New global research project:

The local communities of the future supply their own green, renewable energy

A large, new EU-funded research project led by Aalborg University will help establish energy islands in local communities in both Europe and India. The goal is for locals to be able to create CO2-neutral energy communities with their own production of green energy.

Local communities around the world account for a significant share of total energy consumption globally. In order to reduce CO2 emissions, crucial to achieving the UN's climate goals, it is therefore important to work on making local communities' energy consumption greener and more efficient.

Aalborg University, in collaboration with researchers from four other countries, is coordinating a major research project called H2020 SUSTENANCE. The main objective is to ensure a green transition in local communities throughout Europe and in India through sustainable energy systems. The project is part of the EU's HORIZON 2020 pool and has a budget of almost 4 million Euros.

"The green energy transition requires us to involve citizens in order to learn how their behaviour can help accelerate the process of finding practical solutions adapted to energy consumption. The goal is also to ensure a reliable energy supply in a time of increasing consumption of renewable energy sources, which can be unstable", says professor and project coordinator in the H2020 SUSTENANCE project Birgitte Bak Jensen from the Department of Energy at Aalborg University.

Local energy solutions ensure green transition

The needs of local communities in terms of electricity, heat, water, waste and transport are high. The aim of the project is to make local energy sources CO2-neutral by utilising the already available sources of renewable energy more optimally in the local areas. By integrating technological solutions such as intelligent control, battery storage and energy balancing, researchers wish to ensure a high degree of flexibility in the green energy supply. The efficiently integrated energy solutions will help to increase the share of local renewable energy sources and thus contribute to the green energy transition.

Different societies around the world use the same technological solutions

The new energy solutions will be tested by local communities at experimental sites in Denmark, the Netherlands and Poland, in addition to selected rural areas in India. Despite their economic, societal and political differences, the goal is for the selected societies to demonstrate that the same technological solutions can be adapted in each individual case. In this way, the researchers wish to ensure that energy solutions can be reproduced globally.

Green energy and self-sufficiency improve quality of life

A crucial point in the SUSTENANCE project is to ensure that local communities are self-sufficient when it

comes to energy and that the energy comes from resilient energy systems. Another benefit of the project is its ability to improve the quality of life of citizens in these communities.

Two of the selected pilot areas in India are rural areas where the use of local microgrids will secure power supply for water pumping, cooking and charging of e-rickshaws for transporting school children. This will improve the everyday lives of women and children.

Obstacles and conditions for the green transition are highlighted

The researchers will also analyse existing markets, regulatory frameworks and systems to identify both obstacles and the conditions needed to create change. Guidelines for new energy management procedures will be developed to show how to raise citizens' awareness levels and increase consumer participation in change processes. At the Dutch test site, the project's vision is linked to increased consumer awareness of energy due to rising prices.

"In the near future, the new normal will be one where we are more aware of the relationship between the best time to consume energy and when this energy is produced," explains Professor Johann Hurink from Twente University.

In Poland, the project will take steps towards educating residents of a housing association to be able to create a sustainable energy island. In this way, residents will be able to eliminate the use of natural gas and increase the use of electricity from renewable energy sources in their own area.

"*In the SUSTENANCE project, we are taking a holistic approach. This is to be understood in the sense that we are looking at both the green transition and the concrete technological solutions that are needed to create change. At the same time, we are taking into account the human, market, regulatory and environmental issues that are to ensure that SUSTENANCE implements realistic solutions that can pave the way for other citizens and societies to follow suit*," explains Professor Birgitte Bak Jensen from the Department of Energy at Aalborg University.

FACTS: About SUSTENANCE

SUSTENANCE – launched in July 2021 and runs for 42 months. It has a budget of over €3.8m from Horizon 2020, the EU Framework Programme for Research and Innovation, and also receives funding from the Government of India's Department of Science and Technology (DST).

The consortium, coordinated by Aalborg University (DK), consists of 21 recipients from 4 countries: Skanderborg Kommune (DK), Aura A/S (DK), Neogrid Technologies ApS (DK), Bjerregaard Consulting ApS (DK), Universiteit Twente (NL), Stichting Saxion (NL), Instytut Maszyn Przeplywowych im. Roberta Szewalskiego Polskiej Akademii Nauk (PL), Energa-Operator SA (PL), STAY-ON Pawel Grabowski (PL), Funfacja KEZO przy Centrum Badawczym Polskiej Akademii Nauk (PL), Wlasnosciowa Spoldzienia Mieszkaniowa im. Adama Mickiewicza w Sopocie (PL), Indian Institute of Technology Bombay, Indian Institute of Science, Indian Institite of Technology Kharagpur, Indian Institute of Technology Delhi, National Institute of Technology Society Tiruchirappalli, National Institute of Technology Silchar, Visvesvaraya National Institute of Technology Nagpur, Motilal Nehru National Institute of Technology Allahhabad, Gram Oorja Solutions Private Limited (India).

This project has received support from the EU Horizon 2020 research and innovation programme under grant agreement no. 101022587 and from the Government of India through the Department of Science and Technology (DST) under the SUSTENANCE project. Any results of this project only reflect the views of this consortium, and the funding bodies and the European Commission are not responsible for any use that may be made of the information it contains.

Contact

Prof. Birgitte Bak Jensen, Aalborg University, project coordinator email: bbj@energy.aau.dk, telephone: +45 9940 9274

SUSTENANCE website: https://h2020sustenance.eu/

SUSTENANCE LinkedIn: @SUSTENANCE H2020 project
https://www.linkedin.com/company/sustenance-h2020-project/