



# VIT®

Vellore Institute of Technology  
(Deemed to be University under section 3 of UGC Act, 1956)

## SDG-11 Annual Report 2019-20

### 11 SUSTAINABLE CITIES AND COMMUNITIES



Make cities and human settlements inclusive, safe, resilient and sustainable



Vellore Institute of Technology

Vellore – 632014  
Tamil Nadu, India  
[www.vit.ac.in](http://www.vit.ac.in)



## Report of VIT-Vellore Campus

### I. Clean River Palar:

The River Palar is the prime water resource for the Vellore City and nearby villages, which covers nearly about 4 kms in Vellore limit. The river Palar has been left unattended due to many unknown reasons and this provided opportunities for other ways of exploiting the water resource by dumping of solid and liquid wastes and growth of *Prosopis Juliflora*, a shrub which depletes the water table of river and water bodies etc., The Vellore Institute of Technology has initiated the Clean River Palar Project to restore the livelihood of the river, in collaboration with the Civil Society Organizations, Community Based NGOs, Merchant associations and Philanthropists in and around Vellore District.

The project implemented under the guidance of the District Collector and VIT, collaboration with District Public Works Department and Water Resource Department to clean and restore the habitat of the **River Palar**. Nearly around **1,14,00,000, Sq. feet of *Prosopis Juliflora* shrub** has been successfully removed from the riverbed and the restoration work nearly took 15 days which has been split into three phases, each phase has five days to cover the allotted area for removing and restore the river bed.



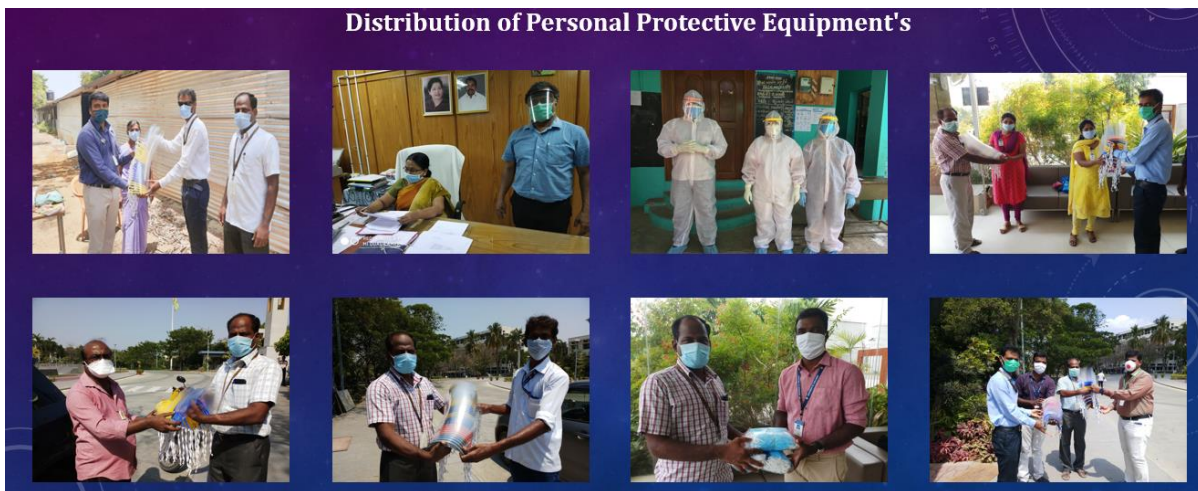


## II. COVID RELIEF MEASURES: March 2020

During the COVID-19 outbreak, VIT had successfully extended helping to many needy people by providing the following essential items

### Materials/Product Distributed

- 2550 numbers of face shields
- 50 surgical masks
- 809 litres of sanitizer
- 3 sets of ventilators (which contain 32 numbers of splitters and limiters)
- 150 numbers of safety touch keys
- 2375 Kgs of rice
- 550 Kgs of wheat flour and
- 550 bags groceries were distributed to needy people



Distribution of PPE to frontline workers

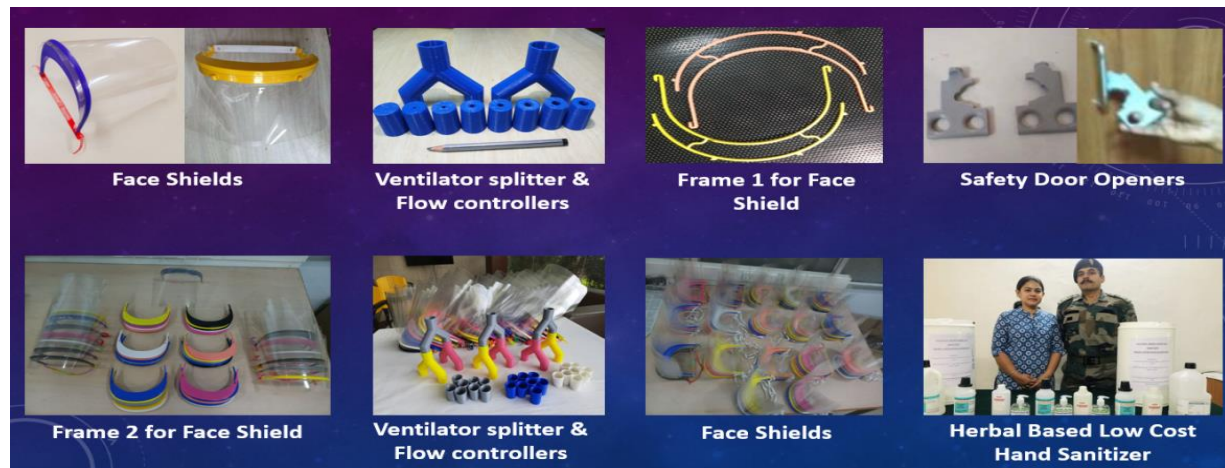
**Financial contribution towards Covid-19 relief fund:**

- VIT Management and Faculty donated INR 1.25 Crore to Tamil Nadu Chief Minister’s Public Relief Fund.
- Free Food Distribution Scheme (TN Govt. Amma Unvagangal - Budget canteens)
- VIT Management provided financial support for INR 3,96,000.
- VIT Management funded INR 50,400 for 500 bottles of Sanitizer to Vellore District Police Office

<https://www.thehindu.com/news/national/tamil-nadu/vit-donates-125-crore-to-cmprf/article31192722.ece>



**Distribution of face shields/ Ventilators/ Safety door openers/ Hand sanitizers**





### III. SUSTAINABILITY

VIT adopts eco-friendly and green initiatives to promote sustainable practices in its lush and verdant campus. A few remarkable efforts include energy conservation, water conservation and waste water recycling. The in-house transportation policy and the extensive research programmes are other sustainable initiatives to uphold green values.

As a part of the energy awareness and conservation programme, VIT hosts numerous workshops and training sessions on a regular basis.



VIT observed an entire week as “water conservation week” (conducted from 31st of August to 4th September). General awareness for conserving every drop of water was demonstrated to the students through seminars, poster and competitive events. Mr. Ayyappa Masagi (founder of Water literacy foundation) was the chief guest for the programme.

<https://vit.ac.in/about/Sustainability/RecyclingProgramme>

#### Rain water harvesting

Roof top rain water harvesting and water recharge pits have become a part and parcel of VIT . The ‘VIT lake’ has become a major place of attraction for the visitors. At the nearby locales (Katpadi and nearby villages), there are several ongoing rain water harvesting projects / research activities, all initiated and fully funded by the VIT, to create awareness among the residents.

## Design of Rooftop Rainwater Harvesting Tank for Katpadi Region, Tamil Nadu

Shubham Jain<sup>#1</sup>, Pankaj Thakur<sup>#2</sup>, Siddharth Singh<sup>#3</sup>, Mehul Srivastava<sup>#4</sup>

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**Abstract** — Rainwater harvesting introduced in Tamil Nadu in 2001, by the State Govt., has had substantial influence on the availability of drinking water for the people. It has been implemented on more than 95% of the households and other commercial buildings in the state. In this study an attempt has been made to study the design of roof top rainwater harvesting tank for Katpadi region Vellore district of Tamil Nadu. Based on the rainfall and population density data of the year 2014, the design parameters for the rain water harvesting system have been developed and thus an optimum tank size has been determined. Study reveals that an optimum tank size of 10000 litres is sufficient for the maximum population of 1000 people.

adequate rainwater conservation using traditional & eco-friendly Rooftop harvesting system (RTHS).

The rain water harvesting movement launched in 2001 by Tamil Nadu government is a foundation of prosperous Tamil Nadu that will be free from water scarcity problems. It has had a prodigious impact on recharging the ground water.

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Promoting Sustainable Solutions

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## Optimizing rainwater collection from droplets falling through crosswinds during the north-east monsoons

Vishnu Teja Damala<sup>1,2</sup>, Satyajit Ghosh<sup>1,3</sup>, Rohit Roy<sup>1</sup> & Balasubramanian Veluchamy<sup>1</sup>

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### Keywords

crosswind, driving rain, rainwater collection, water resources.

### Correspondence

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doi:10.1111/1747-6593.2012.00359.x

### Abstract

The quantity of precipitation received by the monsoons is enormous. The south-west monsoons, unlike the north-east monsoons, have been studied in great detail. This study deals with rainwater collection during the NE monsoons and involves an examination of the stochastic nature of a turbulent boundary layer and the effect of crosswinds on rain droplet trajectories and thence their collection. It must be kept in mind that whilst mid latitude precipitations typically range from 1000 to 2000 mm per year, the north-east monsoon shows higher than this value at



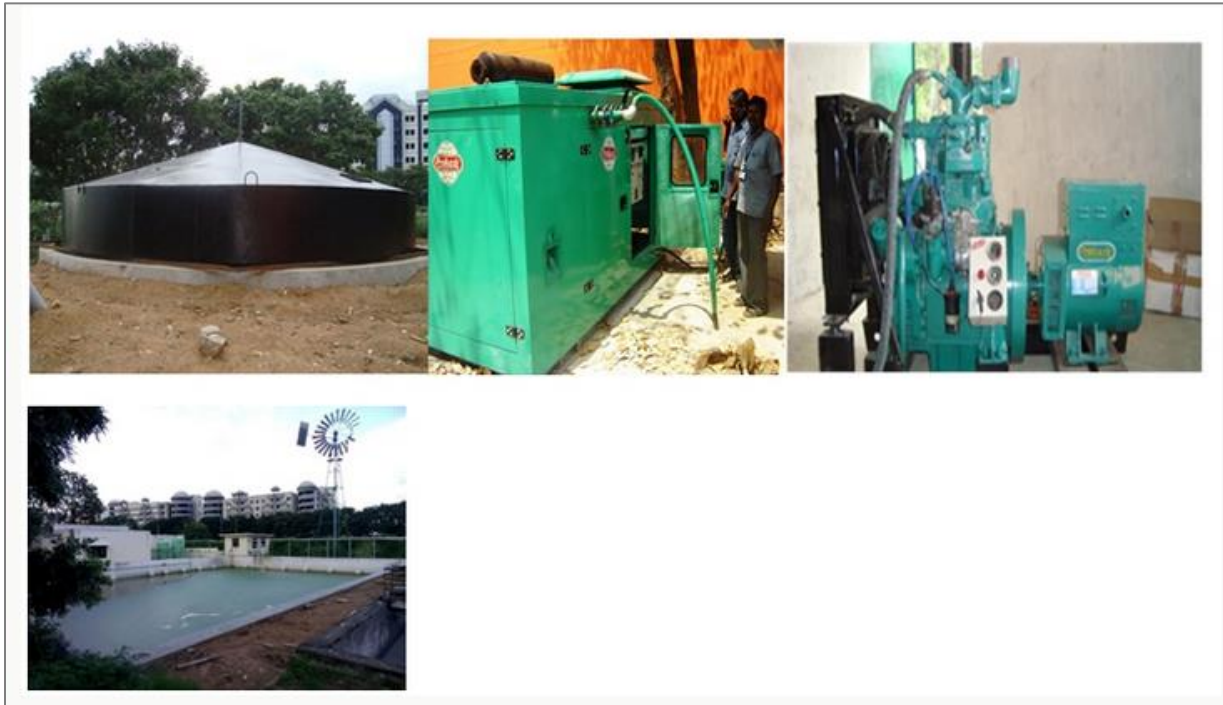
## Rain Water Harvesting



## Rainwater Harvesting Facilities at VIT

## Recycling Programme

A 300 m<sup>3</sup> biogas plant using the sludge from the waste water treatment plant has been fully functional since December 2012. This initiative, funded by MNRE, provides the power required to run a 40 kVA biogas engine. The evacuated power is supplied to the waste water treatment plant. Additionally 15 kVA producer gas engine has been installed for research purpose.

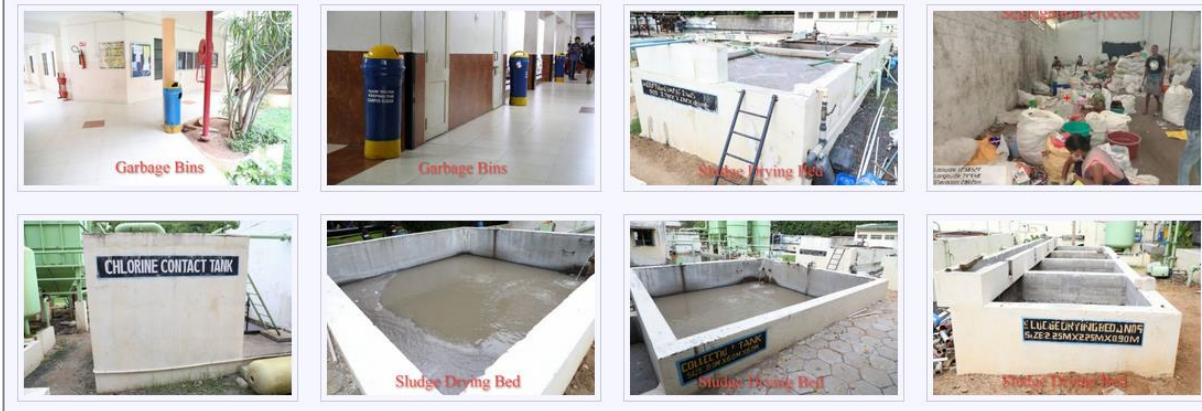


### Water Efficient Toilets





### Garbage In Campus , Hostel Areas , Frequency & Procedures Of Disposal



### Institution Responsibility Activity:

VIT has adopted few villages for sustainable development and ensures all round of help for the public

S.No	District	Block	Name of the village
1	Vellore	Anaicut	Peenjamandai
2	Vellore	K.V.Kuppam	Melmoil
3	Vellore	Sholingur	Valli malai
4	Vellore	Pernampattu	Melpatti
5	Vellore	Kandhili	Perampattu

## Empowering Tribal Community

The National Bank for Agriculture and Rural Development (NABARD) has launched a Joint Liability Group (JLG) scheme to provide access to institutional credit for small, marginal, tenant farmers, and oral leases and share croppers. JLGs are essentially credit groups of small/marginal/tenant farmers/asset less poor who do not have proper title of their farmland. These informal groups of 4-10 members are engaged in similar economic activities and are willing to jointly undertake to repay the loans taken by them from the Banks on individual basis through group mechanism against mutual guarantee.

CSRD&RS is an endorsed JLG Promoting Institutions associated with NABARD Tiruvannmalai and extends his supports via financial support for awareness creation and capacity building of all stakeholders under the JLG Scheme In Jawadhu Hills, Tiruvannmalai District consists of 11 Village Panchayats.

From the year 2013-14 to 2019-20, CSRD&RS linked 147 JLGs and 19 farmers group for credit linkage for an amount of Rs.4.42 crores with support of NABARD and Indian Bank, Jamunamarthur . Every year the Mega Loan mela will be organized and disbursement of loans to JLGs for livelihood development activities with subsidy (<https://vit.ac.in/about/community-outreach/projectsandprograms>).



## Entrepreneurship Development Programme

The CSRD&RS and National Research Development Corporation (NRDC), Government of India, with the objective to promote, develop and commercialize the technologies got the approval for conducting EDP training programs for rural areas of Vellore under the administrative control of the Dept. of Scientific & Industrial Research, Ministry of Science & Technology (<https://vit.ac.in/about/community-outreach/projectsandprograms>).

### Jack Fruit Value Addition EDP Training Programme

Date: 09.03.2020 to 12.03.2020 / Venue: VIT –VRC, Jawadhu Hills



### Mini Millets Value Addition EDP Training Programme

Date : 04.12.2019 to 07.12.2019 / Venue : VIT, Vellore



## Report of VIT-Chennai Campus

### Preamble

The following is a comprehensive report on 'SDG 11 – Sustainable Cities and Communities' for Vellore Institute of Technology Chennai (VIT Chennai). SDG 11 deals with how universities act as custodians of heritage and environment in their communities. VIT Chennai adopts eco-friendly and green initiatives to promote sustainable practices in its lush and verdant campus. A few remarkable efforts include energy conservation, water conservation and wastewater recycling. The extensive research programs are other sustainable initiatives to uphold green values.

### Policies/Major decisions regarding SDG 11

VIT is involved in various practices adopting the green policy. The green initiatives promote sustainability in the institute. The energy conservation facilities, water conservation and water recycling facility contribute to the development and maintenance of the campus as a green campus. The policies or major decisions regarding SDG 11 are elucidated as follows.

#### 1. Water Efficient Toilets

Conservation of water is a very important task of any organization and society. One of the key factors aligning to the conservation of water is the 'Water Efficient Toilets'. The salient feature of the Water Efficient Toilets includes:

- Availability of grey water (Recycled Water) for flushing in Toilets
- Availability of well-connected pipe network
- Availability of running Water – 24 Hours a day
- Exhaust and Air Vents in Toilets

#### 2. Rainwater Harvesting & Solid Waste Management

Rainwater harvesting and water recharge pits have become a part and parcel of VIT Chennai.

**Rainwater Collection Pit**



**Solid Waste Management Unit**



### 3. Solar & Wind Powered Systems



Solar Panels installed at the Roof-tops of the building



Solar panels powered exterior (pathway) lightings



Wind-powered exterior (pathway) lightings

## 4. Digital Library

VIT Chennai, Central Library has a Digital library, Video Conferencing facility and also provides classroom teaching through NPTEL video courses in the different fields of education. The subscribed e-resources are ProQuest-ABI/Inform Complete, ProQuest-Dissertation & Theses (ETD) Part A & B, Bentham Science, Heinonline, JSTOR, Lexis Nexis, Manupatra, Westlaw India SAE Tech. Papers, Springer Link, bibliographical databases Scifinder Scholar, and Scopus, e-books.

### Academic details regarding SDG 11

The following courses are offered as part of B.Tech programs at VIT Chennai.

- CHY1002 – Environmental Sciences
- CLE1006 – Environmental Engineering
- CLE1016 – Urban Planning
- CLE2018 – Industrial Wastes Treatment and Disposal
- CLE2019 – Pollution Control and Monitoring
- CLE2020 - Solid Waste Management
- MGT1006 - Environmental and Sustainability Assessment

### Major events organised

#### 1. Lectures organized relevant to SDG 11

A guest lecture on '**Biodiversity Protection**' by **Dr. Jesica Balnig Chin**, Central Philippine University was organized by VIT School of Law. Lecture on '**Building careers in the smart energy world and journey into the future technology**' is delivered by Mr. Ganesh Kumar, General Manager (L&D) – Indian Oil, Chennai. Indian Oil's 'Vision with Values' encompasses the Corporation's new aspirations – to broaden its horizons, to expand across new vistas, and to infuse new-age dynamism among its employees. Automation in their sector was presented to students as enumerated as follows:

- Auto fuels as a measure towards environmental protection.
- BS-VI projects involve revamp of existing plants & installation of new plants to reduce the sulphur content in both MS & HSD to 10 PPM (max).



Photograph taken during the lecture 'Building careers in the smart energy world and journey into the future technology'

A guest lecture was offered for the students of M.Tech. Software Engineering (5 year Integrated) & M.Tech (BigData) on Career Opportunities in Department of Atomic Energy by Dr. Meenachi N. M, Head, Training Division, Indira Gandhi Centre for Atomic Research, Chennai. Dr. Meenachi briefed about the importance of nuclear energy and explained the growing demand for electricity. She insisted on the role of Indians to contribute to the nation's growth by joining as scientists in the Department of Atomic Energy and to apply their engineering skills. She also explained the recruitment procedures and the benefits for the employees. She briefed about the current projects and the career / academic growth that are possible in that Central Govt. job. The students interacted with her to know about the future careers and internship opportunities in the company.



Photograph taken during the lecture 'Career Opportunities in Department of Atomic Energy'

The School of Mechanical Engineering organized a Guest Lecture on 'Alternative Fuels for IC Engines and Hybrid Electrical Vehicles' by Dr. Anand Gurupatham, Deputy General Manager Renault Nissan Technology & Business Centre India, Chennai on 02-08-2019.

School of Electrical Engineering (SELECT) organized, one day national seminar on 'Grid integration of renewable energy sources - Challenges and Possible Solutions' on 27/07/2019. The seminar started with Shri. S Selvakumar's talk. He talked about the renewable energy penetration and its contribution in islanded and grid connected systems. The next session was handled by Dr. S.Hemamalini. The topic of discussion was power quality analysis of grid integrated solar PV systems. After lunch, the talk was given by Dr. Binu Ben Jose. He discussed various topologies used for grid connected PV systems and its performance. The last session of the day was on the various topologies of grid connected wind driven induction generators. The session was handled by Dr. Vijayakumar Krishnasamy of IIITDM.

School of Electrical Engineering (SELECT) organized a guest lecture on 'Recent research and development in wind energy technologies' by Dr.K. Boopathi, Director & Division Head, Research & Development and Resource data Analytics & Forecasting and Solar Radiation Resource Assessment, National Institute of Wind Energy (NIWE), Chennai. The guest speaker elaborated the basics and necessity of wind energy generation, global and Indian scenario of wind power generation. He also explained the various types of wind farms, construction, working principle and salient features of different wind turbines. Forces acting on wind blades with practical examples and comparison of different windmill structures is also demonstrated.



Photograph taken during the lecture on 'Recent research and development in wind energy technologies'



## Publications

1. Naik, S.S., Harshitha, T.G., Spoorthy, H.D., Taj, G.S.S., Vetrivelan, P., "IOT Based School Bus Monitoring System With Child Security", Lecture Notes on Data Engineering and Communications Technologies, pp.1-6, January 2020.
2. Kalimuthu M, Ponraj A S, and Christy Jackson, "Water management and metering system for smart cities", International Journal of Scientific and Technology Research, Vol.9, Issue 4, pp.1367 - 1372, April 2020.

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