Alternate sources of energy and energy conservation measures.

The parent institute of BNCA, Maharshi Karve Stree Shikshan Samstha, founded in Pune by Maharshi Karve in 1896, has a great legacy of empowering women through education for the last 125 years. MKSSS, in its quest to set up a benchmark for a more environment-conscious society, has implemented various projects to reduce its environmental impact. As an educational institution, MKSSS has an important role to play by influencing and inspiring the students and society to strive to create a better environment. It seeks to set an example for others by adopting sustainable practices in its operations and leading them.

A key effort involves installing solar panels with a total capacity of 600 KWP on rooftops across the MKSSS campus. The BNCA rooftop solar photovoltaic panels contribute 90.4 KW, accounting for 15% of the total capacity. Any surplus energy generated is supplied back to the grid, maximizing the system's efficiency. The institute has recently installed natural gas connections in the canteens and hostel mess. The replacement of LPG by natural gas will significantly reduce the campus's greenhouse gas emissions.

Energy conservation is a priority at the campus, with numerous measures in place to minimize energy consumption. Occupancy sensors have been strategically installed in staircases and restrooms to manage lighting automatically. Energy-efficient LED lights illuminate most parts of the campus, while energy-saving electronic devices are widely utilized, reducing overall energy usage significantly.

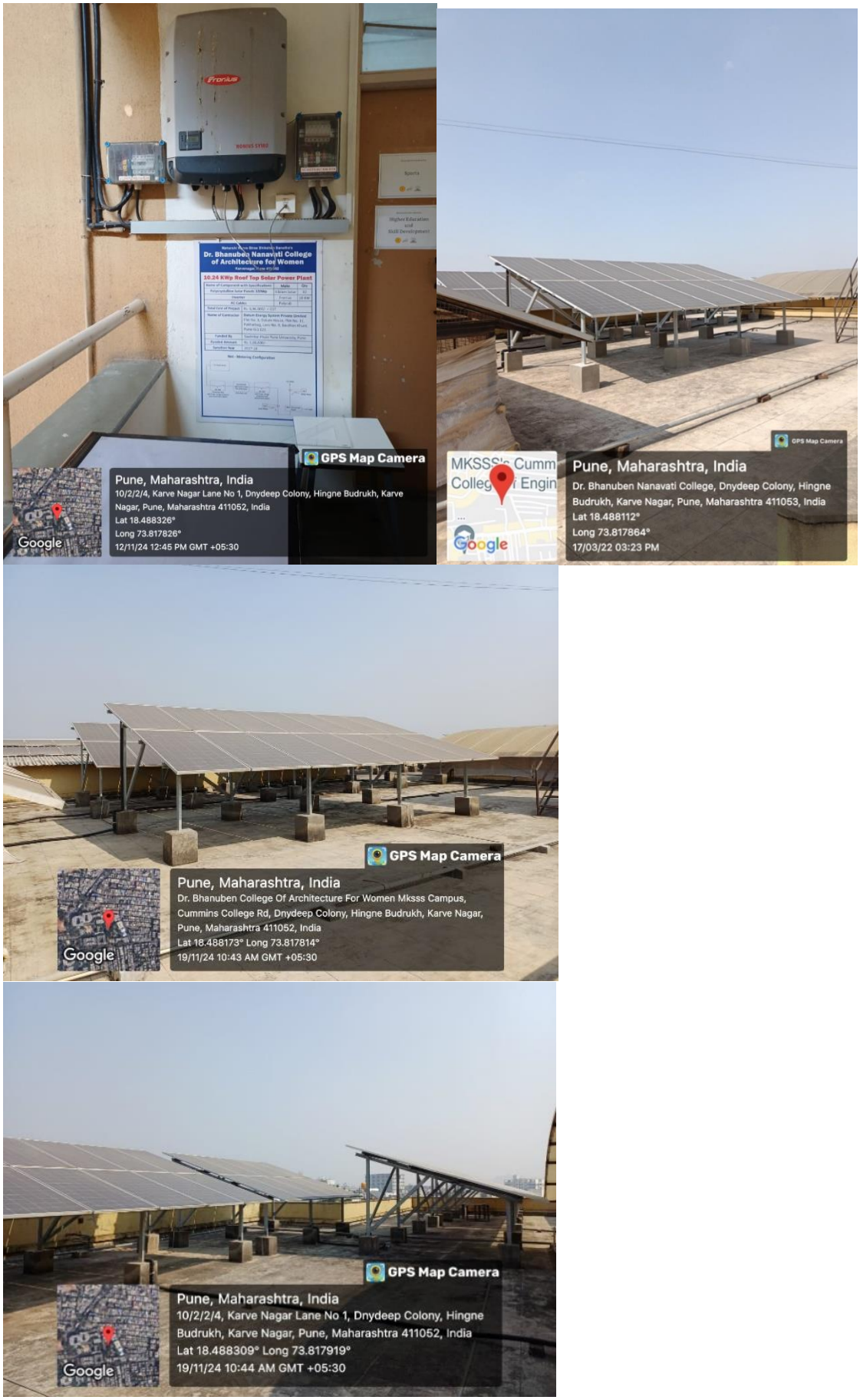
The Institution has the following facilities and initiatives for

7.1.2.1 Alternate sources of energy and energy conservation measures.

a. **Solar Energy**
b. **Wheeling to the grid**
c. **Sensor-based light fixtures for energy conservation**
d. **Use of LED bulbs/power-efficient equipment.**
e. **Biogas plant**
f. **Natural gas for cooking in the Canteen.**

a. Solar Plant

The installed solar capacity of solar photovoltaic panels at BNCA rooftop is 90.4 KW. The overall installed capacity at the MKSSS campus is 600KW with the net metering system in place. The solar system has been commissioned and in operation since November 2021. The solar plants on the campus are maintained regularly.



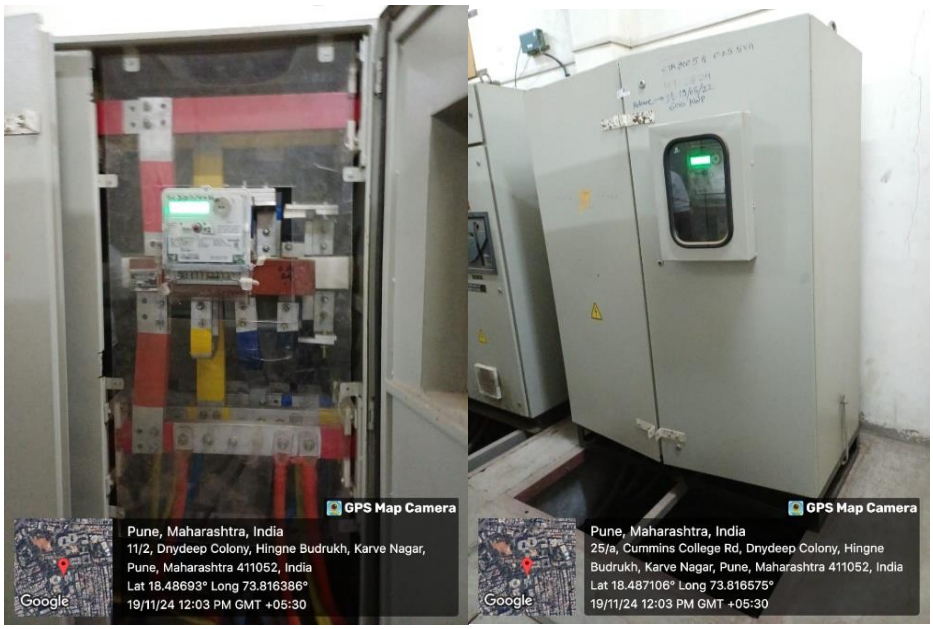
Rooftop solar plant at BNCA

b. Wheeling to the Grid

Power generated on the campus using photovoltaic plants is used within the campus, and excess is exported to the grid. A central net meter records the campus's generation, import, and export of solar power. Solar power reduces the demand for purchased electricity, thereby reducing carbon emissions.
The total capacity of the solar plant on MKSSS campus. – 600 KWP. The capacity of Solar plant in BNCA. - 90.4 kwp. The solar generation capacity of the BNCA solar plant is 15.06% of the total solar power generation in the MKSSS campus.

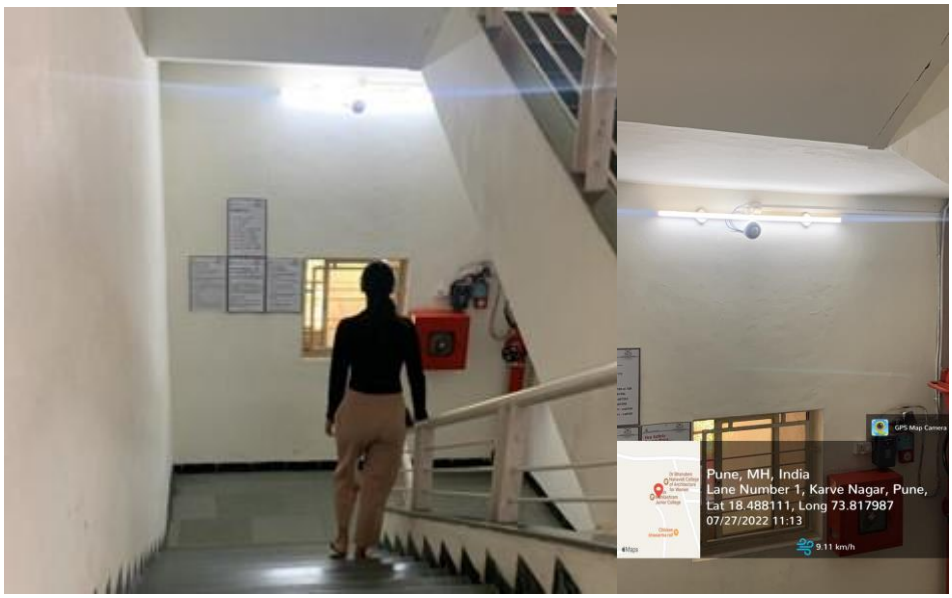
Solar power generation in 2022/23 **Solar power generation in 2023-2024**

SOLAR POWER GENERATION 2022-2023			SOLAR POWER GENERATION 2023-2024		
Month	MKSSS	BNCA (@ 15.06%)	Month	MKSSS	BNCA (@ 15.06%)
	KWH	KWH		KWH	KWH
Jun-22	27117	4068	Jun-23	50931	7620
Jul-22	11699	1755	Jul-23	29250	4405
Aug-22	36672	5501	Aug-23	33259	5009
Sep-22	37117	5568	Sep-23	36821	5545
Oct-22	42866	6430	Oct-23	46314	6975
Nov-22	52379	7857	Nov-23	33888	5103
Dec-22	46821	7023	Dec-23	31584	4757
Jan-23	46270	6941	Jan-24	28926	4356
Feb-23	52435	7865	Feb-24	31099	4683
Mar-23	55176	8276	Mar-24	61019	9519
Apr-23	62150	9323	Apr-24	80451	12129
May-23	64181	9627	May-24	80920	12186
Total	534883	80232	Total	544462	81996



Central net meter on the MKSSS CAMPUS

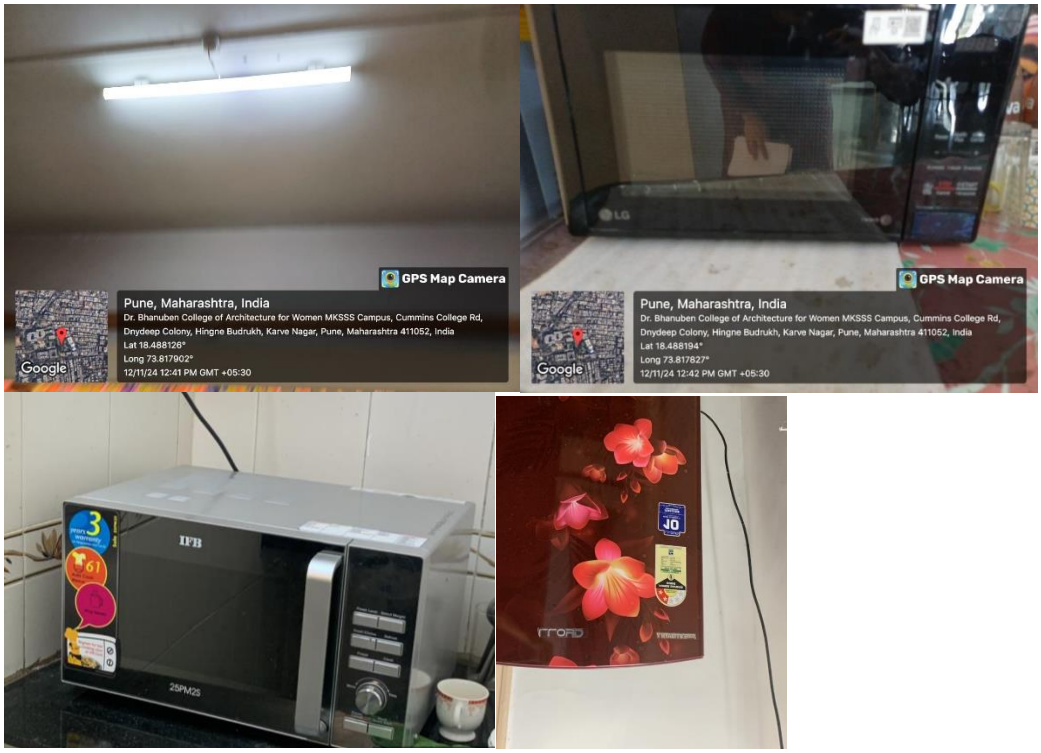
c. **Sensor-based energy conservation -** BNCA has occupancy sensors installed at strategic locations like staircases and toilets to respond to energy conservation measures.



Sensor-based LED tube light at a staircase mid landing in BNCA building

d. **Use of LED bulbs and Energy Saving equipment**

BNCA uses BEE-labeled energy-efficient equipment like fridges and microwaves. There are 2 fridges and 1 microwave on the premises. LED tube lights are installed in most parts of the building, and the old T5 tube lights in the remaining parts will be replaced with LED tube lights.



LED tube lights and BEE-rated fridge and microwaves.

e. Biogas plant as an alternative fuel to LPG

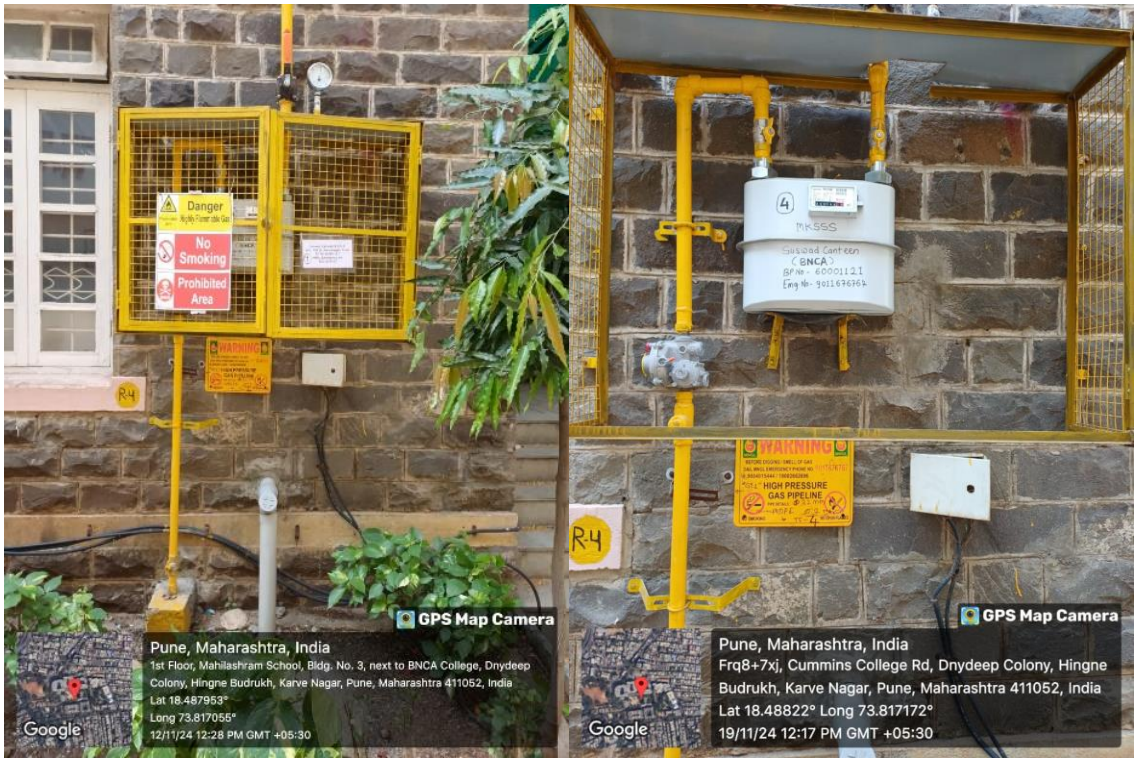
BNCA utilizes the common facility of a biogas plant installed on the MKSSS Campus. The biogas plant can process 500kg of organic waste daily. The gas generated is utilized to fuel 2 cylinders each of approximately 14 kg daily.

Biogas plant on the MKSSS campus

Biogas plant on the MKSSS campus

f. Maharashtra Natural Gas as an alternative to LPG for cooking

Natural gas connections were installed at hostels and canteens on the MKSSS campus in August 2024. Replacing LPG with natural gas will reduce greenhouse gas emissions by 85.5%.



Maharashtra Natural Gas meter for the BNCA canteen on the MKSSS campus

Greenhouse gas emissions due to LPG usage in the BNCA canteen

LPG / cylinder kg	LPG consumption for 1 year (249 cylinders) Kg	Emission factor (tCO2eq/kg	Total annual emission (tCO2eq)
19	4731	0.003	14.193

Reduction in greenhouse gas emissions due to replacing LPG by Natural gas.

Replacing LPG with natural gas					
Total LPG consumption kg	LPG emission factor t co2 eq./kg	LPG emissions t co2 eq.	Natural gas emission factor t co2 /kg	Natural gas emissions t co2 eq.	Reduction in emissions t co2 eq.
4731	0.003	14.19	0.000054	0.255	13.93