



**Centurion University**  
**Center for Renewable Energy & Environment**  
**(CUCREE)**



**Centurion**  
**UNIVERSITY**

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**<http://www.cutm.ac.in>**

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## Background

Important renewable energy sources for India include solar, hydro, wind, biomass, biogas, geothermal and wave. For sustainable development, our dependence on renewable sources of energy must grow. While renewable energy contributes to the bulk of non-commercial energy, its share in commercial energy (coal, oil and natural gas) consumption is growing very fast. For example, out of 249 GW of installed electricity generating capacity in the country hydro and other renewables contribute 29%, coal 59%, natural gas and diesel 10% and nuclear 2%. In 2012, out of total primary energy consumption of 32 quadrillion BTU, share of coal, oil and natural gas was 73%; that of biomass & waste, hydro and other renewable was 26%; and that of nuclear 1% (USEIA, 2014).

Since large scale environmental problems are linked to energy, there are interventions from all levels and directions to conserve energy, and shift to renewable and clean energy. Many enabling mechanisms, i.e, Renewable Energy Certificates, Renewable Purchase Obligation (RPO), preferential tariffs, etc. are being tried. Further, there are efforts to make a gradual shift from a subsidy oriented approach to the market oriented approach. Simultaneously, the prices for renewable energy technologies, primarily wind and solar, continued to fall making renewable increasingly mainstream and competitive with conventional energy sources. Renewable energy is becoming a central part of the world's energy mix including in India.

According to noted energy expert Prof. A. K. N. Reddy, if sustainable development is the desire, then the energy system chosen for the country in general and rural area in particular "must advance rural economic growth, that is, they must be economically efficient, need oriented and equitable, self-reliant and empowering, and environmentally sound". Decentralized energy system exploits all bio energy resources in an optimal manner, leads to energy autonomy in a region in addition to local management and local control, and has all the above requirements of sustainability. It can have options of working as an isolated system or in association with the grid.

Over the years, decentralized energy system has not appealed to policy makers, R&D organizations and related and supporting industries because of their small-scale operation and rustic orientation. Some initial efforts by amateurs have not been successful and given a bad name about the efficacy of the system. However, with the various renewable energy technologies at its maturity and learning from the past actions, the decentralized energy system could be made successful. One of the objectives of the proposed Centre is to provide context specific proof-of-concept models for decentralized energy system in the state/region.

Centurion University's competence lies in understanding the dynamics in rural society and this knowledge will be helpful in selecting appropriate institution for decentralized energy system. Increasing purchasing power of rural household, creating employment opportunities, developing

market for renewable energy technologies and promoting a green industrial culture are in the interest of industries.

### **Centre for Renewable Energy and Environment**

The main aim of the center for Renewable Energy and Environment is to investigate alternate environment friendly energy sources and develop technology and institutional system to make these means economically viable in the given context. The thrust areas will include renewable energy technology adaptation to the local context, local/regional energy security, energy conservation in industry and buildings, decentralised energy system, mitigating climate change effect.

### **Objectives & Activity of the Centre**

The long-term objective of the Centre is to facilitate regional/local energy security using locally available renewable energy. The specific objectives are:

1. Assessment of regional/local energy resources
2. Development, acquisition and transfer of appropriate renewable energy systems for the local area, including proof-of concept models
3. Facilitating creation of appropriate local institutions and institutional linkages for energy service delivery
4. Promoting local value addition and local market creation
5. To showcase successful renewable energy technologies and energy efficiency
6. Documenting experiences from successful and failed cases within and outside India
7. To develop facilities for research and development in the area of energy and environment
8. To offer courses at B. Tech, M. Tech and PhD level and short term Skill Development programs (with duration 1 week, 2 week, months), for providing trained manpower to industry
9. To organise workshop, seminar, quiz programs in energy and environment theme
10. To develop testing and standardization methods/protocols for equipment and devices related to energy and environment

Additionally, the Centre will undertake activities for:

1. Developing linkages with the institutions such as R&D organizations, manufacturing enterprises, educational institutions, funding agencies, non-governmental organizations, government and other promoting bodies in the area of rural energy
2. Establishment of a knowledgebase in the university (state-of-the-art library of books, journals, documents and database) for the rural energy management
3. Development of case-studies and teaching materials
4. Undertaking training program for decentralized energy management

5. Advising government for developing appropriate policies for promoting decentralized energy system in the country

Since agri-processing is expected to consume a large chunk of energy in the rural areas following activities will be also part of the Center.

1. Review of literature in the area of energy and environmental management in agri-processing
2. Benchmarking of energy efficient practices and technologies in agri-processing industries.
3. Establishment of a knowledgebase in the university (state-of-the-art library of books, journals, documents and database) for the energy and technology management in agri-processing industries
4. Developing linkages with the institutions such as R&D organizations, manufacturing enterprises, educational institutions, funding agencies, non-governmental organizations, government and other promoting bodies in the area of agri-processing activities.
5. Development of case-studies and teaching materials

### **Advisory Board**

CUCREE will have an Advisory Body comprising eminent persons from industry, academia, government and civil society institutions. The members will have three year tenure. The day-to-day operation of the Center will be handled by the concerned Coordinator and three faculties, one each from School of Management, School of Engineering and School of Vocational Education & Training. The Convener will assist the coordinator in running the activity. The activity of the Centre will be under desired direction through regular progress reviews of deliverables agreed upon.

1. Dr. Haribandhu Panda, (Pro Vice Chancellor) Chairman
2. Prof. Jagannath Padhi, (Director) Vice Chairman
3. Dr. A.M. Mohanty, (HOD Mechanical), Member
4. Dr. R.K Panigrahi, (Dean SOE) Member
5. Dr. Subrat Sarangi, (HOD Physics) Member
6. Shri Abhinav Madan, MD, Gram Tarang
7. Shri Binay Ku Bose, (CFO), Member
8. Dr. P. Das, Member
9. Representative from Govt. of Odisha
10. Representative of Industry
11. Representative from Civil Society Organizations/ Educational Institution
12. Shri Satya Bhusan Rath, Coordinator

The Advisory Board will guide in developing three-year and annual action plan. The Centre will follow and act as per the norms of the University. The Coordinator will manage the day to day activity of the Center with help of three designated faculties, one each from School of Management, School of Engineering and School of Vocational Education & Training.

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