 35% efficiency:

Electricity output=15.18 kWh/day×0.35=5.31 kWh/day

So, **4.6 kg of biogas per day can produce approximately 5.31 kWh of electricity per day** under typical conditions.

3. **Usage of Wind Power**

With the support of MoU with M/s Bharath Enterprises, Vellor, Tamil Nadu, KARE has started using wind power. 40 kW wind turbine is installed in the campus. The average energy production details is given below:

Energy production from power = 6 kW/h x 5 hrs/day x 120 days

= 3600 kWh per annum.

Total Renewable Energy generation (in kWh per annum)

S. No	Renewable Energy Source	in kWh
1	Solar Plant	1478462
2	Solar Street lights	9.56
3	Biogas	1938
4	Wind power	3600
Total		14,84,009.56

Total Renewable energy production to reduce low carbon footprint = 14,84,009.56 kWh

= 5342.43 Gj

2. **Education programmes on climate:**

Academic programs:

To ensure the success of its energy efficiency initiative, the institute offers various programs on energy and climate change. These programs aim to raise awareness among the student community.

- **M.Tech programme on Renewable Energy Technologies**

  URL: https://kalasalingam.ac.in/course/m-tech-renewable-energy-technologies/

- **Program Elective courses:** B.Tech., EEE Curriculum and syllabi

S.No	Course Code	Course Name	Dept
1.	213EEE3132	Solar Photovoltaic Systems	EEE
2.	213EEE3133	Wind Power Generation	EEE
3.	213EEE3134	Biomass Energy System	EEE
	213EEE3135	Geothermal and Ocean Energy Conversion	EEE
4.	213EEE3136	Industrial & Commercial Aspects of Renewable Energy Sources	EEE
5.	213EEE2137	Renewable Energy Sources	EEE
6.	213EEE3138	Fuel Cell Technology	EEE
7.	213EEE3139	Smart Grid	EEE
8.	213EEE2150	Solar and Wind Energy Conversion	EEE

- Foundation course on Sustainable development **(211MEC1401 - Sustainable Design and Manufacturing)** that aimed at educating the campus community about the importance of energy conservation

3. Commitment to carbon neutral university

The institution follows several programs and initiatives to reduce its environmental impact and support sustainability, helping to reduce carbon emissions both directly and indirectly. These are some of the common programs followed by KARE:

1. Usage of the solar energy panels in the campus to produce some of the energy for the campus needed.
2. Effective implementation of Rainwater harvesting system
3. Explicit policy on Energy
4. Usage of Energy Efficient appliances
5. Academic programs on Energy and Climate change
6. Usage of E-Vehicles for campus shuttle services
7. Public transport