جامعة الأمير سلطان
PRINCE SULTAN
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Sustainable Development Report 2020
Climate Action

Climate Action ■

Prince Sultan University is attentive on bringing down the environment pollution and contribute in the fight towards climate change. As an important stakeholder, PSU contributes towards the achievement of sustainable environment and campus through various events, practices, and research. It regularly organizes events and exhibitions for students and employees to promote the awareness on climate change.

The strong commitment can be witnessed from the type of support provided in events related to clean energy, EV and the sustainable practices followed for sustainable PSU campus to promote measures for climate change and research contribution etc. Moreover, the solutions and impacts of climate change is an important topic is endorsed in our curriculum and outreach.

Impact example – Low carbon energy use

The Prince Sultan University is involved in several industrial collaborations that are leading the way in the search for alternative energy sources. One such example comes from our Renewable Energy Lab, who are in cooperation with Koncar Power Plant Electric Traction, Croatia for a collaborative project on microgrids' test bench for EV charging and renewable energy to combat climate change.
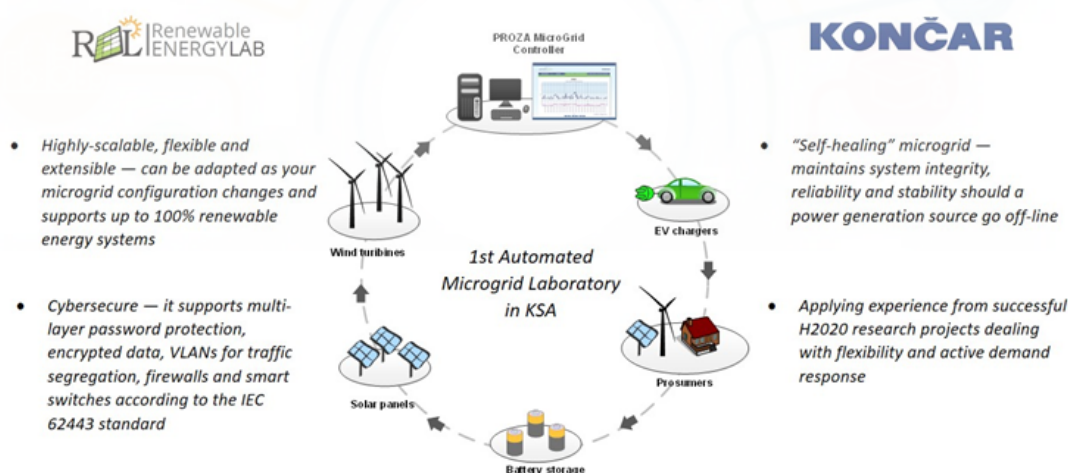
The Prince Sultan University is involved in several industrial collaborations that are leading the way in the search for alternative energy sources. One such example comes from our Renewable Energy Lab, who are in cooperation with Power and Telecom Technologies Co., KFB Holding Group, Riyadh for a collaborative consultancy project on investigations on minimizing electricity cost and feasibility study of self-sustainable campus towards climate change mitigation.

1 Introducing custom-made techniques for local environment conditions like robotic panel cleaning etc. as per the SDGs 9 and 13

2 Setting up a remote monitoring and control station at Renewable Energy Lab for the performance analysis of installed lights
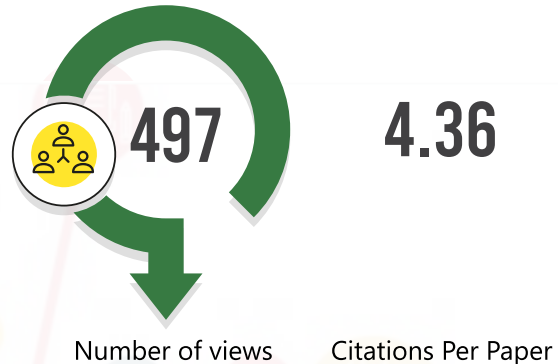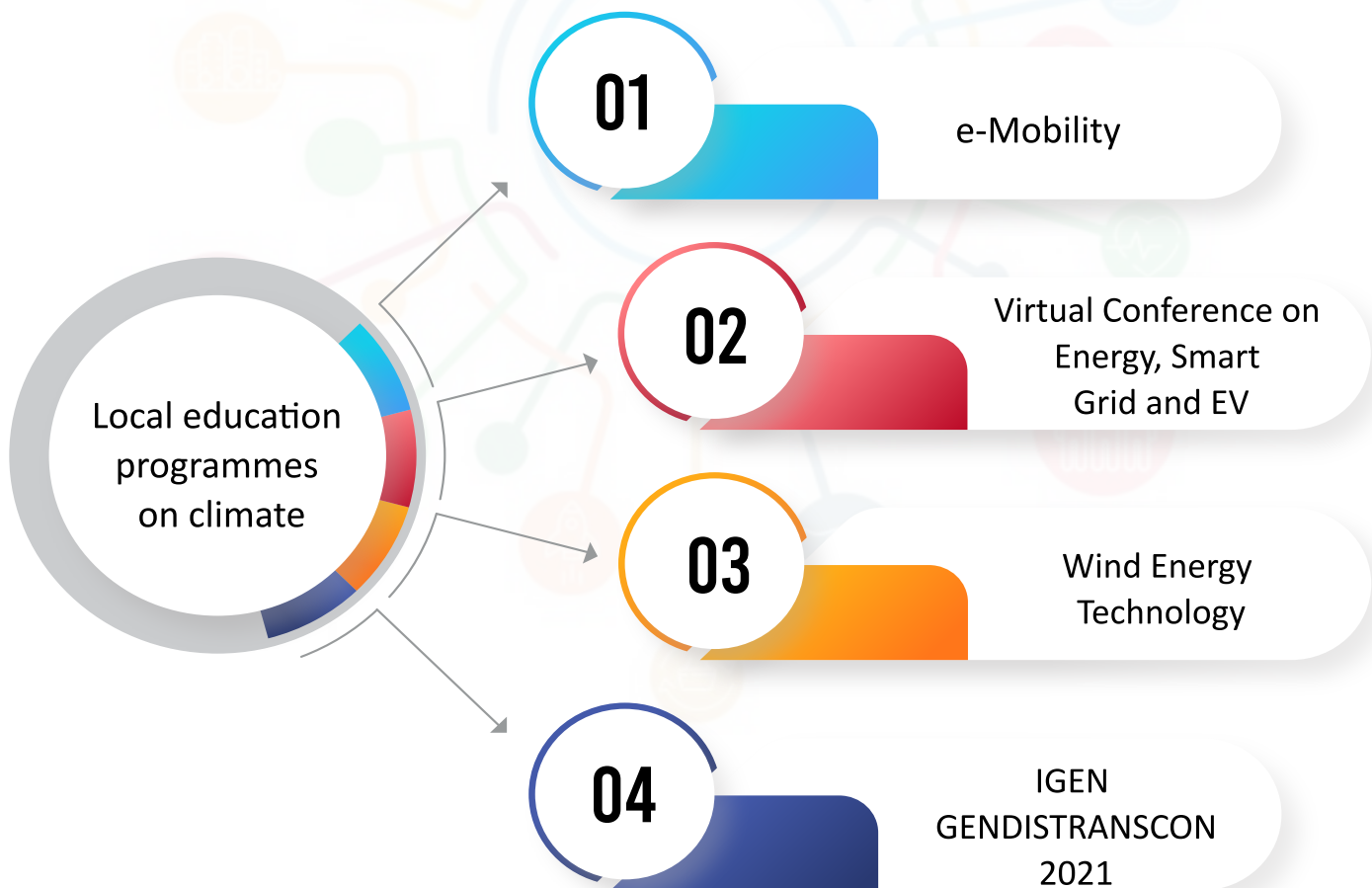
Research on Climate Action ■

PSU's scholarly output researches related to Climate Action in the past academic year has 497 views and 4.36 citations per paper.

Renewable Energy lab at PSU is showing serious commitment to encourage its researchers for increasing their productivity in this field.

497

4.36

Number of views   Citations Per Paper

Environmental education measures

Renewable Energy Lab (REL), College of Engineering, Prince Sultan University has organized several events and conferences in association with Top ranking universities in the world in the 'climate change' theme.
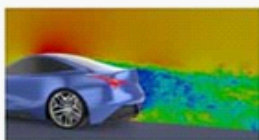
Local education programmes on climate

01 e-Mobility

02 Virtual Conference on Energy, Smart Grid and EV

03 Wind Energy Technology

04 IGEN GENDISTRANSCON 2021

e-Mobility ■

e-Mobility

June 23, 2020 | 11.30 am

Delivering e-Mobility to the masses is not only a huge investment, but a significant operational undertaking. As OEMs, suppliers and emerging vehicle manufacturers invest billions to develop innovative electric vehicles, and optimize development and production processes, they are looking for a strategic partner to help realize their vision. Altair technologies are changing the way electric passenger, off-highway and autonomous vehicles are designed, enabling them to accelerate product development, enhance the energy efficiency, and optimize integrated system performance.

Agenda: 23 June

- e-Mobility research and development trends

- Leveraging virtual engineering platform for faster product development

- e-Mobility components – Light weighting, Advanced Material, Safety and Comfort, Electronics and Battery, Connected systems

- e-Mobility infrastructure design

- Advance Driver assistance system

Register N
(https://attendee.gotowebinar.com/r

Umashankar Subramaniam
- Associate Professor, Renewable energy Lab, College of Engineering, Prince Sultan University, Saudi Arabia,

Speakers:

Mr. Prashanth Kulkarni
Industry Applications - Altair

Mr. Kamleshwar
Industry Applications - Altair

Mr. Manoj M
Industry Applications - Altair

Mr. Sandeep Ramagiri
Industry Applications - Altair

Mr. Sudhir Padaki
Industry Applications - Altair

Virtual conference on Energy, smart grid and EV ■

Virtual Conference on Energy, Smart Grid and EV:

9th July, 2020

Virtual Conference on Recent Trends on Renewable Energy, Smart Grid and Electric Vehicle Technologies

Organized by: School of Electrical Engineering
in Association with

VICTORIA UNIVERSITY

Renewable Energy Lab (**REL**), College of Engineering, Prince Sultan University is organized International Virtual Conference on Recent trends on Renewable Energy, Smart Grid, and Electric Vehicle Charging (RESGEVT-20) on 9th July 2020 as a partner Institution in association with Top ranking universities in the world . VIT University Vellore India is hosting this conference. The Virtual Conference is a platform for researchers, academicians as well as professionals from all over the world to present, discuss and promote the knowledge, research and practice in the field of Smart Grid Control, Renewable Energy Sources, Energy Efficiency, Power Quality and Electric Vehicle Charging to combat climate change. RESGEVT-20 is offering a fantastic opportunity to attend a global scientific forum from the convenience of your desktop. The conference is online, from paper submission, including reviewing, conference discussion, and post-conference processing. All papers referred to the double tier approval process, single-blind peer-review and regular check. The online conference is a smart and affordable manner of presenting research results. Selected papers based on the domain and quality published in **Scopus Indexed conference proceedings (IOP Conference Series)**.

Wind Energy Technology

IGEN GENDISTRANSCON 2021

International Journal of
INTELLIGENT SYSTEMS

RESEARCH ARTICLE

Intelligent optimization for charging scheduling of electric vehicle using exponential Harris Hawks technique

Ramkumar Devendiran ✉, Padmanathan Kasinathan ✉, Vigna K. Ramachandaramurthy, Umashankar Subramaniam, Uma Govindarajan, Xavier Fernando

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applied sciences   **MDPI**

Article

A Novel Deep Learning Based Model for Tropical Intensity Estimation and Post-Disaster Management of Hurricanes

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Abstract: The prediction of severe weather events such as hurricanes is always a challenging task in the history of climate research, and many deep learning models have been developed for predicting the severity of weather events. When a disastrous hurricane strikes a coastal region, it causes serious hazards to human life and habitats and also reflects a prodigious amount of economic losses. Therefore, it is necessary to build models to improve the prediction accuracy and to avoid such significant losses in all aspects. However, it is impractical to predict or monitor every storm formation in real time. Though various techniques exist for diagnosing the tropical cyclone intensity such as convolutional neural networks (CNN), convolutional auto-encoders, recurrent neural network (RNN), etc., there are some challenges involved in estimating the tropical cyclone intensity. This study emphasizes estimating the tropical cyclone intensity to identify the different categories of hurricanes and to perform post-disaster management. An improved deep convolutional neural network (CNN) model is used for predicting the weakest to strongest hurricanes with the intensity values using infrared satellite imagery data and wind speed data from HURDAT2 database. The model achieves a lower Root mean squared error (RMSE) value of 7.6 knots and a Mean squared error (MSE) value of 6.68 knots by adding the batch normalization and dropout layers in the CNN model. Further, it is crucial to predict and evaluate the post-disaster damage for implementing advance measures and planning for the resources. The fine-tuning of the pre-trained visual geometry group (VGG 19) model is accomplished to predict the extent of damage and to perform automatic annotation for the image using the satellite imagery data of Greater Houston. VGG 19 is also trained using video datasets for classifying various types of severe weather events and to annotate the weather event automatically. An accuracy of 98% is achieved for hurricane damage prediction and 97% accuracy for classifying severe weather events. The results proved that the proposed models for hurricane intensity estimation and its damage prediction enhances the learning ability, which can ultimately help scientists and meteorologists to comprehend the formation of storm events. Finally, the mitigation steps in reducing the hurricane risks are addressed.

Keywords: deep learning (DL); hurricanes; convolutional neural network (CNN); visual geometry group (VGG 19); data augmentation (DA)

SUSTAINABLE DEVELOPMENT G⊙ALS

PSU's commitment to SDG 2030

PSU is committed to United Nations Sustainable Development Goals (SDGs) through effective institutional resource management, innovative teaching and learning, research, national and international partnerships, continuous studies, and outreach. PSU shall undertake the following activities: form higher and steering committees, evaluate each SDG, formulate and develop related SDG policies, conduct awareness campaigns to the PSU community, establish a sustainability office, identify the SDGs related to each college, program, and course, and lab centers at PSU, and implement sustainability-related initiatives.

Vision

Prince Sultan University strives to support Saudi Arabia's Vision 2030 and the United Nations Sustainable Development Goals (SDGs) by paving the way for higher education in KSA and Middle East.

Mission

Supporting the Saudi Arabia's Vision 2030 and the PSU's strategic directions, PSU aligns its mission with SDGs by providing quality education, sustainability initiatives, lifelong learning, scientific research, and community service.

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