MARIANO MARCOS STATE UNIVERSITY
The Role of Academe and Research Institutions in achieving the Philippines’ National Energy Transition Goals

Bjorn S. Santos, PhD

Presented during the Deep Dive Workshop at the Asia Clean Energy Forum on June 14, 2023 at Asian Development Bank Main Office, Ortigas, Mandaluyong City
Outline

• Brief overview of the Philippines' National Energy Transition Goals
• Role of Academe and Research Institutions in the Energy Transition
  • Research and Development
  • Capacity building and education
  • Policy and Regulatory Support
  • Collaborative Initiatives and Partnerships
• Conclusion
Brief overview of the Philippines' National Energy Transition Goals

- 35.0 percent and 50.0 percent RE share in the power generation mix by 2030 and 2040;
- 5.0 percent blending for biodiesel starting 2022;
- 1.5 percent increase in aggregated natural gas consumption from the transport and industry sectors between 2020 and 2040;
- 10.0 percent penetration rate of electric vehicles for road transport (motorcycles, cars, jeepneys) by 2040;
- 5.0 percent energy savings on oil products and electricity by 2040; and
- At least 12.0 percent reduction in the GHG emission for the Nationally Determined Contribution (NDC)
Role of Academe and Research Institutions in the Energy Transition

• Research and Development
  • drives innovation
  • develops innovative technologies and solutions
National BioEnergy Research and Innovation Center

Goal

Develop a synergy of applied community of interest and community of practice on bioenergy research, development, extension, education & technopreneurship for sustainable development and energy self-sufficiency.

Objectives

- To develop a national bioenergy research, development and extension agenda, plans and programs for all.
- To provide a common platform and modality of bioenergy development initiating and enhancing creativity, innovativeness, competitiveness, progress and dynamic partnership.
- To determine and identify innovative and challenging potentials of bioenergy technologies, services and outputs for production, profit and marketing.
- To establish, create and capacitate all key players and stakeholders (researchers, educators, development workers, policy makers, and communities) in bioenergy for countryside development through bioenergy research, development, extension, education, training and technopreneurship.
- To strengthen institutional capacities and competencies of all involved in bioenergy for institutional partnerships and community development.
MMSU pushing 'nipahol' as fuel blend

By Leander C. Domingo  January 14, 2023  130

'Mnipahol': Filipino scientist discovers alternative to LPG

Jasmin Romero, ABS-CBN News  Posted at Dec 27 2022 07:22 PM

MANILA — An alternative cooking fuel that could possibly “replace” liquified petroleum gas or LPG commonly used in households has been invented by a Filipino scientist, according to the Department of Science and Technology (DOST).

Presyo ng LPG, auto-LPG tumaas sa umaga ng Disyembre

Dr. Fiorello Abenes, a DOST- Balik Scientist hosted by Mariano Marcos State University (MMSU) in Laoag, Ilocos Norte, came up with “Nipahol,” a cooking fuel based from the ethanol extracted from

‘Nipahol’ seen as 15% gasoline blend to run vehicles

An expert in renewable energy is pushing for the use of the Mariano Marcos State University (MMSU) Nipahol in producing gasoline blend that is up to 15% ethanol by volume (E15). Dr. Fiorello Abenes, who recently served as Department of Science and Technology Balik Scientist at MMSU, pushes the use of Nipahol for E15 would lower the staggering costs of fuel while maintaining its efficacy.
Role of Academe and Research Institutions in the Energy Transition

- Capacity building and Education
  - Training of Future Energy Workforce
  - Collaborative programs with industry to bridge the skills gap
  - Public awareness and engagement
PROFESSIONAL SCIENCE MASTERS - RENEWABLE ENERGY ENGINEERING (PSM-REE)

CHED MMSU
REE Foreign University Partners
Industry Partners
USAID
NGUs/LGUs

Brdging the Gap

UNIVERSITY: MMSU
People Processes Principles
• Dynamic learning management/delivery system: future-proof education; distance education
• Industry ready graduates (skills/competencies)
• Curriculum development relevant to industry needs
• Pilot Studies/Capstone
• Product validation studies
• Joint offering (e.g., AIT)
• Consultative program development (Rutgers Univ./Texas A&M)

RENEWABLE ENERGY INDUSTRIES
• REE leaders/managers/entrepreneurs
• Knowledge creation and co-creation
• Pedagogical strategies
• Industry driven programs
• REE Products
• Joint REE Research/Innovation (R & D Ecosystem)

• Trust MMSU as industry partner
• Faculty and student immersion (Bootcamps)
• Mentor faculty and Students
• Technical Guidance
• Scholarships
• Invest in product Development
• Commercialization & technology transfer

IDEATION EXECUTION
Mutually Exclusive

Industry Hires REE Graduates

MMSU
PROFESSIONAL SCIENCE MASTERS - RENEWABLE ENERGY ENGINEERING (PSM-REE)

**Industry Partners**
- USAID
- NRGCP
- Mariano Marcos State University
- Rutgers University
- Texas A&M University
- Kansas State University

**Faculty Development**
Continuous coaching of faculty members on the most recent technologies and innovations in renewable energy conversions

**Guest-Industry Lectures**
Students are provided with technical and business insights from partners in the industry (EDC, NGCP)

**Industry Exposures / Immersions**
Students are put through real-life work situations in their chosen RE industry

**Curriculum Development**
Strong collaboration among experts from MMSU, USAID-Strides, University of Rutgers, Texas A&M University and Energy Development Corporation in developing the PSM-REE curriculum

**Employment / Promotion**
Graduates become pioneers and future leaders/managers in their respective RE companies

**Employers**
- Mariano Marcos State University
- AMD Construction Corp.
- Bureau of Fire Protection
- BCS Realty Holding and Development
- EDC Burgos Wind Power Corp.
- Omicron Cons. / Tektron Construction Corp. – JV
- JSI8 Engineering Services
- Ilocos Norte Electric Cooperative
  - EMAPTA Phil
  - DPWH Apayao
  - St. Rizal AgroFarm Supply
  - DTI-CAR
  - DA RFOI
- Shell Exploration Philippines
- Buslac Builders Inc.
- Universal Robina Corp. – Sure
- CARSUMCO
- Pangasinan State University
- Ilocos Norte Provincial Government
- VENVI – Agro Industrial Ventures Corp.
- ABEIAN Construction
- LGU Olavez
MMSU-DOE Affiliated Renewable Energy Center (AREC)

LAUNCHING OF THE RENEWABLE ENERGY EXECUTIVE COMPETENCY TRAINING PROGRAM
MAY 22, 2023 | NBERIC AUDITORIUM

Renewable Energy Executive Competency Training Program (REECTP)

MMSU, DOE train LGU executives on renewable energy governance

To jumpstart the development of renewable energy (RE)-based communities, the Mariano Marcos State University (MMSU) together with the Department of Energy (DOE), has launched a comprehensive competency training program for local officials and interest groups in Ilocos Norte.
Role of Academe and Research Institutions in the Energy Transition

- Policy and Regulatory Support
  - to provide science evidence-based and data-driven policy
  - research should fit to policies and adapt with the national interests, while governments adjust on the research result

AMMENDMENT TO THE BIOFUELS ACT OF 2006 (RA 9367)
- HOUSE BILLS No. 2180, 7059 and 7328
Role of Academe and Research Institutions in the Energy Transition

- Collaborative Initiatives and Partnerships

Department of Energy - National Energy Efficiency and Conservation Program (NEECP)
Conclusion

• To achieve the Philippines' energy transition goals effectively:
  • Need for increased collaboration, research, and innovation
  • Need for sustained efforts for a sustainable energy future
Send us a message or visit us
City of Batac, Ilocos Norte, Philippines
(63) 77-600-0459
op@mmsu.edu.ph

Follow us for updates
facebook.com/MMSUofficial
www.mmsu.edu.ph