SDG 7

7.1 Research on Affordable & Clean Energy

Parameter	Data
Scholarly Output	904
Field-Weighted Citation Impact	1.54
Citation Count	7,288

Between 2022 and 2024, Amrita Vishwa Vidyapeetham made substantial contributions toward advancing United Nations Sustainable Development Goal 7 — Affordable and Clean Energy, through impactful research focused on renewable energy systems, electric mobility, and sustainable power technologies. With 904 scholarly outputs and a Field-Weighted Citation Impact of 1.52, Amrita's research demonstrates both depth and global relevance in driving energy innovation for a sustainable future. The university's studies span critical areas such as Electric Vehicles, Renewable Energy Integration, Solar Panels, Lithium-Ion Batteries, and Energy Management Systems, showcasing a comprehensive approach to clean energy transition. Pioneering work on Vehicle-to-Grid technologies, Battery Management, and Solar Power Optimization underscores Amrita's commitment to developing efficient, affordable, and resilient energy solutions. Supported by 231 international collaborations, over 30,000 views, and 7,288 citations, Amrita's SDG 7 research highlights its global leadership in fostering sustainable energy innovation and advancing India's clean energy transformation.

7.2 University measures towards affordable and clean energy

Innovation in Solar Energy Technology (Patents Granted 2023)

In 2023, Amrita Vishwa Vidyapeetham advanced renewable energy research through two major patented technologies. The Solar Electric Vehicle, patented on July 4, 2023, demonstrated a cost-effective and sustainable mobility solution powered entirely by solar energy. Later, on October 10, 2023, a Solar Monitoring System for Measuring Solar Radiation Intensity was patented to enhance the precision of solar performance evaluation. These innovations strengthen Amrita's

leadership in applied clean energy research and sustainable technology development.

Adoption of Energy Efficiency Standards for New Constructions

On November 24, 2023, Amrita implemented a formal policy mandating all new buildings and renovations to comply with institutional energy efficiency standards. The policy includes requirements for reflective roofing, insulated walls, high-efficiency glazing, and optimized HVAC controls. This initiative ensures that future infrastructure development contributes to sustainable campus operations and reduces overall carbon emissions.

Retrofitting and Energy Optimization Across Campuses (2023)

Throughout 2023, existing campus buildings were systematically upgraded with LED retrofits, motion sensors, and centralized monitoring systems. These improvements reduced energy wastage and improved efficiency in classrooms, labs, and administrative offices. The upgrades demonstrate measurable reductions in electricity consumption and operational costs.

Building Energy Monitoring and Management System

The Building Energy Monitoring and Management System at Amrita provides a comprehensive platform for tracking and optimizing campus energy performance. The real-time dashboard monitors consumption patterns, visualizes usage trends, and computes key performance indicators such as Energy Use Intensity (EUI) and Power Usage Effectiveness (PUE). It also measures the building's carbon footprint and generates automated alerts to identify anomalies or inefficiencies.

Through remote access and system control, facility managers can make data-driven decisions to minimize energy waste and operational costs while promoting sustainable campus operations. This initiative has resulted in an annual energy saving of **379,200 kWh**, translating to

a reduction of **311 metric tons of CO_2** emissions each year, reinforcing Amrita's commitment to environmental stewardship.

7.4 Energy and the community

Energy Conservation Week and World Bicycle Day (27-30 November 2023)

Between November 27 and 30, 2023, Amrita conducted Energy Conservation Week alongside World Bicycle Day celebrations under NSS. Students and

faculty organized rallies, exhibitions, debates, and art events to promote energy conservation and sustainable commuting.

The initiative fostered awareness on responsible energy use among campus and local communities.

Renewable Energy Pledge Campaign (November 2023)

In November 2023, Amrita launched a Renewable Energy Pledge encouraging students, staff, and nearby residents to commit to 100% renewable energy usage.

Awareness sessions, exhibitions, and discussions helped participants explore practical ways to adopt solar and other clean energy options.

Smart Energy Systems and Solar EV Infrastructure Projects

Amrita Vishwa Vidyapeetham actively promotes low-carbon innovation through applied research projects that integrate technology with sustainability. Under this initiative, researchers and faculty developed Smart Energy Systems to enhance energy efficiency and enable intelligent demand management across campus facilities. In parallel, Solar-Powered EV Battery Swapping Stations were designed and implemented to support clean mobility and reduce dependence on fossil fuels.