End of Life Management of Solar PV | Circular Economy

Topic: Business model innovations and policy research to promote reverse logistics of end of life PVs and for efficient material recovery.

According to IRENA ,the world would have 60-78 Million tonne of Solar PV waste by 2050 from which the recovered raw materials amount to a value of 15 Billion $. Our Country,India would represent approximately 10% of total Solar PV waste in the world by 2050. On the other hand our raw material requirement would be 12 Million tonnes by 2030. Therefore there arises a need to focus on recycling or end of life management of solar panels as a value generating business stream and as a potential supplier of secondary raw materials that can curb the need of large volumes of raw materials in the future.

Waste management of Solar PV can be done by reducing the amount of waste generated (promoting resource efficiency in design,process and product stage) and by effecting a financially viable , highly efficient recycling process at the end of life stage of PV panels.

Extended producer responsibility , conducive policy framework, innovative business models are the potential solutions needed to prepare India as the volume of panels are increasing exponentially.

The European Union (EU) has a well established policy framework in the form of WEEE (Waste Electrical and Electronic Equipment) Directive that has led to producer consortium like PVCYCLE to efficiently organize and financially manage the end of life solar panels. EU H2020 projects like CIRCUSOL are researching on circular business model with a concept called Product Service Systems that provide environmental , economic and user benefits simultaneously .

I wish to perform a detailed analysis of the different existing policy,business model approaches on the end of life panel and help in proposing a policy draft ,road map or guidelines customized to India such that we are on track for reaching energy sovereignty by Solar PV and other renewable.

I can bring in the exposure and experience that i am receiving currently from my master studies in the EU .I also have experience in policy studies,business model aspects from ESADE Business school . I am trained by the Joint Research Centre of the European commission on an innovative tool called Scenario Exploration System (SES) that can cater scenario based studies on potential policy decisions. I have bonafide knowledge of Solar PV panels obtained from my master studies at KTH Royal Insititute of Technology , Sweden and Polytechnic University of Catalonia ,Spain.

I am a winner of European Utility Company EDP's Case challenge on big data energy management at the European Utility week in Paris in 2019 . I also worked with the Stockholm City Municipality on their project to curb congestion of electricity grids during peak hours and my team's proposal was awarded and it is put under consideration for implementation.

I am also well versed in circular economy and in state of art life cycle analysis tools that can help in this internship to validate the supply chain of solar panels.

Kishore Ganesan

Avinguda de Madrid 171, ESC D 6^0, Barcelona,08028.
e-mail: kishoreganesh18@gmail.com
Phone: +46 734867360
D.O.B: 24th April 1996
www.linkedin.com/in/kishoreganesh

Academic Record

Double Masters degree in Environomical Pathways for Sustainable Energy Systems
EIT - InnoEnergy Dual Degree Program

MSc Sustainable Energy Systems
KTH Royal Institute of Technology

Aug '18 – Jun '19
Stockholm, Sweden

- Specialization: Thermo-economic Analysis of Sustainable Energy Systems with Environmental Context

MSc Energy Engineering
UPC: Universitat Politècnica de Catalunya

Aug '19 – Jun '20
Barcelona, Spain

- Specialization: Solar Systems

Bachelor of Engineering in Mechanical Engineering
Anna University

Aug '13 – Apr '17
Chennai, India

- Graduated first in class with Distinction (CGPA: 9.58/10)

Work Experience

Team Member-Operations
Saint Gobain Glass India Pvt Ltd

Jun '17 – Mar '18
Sriperumbudur, India

- Worked in Manufacturing of Solar Control Façade involving sputtering process.
- Co-ordinated the planning, production, quality, logistics and dispatch of Coated Glasses.
- Undertook Kaizen Projects to improve cycle time and to reduce glass breakage in production.

Summer Intern – Projects
Greenely

Jul '19 – Aug '19
Stockholm, Sweden

- Establishing an energy savings modelling system for users of *the application*

Summer Intern
World Bioenergy Association

Jul '19 – Aug '19
Stockholm, Sweden

- Worked on a factsheet related to Bioenergy with Carbon Capture and storage (BECCS)

Additional Training

New Venture Creation and Entrepreneurship | *ESADE Business School*
An intensive course on Strategy, Innovation, Marketing, Finance and Design Thinking, IPR, High Performance team, Lean Start-up

Aug '18 – Jun '20
Barcelona, Spain

Engineering and Technology for Society and Global Developments *University of Edinburgh, UK & Anna University, India*
lectures in topics like Climate change,Additive manufacturing, Renewable energy.

June 2016
Chennai, India

Scenario Exploration System (SES) Tool *Joint Research Centre, European Commission*
Future simulation tool that uses engagement techniques to realise systemic collective reflection created when building scenarios

September 2019
Brussels, Belgium

Recent Projects

Managing the Electricity Grid Capacity Shortage in Stockholm City
Stockholm City Corporation & SWECO Consulting Firm
Formulating an internal demand response solution for Stockholm Corporation owned buildings to mitigate the electricity consumption during peak period.

Aug '18 – ongoing
Stockholm, Sweden

Quantifying the impact of Carbon Capture and Sequestration on the Evolution of fossil fuels' demand |*KTH Royal Institute of Technology.*
Scenario wise analysis of the impact of Carbon capture on future fuels demand.

Aug '18 – Jan '19
Stockholm, Sweden

Evaluation of technological business opportunity on Building Integrated Photovoltaic Thermal Systems (BIPVT) towards net zero energy buildings
Market analysis of BIPVT systems and forecasting of market drivers to achieve Net Zero Energy Buildings.

Aug '18 – Jan '19
Stockholm, Sweden

Awards and Achievements

- 🏆 **MSc SELECT GRAND CHALLENGE AWARD** for best proposal involving internal demand response solution in Stockholms Stad buildings for grid congestion problem in Stockholm City.
- 🏆 **Winner |EDP Challenge | Game Changing Impact Challenges at European Utility Week 2019** on presenting an innovative demand flexibility solution to their case challenge on "Load Metering DATA and WHAT can you do with it"

Extra-Curricular Activities and Positions

CommUnity Representative| InnoEnergy| Energy Policy Program

- Organized "Food-Print" – an event to foster the importance of sustainable food production and consumption in collaboration with EIT Digital and CommUnity InnoEnergy.
- Organizing "Co-Labs "– Monthly Speaker Series on various futuristic topics like Artificial Intelligence, Machine Learning, Blockchain and IoT.
- Worked on "CEP" –Project to consolidate the 'Clean Energy Package for all', Energy Policy Framework of the EU, in a way to educate students and common people about complex policies.
- Trained by Joint research centre, European Commission, Brussels on "Scenario Exploration System (SES)" Tool

Skills

- 🖱 **Digital Skills | Software**: MS Excel, C, C++, MATLAB, Python |CATIA, ADAMS, PRO-E, ANSYS, GaBi, Matlab, MatPower, PV Sol
- 🔊 **Languages Known (CEFR Level)-**English (C2), German(A2), Hindi(C2), Tamil (C2), Sanskrit (B2).