

# VISHWAKARMA UNIVERSITY

SDG 7 REPORT 2019





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*Maximising Human Potential*

# About This Report

The United Nations “Transforming our World: the 2030 Agenda for Sustainable Development” which includes the 17 Sustainable Development Goals (SDGs) has great importance and significance to universities. The SDGs provide for a shared global vision towards sustainable development for all. Vishwakarma University (VU) firmly believes in the vital role that universities can play in the achievement of the SDGs, and has ingrained this aspect in all of its strategies and operations. As encapsulated in its motto - maximizing human potential, VU, since the year of its inception, has worked endlessly towards creating an enabling environment to ensure the wholesome development of its students - preparing them for life and livelihood.

VU has embarked on an exciting journey to transform the VU Campus to become an EcoCampus, which will be a testbed for innovative sustainability solutions for the future. The vision of the VU EcoCampus is to develop VU as “a global Sustainability thought leader, committed to improving the society, by providing an empowering partnership for the development of technology and educating the future generation”. Sustainability with an aim to reduce the carbon footprint was the key theme of the function organised to celebrate the launch of the ‘Eco Campus’.

This report showcases VU’s commitment to sustainable development goals in which VU has been actively working in partnership with diverse stakeholders. One such example is VU’s Certificate Programme in Sustainability Management in Cooperation with the HoF University of Applied Sciences Germany, a program in which students gain a deep understanding of state-of-the-art business management techniques and more importantly latest sustainable methods. Likewise, the Wilo Foundation-Vishwakarma University established through a grant from the Wilo Foundation, Germany promotes research in water treatment, purification and create the much-needed social awareness about clean drinking water through its Water Quality Centre of Excellence.

VU continually strives to contribute to the sustainable development of the nation and society at large by developing educated and productive human resources that observe and adhere to the practices of equity, inclusiveness, excellence, ethics, and professional standards.

**Prof. (Dr.) Siddharth Jabade,  
Vice Chancellor,  
Vishwakarma University, Pune, India**





7 AFFORDABLE AND  
CLEAN ENERGY



**Ensure access to affordable,  
reliable, sustainable, and  
modern energy for all**

Vishwakarma University (VU) is committed to promoting clean and affordable energy among the community through various innovations and modules. The focus lies on encouraging and motivating students to land up to creative and sustainable solutions that could suffice the growing demands of energy and at the same time without harming the environment. The motto is to become energy efficient through potential and unique Eco – Campus initiatives.

### **Eco Campus Initiative**

The Eco Campus initiative at Vishwakarma University uses its campus as a 'Living Laboratory' for promoting and encouraging operational environment testing for the innovative technologies that are at the advanced level of the Technology Readiness Levels (TRL). One of the Vishwakarma University campuses spans over 22 acres and has more than 9 buildings. There are other establishments of the group at various locations. Apart from academic (lecture theatres, laboratories) and administrative buildings, the commercial outlets add to the diversity of the building typology on the campus. Some of the new buildings are integrated with eco-friendly technologies and environmentally responsible buildings right from the design and planning stage.

The vision of VU Eco Campus is to develop VU as "a global Sustainability thought leader, committed to improving the society, by providing an empowering partnership for the development of technology and educating the future generation". Dr. Don McLean (Founder of Integrated Environmental Solutions; <https://www.iesve.com/>) embraced the occasion by his gracious presence for this initiative.

There are five thrust areas have been identified. VU Eco Campus is focused on demonstration projects to showcase innovative technologies and solutions for sustainable living.

The Eco-campus initiative has enabled collaboration with the Energy Research Institute at NTU Singapore (ERI@N) for adaptation and localization of the technologies developed at ERI@N. The research and development projects to appropriately adapt these technologies in the context of the Indian environmental condition, social priorities/preferences, and feasibility. These projects related to (1) Development of market readiness levels and business plan for the self-powered smart sensors for the Indian market; (2) To conduct operational environmental testing of the innovative solar panel coating for the Indian tropical conditions and prepare competition analysis landscape for the Indian market; (3) To implement virtual audit technique for the buildings in India and establish end-user cases;

**The intent is to holistically address sustainability at VU Campus using technologies such as (but not limited to):**

Energy assessment, smart sensors, e-learning, digital dashboards, clean energy generation, water conservation, smart waste management, greenery enhancement, user behavior/engagement, etc. Energy Research Institute at NTU (ERIAN) Singapore was a thought leader partner for this initiative.

<https://www.vupune.ac.in/vishwakarma-news/vishwakarma-university-goes-eco-friendly-way>



### **Enterprise Resource Planning (ERP) for Digitalization**

Vishwakarma University's Enterprise Resource Planning (ERP) system is one such example working towards SDG7. VU has developed its ERP that is developed by an in-house team of certified developers. The activities and features reduce the burden on the environment. ERP systems are widely adopted for proper functioning and data monitoring in academics and other details all over the university.

### **Seminar on "Green Career Choices"**

Energy is the main contributor to climate change which produces around 60% of greenhouse gases (UNDP), thus energy in any form should be routed in a proper way to create a positive impact on human beings and its surrounding

Renewable energy is the future to satisfy our needs and to save the environment. Vishwakarma University inculcates the pattern of thinking towards the career from all dimensions ranging from self-development, self-motivation, present and future demand, and benefits to the society. The program director of Eco campus from Nanyang Technological University (NTU), Prof. Nilesh Jadhav has shared the opportunities in the energy sector in the seminar arranged on "Green Career Choices" on August 24th, 2018.



### **Energy Audit a step towards sustainability**

To increase the energy efficiency of university buildings, university students performed an energy audit to evaluate the exact utilization of energy resources. Interestingly, this audit was a part of a students' industry project in collaboration with the renowned and pioneer company, Integrated Environmental Solutions (IES) Ltd. The beauty of the initiative is that the students from all streams have come up with 9 projects suggesting ideas to achieve energy efficiency. There are various solutions suggested including IoT-based sensors to automatically switch off lights, fans, and computers when no one is using them, implementation of ERP to minimize the use of paper, profiling of computers in computer

labs to automatically put them on hibernation mode, etc.

### **Establishment of Energy and Sustainability Center of Excellence, March 2019**

Vishwakarma University collaborated with Integrated Environmental Solution as an Authorised Training Partner on March, 19th 2019 for the Energy and Sustainability Center of Excellence at Vishwakarma University.

Vishwakarma University established a laboratory with 20 licensed copies approved by IES. The objectives of the center are to assess the performance of various types of buildings by doing energy modeling, to strengthen research culture in the ecosystem by giving training to the students and faculties, and to support various initiatives of energy.

<https://www.vupune.ac.in/vu-ecocampus>

### **Training cum Workshop**

A five-day hands-on training for our faculty and students was conducted from May 20th to May 24th, 2019 which was given by Mr. Girish Vishwanathan, the expert from IES.

### **Design Thinking Workshop**

Vishwakarma University conducted a half-day workshop on "Design Thinking" on 13th Feb 2019 at the VU campus. Design thinking techniques to help teams solve really big, real-world problems. Design Thinking is a collaborative, team-based approach used to find breakthrough solutions to complex problems. Design Thinking focuses on experiential ' design, in that a strong emphasis is placed on the experience of the end-user of a product or service. This hand-on workshop included many powerful Design Thinking tools and techniques. This workshop has been conducted by guest Dr. Michael V Testani, Binghamton University, USA.

<https://www.vupune.ac.in/vishwakarma-news/workshop-on-design-thinking-2>

### **IES VE Training**

Vishwakarma University organized a two-day workshop from 20th May to 24th May 2019. Mr. Nilesh Jadhav, Senior Scientist/Program Director, Eco Campus at Energy Research Institute at NTU for students and staff. The students were divided into groups of 8 students each. Each group came up with three project ideas centered around how to make VU an energy-efficient and sustainable campus.



## Research Projects

Under Eco-friendly initiative at Vishwakarma University, the following research projects have been undertaken and completed in collaboration with Energy Research Institute at Nanyang Technological University, Singapore.

### **Virtual Energy Audit of Campus Building**

The goal of the project was to create a benchmark and develop a case study in Commercial, Industrial and Educational buildings in India. Three case studies [Academic Building (Vishwakarma University Main Building). 2. Commercial Building (Suyog Center-Trust Office). 3. Industrial Building (Aakar Foundry)] were taken under consideration for the Energy Audit project.

Traditional Auditing has always been a profound exercise performed by enterprises, all over the Virtual Energy Audit is the Exercise to simulate, an energy case study in such a manner that it becomes an Optimized, Self-Efficient and Energy conservation Asset. This is a field that is a Green Career Option and has a prosperous future ahead. Hence the Virtual Energy Audit was the Audit method chosen for this Project. IES VE Software was the tool used for this project. Faculty of Vishwakarma University and the Accomodaries of the considered Case Studies were the Beneficiaries of the Energy Project.

A research paper titled “Performance Assessment of Building by Virtual Energy Audit” was written based on the results obtained from the case studies, which are published in the IEEE Xplore. Faculty Members and Students later presented the paper at the International Green Building Conference held in Phuket, Thailand (October 2018). Paid Internships were offered for three students by the IES VE India Pvt Ld.



<https://ieeexplore.ieee.org/document/8635695>

### **The market study on the PV solar panels coating**

The Goals and Objectives are to understand the awareness level of PV solar panel coating users, to identify problems faced by the household users, and to understand the feedback of customers about solar panel coating.

### **Nano coating on solar panels to improve efficiency**

Objectives of the project encircle testing the nano-coating on solar panels in Indian environmental conditions. Nano coating was tested on 10 Solar Panels on the campus. A 3% increase in power output was observed.

### **Market Research and business model study on virtual audit services for buildings in India guiding successful entry into the Indian market.**



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