SRM Core group Meeting on Sustainable Development Goals and Smart Campus Cloud Network

Summary Report

17th May 2019, SRMIST Chennai

Agenda

Launch Event – Forenoon Agenda

SRM Core Group Meeting on

Sustainable Development Goals and Smart Campus Cloud Network

Date: Friday 17th May 2019; Time: 10:00 AM – 1:00 PM
Venue: Dr.Vikram Sarabhai Hall, 4th Floor, University Building

10:00 – 10:30 AM	**Inauguration & Introduction** **Prof. Neppolian** Dean Research, SRMIST **Dr. V. Thirumurugan** Associate Director (CL), SRMIST **Dr. T. Thiyagarajan** Dean-Agricultural Sciences, SRMIST
10:30 – 11:30 AM	Presentation on SCCN by **Dr. Rajendra Shende,** Chairman-TERRE Special focus on SDGs and Carbon Neutral University Campus & Q&A/ Open discussion
11:30 – 11:45 AM	Tea Break
11:45 – 12:45 PM	SDGs initiatives in Campus by SRM Core team Faculty of Agricultural Sciences Civil Engineering-Environmental group Computer Science Engineering Electronic and Instrumentation Engineering Centre for Environmental Nuclear Research Unnat Bharat Abhiyan Cell
12:45 – 01:00 PM	Interaction between SRMIST- SDG Core Team & TERRE representatives on SCCN
01:00 – 02:00 PM	Lunch Break

Launch Event – Afternoon Agenda

SRM Core Group Meeting on Sustainable Development Goals and Smart Campus Cloud Network

Date: Friday 17th May 2019; Time: 2:00 PM – 5:00 PM

Venue: 15th floor, Dr.Ramakrishnan Conference Hall, UB Building

2:00 – 3:00 PM	**Meeting with MoU committee members**
3:00 – 5:00 PM	**Visit to SRMIST-Green initiatives & Discussion with Maintenance Team** **Bio-Gas plant** **STP Plant** **Solar panel** **Solar cooking system** **Solar water heater** **RO Plant** **Rain water Harvesting** **Biomedical Segregation unit**

Introduction

SRM Institute of Science and Technology, Chennai and TERRE Policy Centre, a not- for-profit environmental organization, Pune have organized the SRM Cor Group Meeting on SDGs and Smart Campus Cloud Network on 17th May 2019 and roundtable consultation on "Mainstreaming SDGs in Education and building the partnership through Smart Campus Cloud Network (SCCN)' on 18th May 2019.

SRMIST is a registered member of SCCN. The SCCN core group meeting was organized on 17th May 2019 under the leadership of Dr. Kantha Deivi Arunachalam, Dean – Center for Environment Nuclear Research.

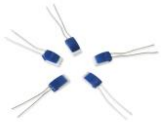
The objective of the meeting was to deliberate on the SCCN project and its linkages with UN SDGs. Mainstreaming SDGs in the Indian education system has been prioritized by the Government of India. With this in view, the meeting also aimed at sharing the progress of the activities and case studies of initiatives related to environment and sustainability undertaken by various departments of SRMIST were presented. The meeting successfully brought a good some of various projects. The meeting was followed by a campus tour showing the facilities available in the campus with the thrust on SDGs.

This report provides a summary of the discussions and the suggestions emerged from the meeting.

SDG Initiatives by Electronics and Instrumentation Department

Macro & Micro sensors

- Harmful gas monitoring
- Humidity Monitoring
- Solar & body heat harvester
- Human foot step energy harvester
- pH Monitoring



Solar energy harvesting

- Human body heat and solar energy harvesting to power miniaturised sensors for bio medical application
- Micro TEGs mage of thermocouple and thermopile arrangement of sensors for better efficiency and voltage output
- Design & fabrication of sensor has been achieved

Foot step Energy harvester

- Array of Piezo electric sensors connected in serial placed underneath the console of shoes
- As we walk, the human foot pressure applied on these sensor arrays get convereted to an equivalent voltage output
- mV output was recorded from this compact module which can be amplified for further processing

Online pH monitor

- Real time water pH monitoring system using NI WSN 3202 completely developed by students

  To measure the pH of RO drinking water utilizing IOT based Strategies

  To Provide better statistics by recording the data using Cloud networks

  To make the measured value available for everyone by providing Cloud access

Harmful Gas sensor

- Design, fabrication and testing of harmful gases from automobile exhausts such as CO, CO_2
- MEMS design tool for simulation and analysis
- Fabrication of sensor, characterisation and testing of sensor
- Design of automated control system based on sensor input to minimise the pollution level

Humidity Sensor

- Environmental humidity monitoring for human comfort and instrument safety
- Design, fabrication and testing of thin film humidity sensor in support with Fab-lab & testing equipment setup at SRMIST
- Static and dynamic measurement of humidity over the range of (30-90)%RH has been recorded with the sensor
- Development of signal conditioning circuit for transmission and control

SDG Initiatives by Department of Computer Science and Engineering

2018- 2019 Academic year students projects

Project type	Status	Total
Agriculture & Green Initiatives	Prototyped	**6**
Healthcare Initiatives	Prototyped	**3**
Monitoring & Controlling	Prototyped	**3**
Recycling Initiatives	Prototyped	**2**
Smart Campus Initiatives	Prototyped	**2**
Total		**15**

Providing Urban Amenities to Rural Areas

Total number of Faculties	**17**
Type of social responsibilities	**Number of Activities**
Field visits	2
Conducted training program for school students & Faculties	3
Social outreach programs	2
Proposal submitted	10

Highlight Projects of CSE

1. Autonomous Irrigation System by Akshay Kumar under the guidance of Dr. M. Murali
2. Determining the Water Pump Status by Jayakrishna under the guidance of Dr. E. Poovammal
3. Analysis of Crop Yield Prediction using Artificial Intelligence and Satellite Imagery by Prathishtha Soni and Teresa Priyanka under the guidance of Dr. C. Malathy
4. Smart Waste Management System by Sai Suraj and Leela Nagavardhan under the guidance of M. Revathi

SDG Initiatives by Department of Civil Engineering

STUDY ON IMPROVING THE EFFICIENCY OF SEWAGE TREATMENT PLANTS AT SRM CAMPUS

SRMIST Kattankulathur campus hosts three Sewage Treatment Plants (STP) within the premises which are located behind the dental college, behind the SRM General hospital and beside girls' hostel. These plants are designed and constructed such that it minimizes and removes organic matter, nutrients, solids (both suspended and dissolved), disease carrying organisms and other domestic sewage constituents before it is disposed on land.

It was revealed from the performance study of the STPs from October 2013 to March 2014 that the capacity of STP I is lesser compared to the daily inflow and the removal efficiency of all the three treatment plants in terms of TDS was very low to almost negligible.

STUDY ON OPTIMUM UTILIZATION OF SLUDGE FROM SEWAGE TREATMENT PLANTS AT SRM MAIN CAMPUS

The large quantities of sludge and the scarcity of land area are significantly increasing the sludge risk to public health. The growing problem of wastewater sewage sludge disposal in the SRM campus can be alleviated if new disposal options other than landfill can be found. New emerging studies world-wide spotlight on reusing sludge and treated wastewater in construction technology. It was found that sludge

will be a potential material for brick manufacturing and an alternate to disposal. In near future, this may be used for minor works in the campus like foot path lining, sit out stands in garden area in the campus before. Further studies can be done more appropriately and the same may be commercialized.

SOLID WASTE MANAGEMENT WITH SUGAR MILL INDUSTRY SLUDGE USING VERMI-COMPOSTING

The rapid increase in the volume of solid waste generated is one of the aspects of the environmental issues and adverse effect on the atmosphere and ecosystem. Disposal of solid wastes can be done by land filling, incineration, recycling, conversion into biogas, dumping, and composting. Most common practices of waste processing are uncontrolled dumping which causes mainly water and soil pollution. Vermi-composting is one of the disposals cum recycling technology which will improve the quality of the end product.

SDG Initiatives by Faculty of Agricultural Sciences

Of the 17 SDGs, 10 goals are related to agriculture. Thus, agriculture will play a major role in achieving the SDG goals. Contributing to Sustainable Development Goals has been included under the strategic plans of SRM College of Agricultural Sciences. Towards achieving this target, the focus areas have been identified as Agroecology, Agricultural Rural Development, Urban Farming, Herbal and Nutri Farming and Precision Farming.

Agroecology

SRMIST is the first Agricultural Institution in the Country to create a separate discipline 'Agroecology". SRMIST is the first Agricultural Institution in the Country to offer a new course (2+1) "Introduction to Agroecology" and introduced in the academic year 2018-19. SRMIST will be establishing a "Centre for Agroecological Studies" for conducting advanced research. SRMIST is organizing an International Conference on "Ecological Principles of System of Rice Intensification and applying them to other Crops for Sustainable Food Production" by the end of 2019.

Agricultural Rural Development

SRM-CAS will be establishing Agricultural Rural Development Centres in the districts to create human capital through training and capacity building measures from dairy to mechanised

farming, weaving, poultry, food processing units, mushroom cultivation etc. An Agricultural Rural Development Institute is proposed to be established in the College of Agricultural Sciences, Achirupakkam. Contributing to "Doubling of Farmers' Income" (DFI) and 'Secondary Agriculture" have been included under the strategic plans of SRM College of Agricultural Sciences.

Herbal and Nutri Farming

For good nutrition and good health, research on crops with nutrient and medicinal values under Herbal and Nutri-Farming will be promoted in SRM-CAS. SRM CAS is already in the process of collaborating with Interdisciplinary Institute of Indian System of Medicine (IIISM)in SRMIST, Mohan Diabetic Research Foundation, and AVT Naturals.

Urban Farming

An Urban Farm Centre has been created in SRMIST, Kattankulathur, in an area of 1400 sqm, is functioning from 23rd November 2018, with the prime objective to serve as an information centre for Urban farming to impart training programmes on urban agriculture, hi-tech agriculture to urban entrepreneurs, IT graduates, students, home makers etc. Urban Farm Centre will contribute in creating "Smart Cities" under SDG.

Precision Farming

Precision Farming will be one of the focus areas of SRM College of Agricultural Sciences. SRMIST is trying to collaborate with Kansas State University, USA and Mahindra Research Valley, Chennai in carrying out research and development on Precision Farming.

SRM CareFarm

SRMIST is introducing care farming in India, by establishing a Care Farm and provide green care services to people; educate professionals on care farming; and provide support to establish care farms as farm diversification and enhance farm incomes. In care farming, care of the farm is combined with care of people.

Meeting with MoU Committee Members

Visit to STP Plant

Visit to Solar power Plant

Visit to Biogas Plant

Visit to Solar Steam Cooking System

TERRE Policy Centre

SmartCampusCloudNetwork

United Nations Educational, Scientific and Cultural Organization

SRM