



**Karunya INSTITUTE OF TECHNOLOGY AND SCIENCES**

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MoE, UGC & AICTE Approved

**NAAC A++ Accredited**

## **SDG - 7 Affordable and Clean Energy**

### **7.4.1 Importance of energy efficiency and clean energy to Local Community**

#### **Energy Awareness Programme (2023–24)**

**Location:** KITS campus + community engagement locations

**Nature of beneficiaries:** school students, rural community groups, outreach visitors, NGOs  
Karunya Institute of Technology & Sciences (KITS) conducted a series of structured community outreach programmes in the Siruvani and surrounding village regions, focusing on practical education, training, and sensitization on the importance of energy efficiency and renewable energy solutions. These programmes were executed with the support of the Department of Electrical & Electronics Engineering, faculty teams, and student volunteers, ensuring direct community engagement and hands-on learning.

#### **1. Training on Solar-Powered Drip Irrigation System**

- Programme conducted at Siruvani village with farmers and local households.
- Villagers were introduced to solar-powered irrigation pumps as an alternative to unreliable grid electricity.
- Demonstrations included:
  - working principles of solar pumps
  - water-efficient drip irrigation techniques
  - crop selection suited for sustainable energy-based farming
- Discussions addressed the importance of reducing dependency on diesel/power-based irrigation and shifting to renewable-energy integrated farming systems.



Figure 1 Solar-powered drip irrigation awareness session

## 2. Feasibility Discussion on Solar-Powered Gate Boom System

- Joint meeting with forest department officials.
- Objective: assess replacement of manual barricade at check post with a solar-powered automatic gate boom.
- Feasibility study initiated to evaluate load requirements, solar panel capacity, battery backup, and safety features.
- Awareness created on how renewable energy can support community-level infrastructure and day-to-day operations.



Figure 2 Discussion on solar-powered gate boom system

### 3. Solar Water Pump Restoration & Training Workshop

A solar water pump that was non-functional for months was restored with the help of EEE faculty and students.

- 20–30 villagers participated in this dedicated training session.
- Participants were trained on:
  - basic diagnostics (checking wiring, blockages, loose connections)
  - safe cleaning of solar panels
  - improving energy efficiency by maintaining panel orientation and sunlight exposure
- This empowered villagers to independently maintain their own renewable energy assets.



Figure 3 Solar water pump maintenance training



#### **4. Repair and Servicing of Solar Streetlight**

- Faculty and students repaired a non-working solar-powered streetlight.
- Full servicing included wiring correction, terminal cleaning, battery connection inspection, and removal of tree-shade obstructions.
- Villagers were taught essential maintenance practices to ensure uninterrupted lighting at night using clean energy.
- This reduced dependency on external technicians and enhanced energy self-sufficiency.

#### **5. Demonstration of Solar-Charged Electric Bicycle**

- At multiple expo venues, KITS demonstrated an electric bicycle charged entirely using solar energy from the Solar Energy Lab's grid-connected PV system.
- Displayed across five different public platforms for diverse audiences.
- Awareness created on:
  - clean mobility
  - solar charging infrastructure
  - reduction of carbon emissions through green transportation



- Generated significant interest among school students, college youth, and local community members.



Figure 5 Solar-charged electric bicycle demonstration

## 6. Community Training on Solar Fencing System

- Villagers trained on the functioning and safety features of solar-powered fencing systems used for protecting agricultural fields from wild animal intrusion.
- Training included:
  - Understanding circuit components
  - Battery operation
  - Troubleshooting procedures
- Replacing fuses and checking connections
- Strengthened the community's capability to use renewable energy-based rural safety systems.



Figure 6 Solar fencing system training

## 7. Demonstration of Rooftop Solar PV Plant and Energy Monitoring

- Community group brought to KITS campus for live demonstration of rooftop solar panels.



- Campus solar plant demonstration → shown to community groups, visiting schools, NGOs
- Real-time dashboards explaining energy generation, CO<sub>2</sub> savings
- This directly matches community learning.
- Participants saw the orientation, tilt angle, panel structure, and wiring, and understood how solar energy is generated.
- Real-time energy monitoring system showcased to explain:
  - energy production
  - efficiency tracking
  - environmental benefits and CO<sub>2</sub> reduction
- Hands-on explanation increased awareness and encouraged adoption of home-scale solar systems.



Figure 7 Rooftop solar PV plant demonstration

### Additional Community-Based Energy Awareness Activities

<b>Awareness sessions through Karunya Conservation &amp; Management Centre</b>	Training under KCMC – Reduce, Reuse, Recycle Explains renewable energy use (solar plant, LED initiatives) Visitors, schools, and community groups were taken for guided campus tours
<b>Demonstration of solar water heating systems</b>	Solar water heaters (29 units) demonstrated to visitors Explains how renewable heat energy reduces power usage
<b>Demonstration of biogas plant (Zero LPG use)</b>	Biogas processing explained to community/visitors Shows renewable energy use in cooking and waste management Part of campus tours and sustainable awareness programs

<b>Awareness campaign</b>	Awareness campaigns on energy conservation and renewable energy adoption were conducted for community stakeholders such as local villagers, farmers, and rural households.
<b>Solar lighting / LED lighting for community areas</b>	Demonstration of solar lighting systems installed in village locations Training provided to villagers on basic battery replacement and panel orientation Awareness on energy-efficient LED lighting for improved safety and reduced electricity usage in community spaces

KITS conducted a series of community-based programmes during 2023–24 to educate and empower the local population on clean energy usage and energy conservation. Key initiatives included:

- Solar-powered drip irrigation training for farmers, demonstrating renewable-energy–supported irrigation methods and crop management.
- Solar water pump restoration and maintenance workshop, enabling villagers to handle basic troubleshooting and improve system efficiency.
- Solar streetlight repair and servicing session, providing hands-on guidance on battery replacement, wiring checks, and solar panel cleaning.
- Demonstration of solar fencing systems, showcasing the use of renewable energy for field protection against wildlife intrusions.
- Solar-charged electric cycle exhibition, presented at multiple venues to highlight sustainable mobility powered by solar energy.
- Rooftop solar PV plant tours, where villagers and visitors learned about solar generation, monitoring, and CO<sub>2</sub> reduction benefits.
- Awareness sessions by KCMC, including guided campus tours on solar installations, LED-based energy efficiency, biogas plant operations, and renewable heat energy through solar water heaters.
- Community awareness campaigns promoting energy conservation, renewable energy adoption, and sustainable household practices.

Together, these initiatives strengthened energy literacy, encouraged renewable energy adoption, and equipped the rural community with practical skills to maintain and operate clean energy systems, reinforcing KITS’ strong commitment to SDG 7.