

MMSU's Commitment

Institute programs and policies to combat climate change and its impacts.



Environmental Rehabilitation Efforts for Climate Change Mitigation and Adaptation

Trees play an important role in stabilizing climate by absorbing and sequestering carbon. They also filter and absorb air pollutants, release oxygen, regulate microclimate, provide wildlife habitat, and many more. These services are highly recognized by MMSU, thus, the annual tree planting program started in 2018 to increase the number of trees on-campus and enforce the mini-forests that are owned by MMSU. In addition to this, MMSU also supports several mangrove plantations in the province to help restore the mangrove forests and help the coastal communities strengthen their defense against storm surges and winds during typhoons.

Key Activities and Accomplishments

- **Conduct of Knowledge Convergence Forum.** The Mariano Marcos State University - Affiliated Renewable Energy Center (MMSU-AREC) hosted a Knowledge Convergence Forum (KCF) at the National Bioenergy Research and Innovation Center (NBERIC), bringing together all accredited and soon-to-be accredited ARECs from across the country. The forum featured a range of activities, including an AREC showcase, the rollout of MMSU-AREC's newly developed mobile and web-based Geographic Information System (GIS), and tours of renewable energy (RE) sites in Ilocos Norte. Attended by various State Universities and Colleges (SUCs) and representatives from the Department of Energy (DOE), the event highlighted the collaboration and innovation driving the renewable energy sector forward in the Philippines.
- **Biodiesel Production Training Workshop Implementation.** In collaboration with the College of Engineering's-Chemical Engineering Department (COE-CED), the National Bioenergy Research and Innovation Center (NBERIC) hosted a biodiesel production training workshop on

November 7-8. Five representatives from the Mariano Marcos Memorial Hospital and Medical Center (MMM&MC) attended the workshop, seeking to repurpose their substantial volume of cooking oil residue. Participants engaged in lectures on biodiesel production using used oil and took part in hands-on activities, including the actual production process and flame testing of the biodiesel they produced. This workshop aimed to provide practical solutions for waste management while promoting sustainable energy practices.

- **Validation experiments on Nipa.** Exemplifying dedication and continuous effort in the R&D of bioethanol, NBERIC aims to further optimize its protocols through a series of nipa validation experiments conducted in Brgy. Navagan, Aparri, Cagayan on November 13 and 14. The NBERIC researchers explored ways to enhance the center's knowledge on variations in nipa sap quality and yield, conducting microbial analysis on nipa sap, and performing physical and chemical characterization of nipa sap. Additionally, they carried out a trial run of the deployed Solar Powered Distillation (SPD) facility.
- **Conduct of IEC Campaign Program.** The Grade 6, 11, and 12 - Science, Technology, Engineering, and Mathematics (STEM) students of the University Laboratory School (ULS) in Laoag City, in partnership with the Mariano Marcos State University - Affiliated Renewable Energy Center (MMSU-AREC), successfully executed an Information, Education, and Communication (IEC) Campaign Program on Solar Home System and Battery Energy Storage System which conducted on November 30 - December 01, which aimed to educate and inspire the next generation on the basic of electricity, renewable energy sources, solar home systems, and battery energy storage system (BESS). This campaign also is a significant stride in raising awareness and promoting the adoption of renewable energy sources among the youth. The MMSU-AREC team anticipates future collaborations that would further empower them with knowledge and inspire them to contribute to a more sustainable and environmentally conscious future.
- **Industry Partnership.** The Philippine Climate Change Commission (CCC) has committed to assisting Ilocos Norte in becoming a climate-smart and climate-resilient province, partnering with the Mariano Marcos State University (MMSU) in this endeavor. During a climate change forum held at the University Review Center on February 1, CCC Vice Chairperson and Executive Director Robert E.A. Borje pledged to strengthen cooperation with the Provincial Government of Ilocos Norte, MMSU, and other research and development institutions to implement climate action initiatives focusing on water and agriculture. To facilitate this, a series of technical workshops are scheduled to enhance the Local Climate Change Action Plans (LCCAPs) of local government units (LGUs) and develop project proposals for the People's Survival Fund (PSF). MMSU and other research and development organizations in the province will play a crucial role in conducting these activities and supporting LGUs in implementing their LCCAPs.

Relevant Research and Development Projects in SDG 13: Climate Action

Title	Researcher/s	Fund Source
Establishment of the Affiliated Renewable Energy Center (AREC) in Support to the Centers' Renewable Energy Projects (DOE)	T Ubiña, B Santos, M Lucas, PD Pastor, JJ Butay, M Gano, M Rafal	GIA
Renewable Energy Executive Competency Training Program (REECTP) for Agriculture and Fishery in Ilocos Norte, Philippines (DOE)	T Ubiña, B Santos, M Lucas, PD Pastor, JJ Butay, M Gano, M Rafal	GIA

<p>Assessment of the Status of Pigeon Pea Production and Consumption in Ilocos Norte and Its Acceptability as a Climate Change Adaptation Crop</p> <ul style="list-style-type: none"> • Evaluation of Farmers' Acceptance of the Pigeon Pea (<i>Cajanus Cajan</i>) as a Climate-Change Adaptation Crop • Assessment of the Economic Viability of Pigeon Pea as a Climate Change Adaptation Crop • Documentation of Farmers' Knowledge and Practices on Pigeon Pea Production, Seed System and Utilization 	<p>L Agbigay, MC Pammit, E Galacgac</p>	<p>GAA</p>
<p>Assessment of the Status of Pigeonpea Production as a Climate-Change Adaptation Crop in Ilocos Norte</p>	<p>L Agbigay</p>	<p>GAA</p>
<p>Development of Sustainable and Climate-Resilient Salterns: Best Practices, Standardization, Site Mapping and Design of Pilot Saltern Farm</p>	<p>N Alibuyog, R Utrera, S Nicolas, C Valentin, WM Manzanias, F Pastor, J Agreda, JJ Butay, L Agbigay, RM Lorenzo, C Julian, J Pugat, RJ Opelac, SC Santos, D Buciao, LI Galano, M Guerrero, NS Bravo</p>	<p>GIA</p>