MARIANO MARCOS STATE UNIVERSITY

QS STARS™ RATING SYSTEM

ISO 9001 SOCOTEC CERTIFICATION INTERNATIONAL

WURI WORLD'S UNIVERSITIES WITH REAL IMPACT

RANK 101-200

THE IMPACT RANKINGS 2021

RANK 401-600 IN THE WORLD

RANK 2 IN THE PHILIPPINES

The Role of Academe and Research Institutions in achieving the Philippines' National Energy Transition Goals

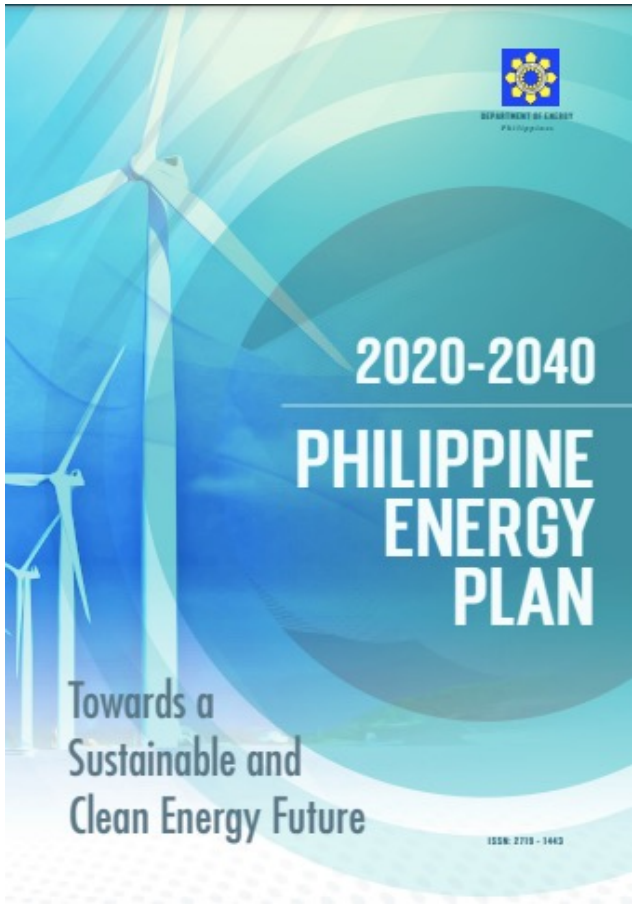
Bjorn S. Santos, PhD

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

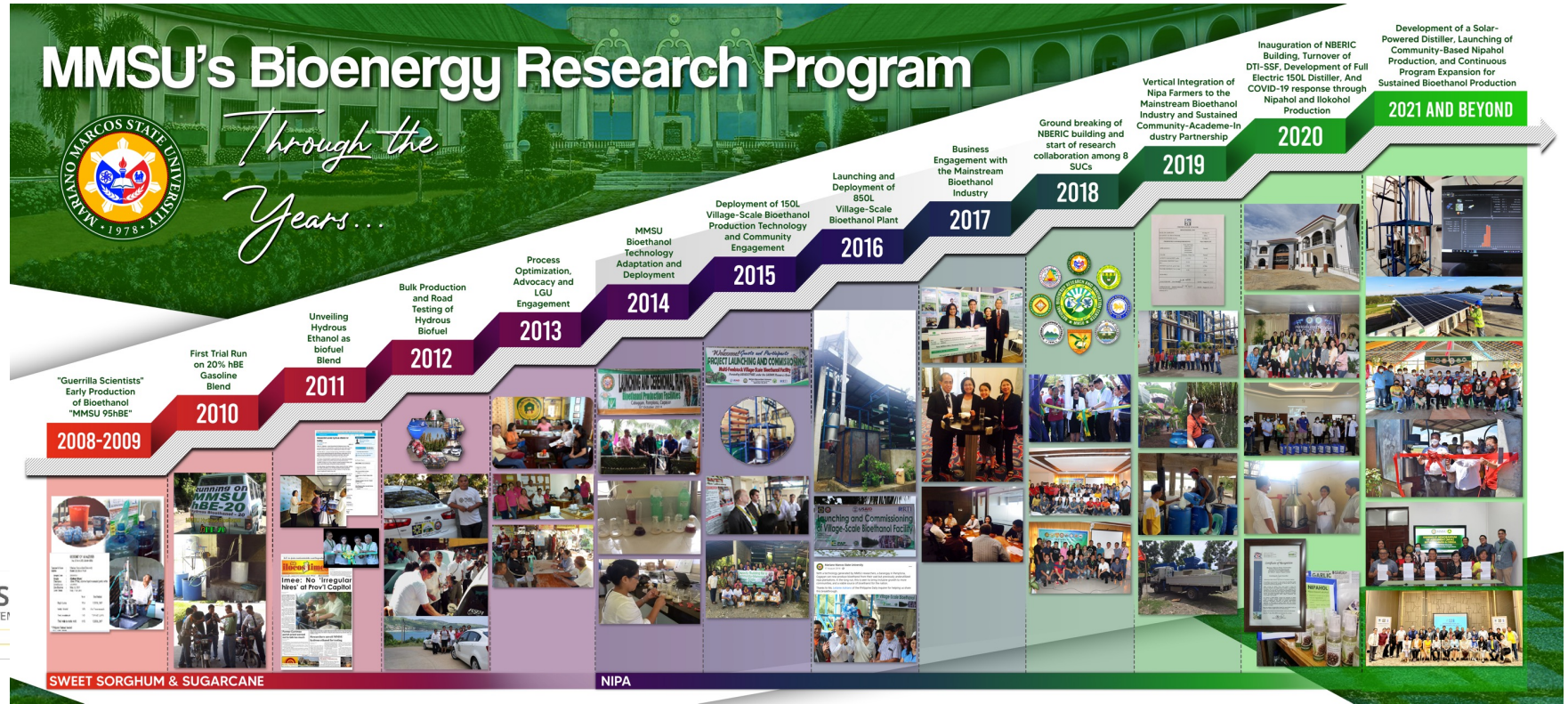


CLEAN ENERGY SCENARIO

- **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



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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.

Traditional Lambanog Technology

Multi-feedstock Bioethanol Distilling Facility

Zero-fossil fuel Bioethanol Distilling Facility

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.

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Monday, June 12, 2023
Today's Paper

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MMSU pushing 'nipahol' as fuel blend

By Leander C. Domingo January 14, 2023 130

ABS-CBN NEWS

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'Nipahol': 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 umpisa 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

MMSU

'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.

SUSTAINABLE DEVELOPMENT GOALS 7 AFFORDABLE AND CLEAN ENERGY 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE 12 RESPONSIBLE CONSUMPTION AND PRODUCTION

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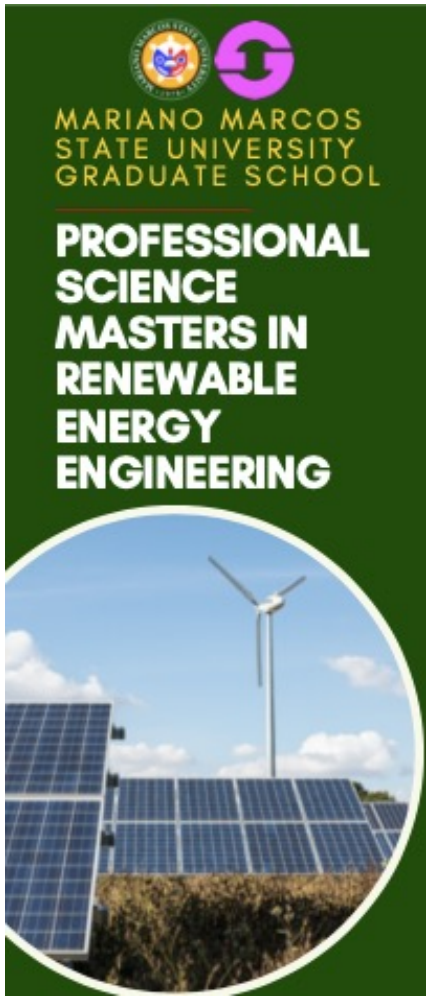
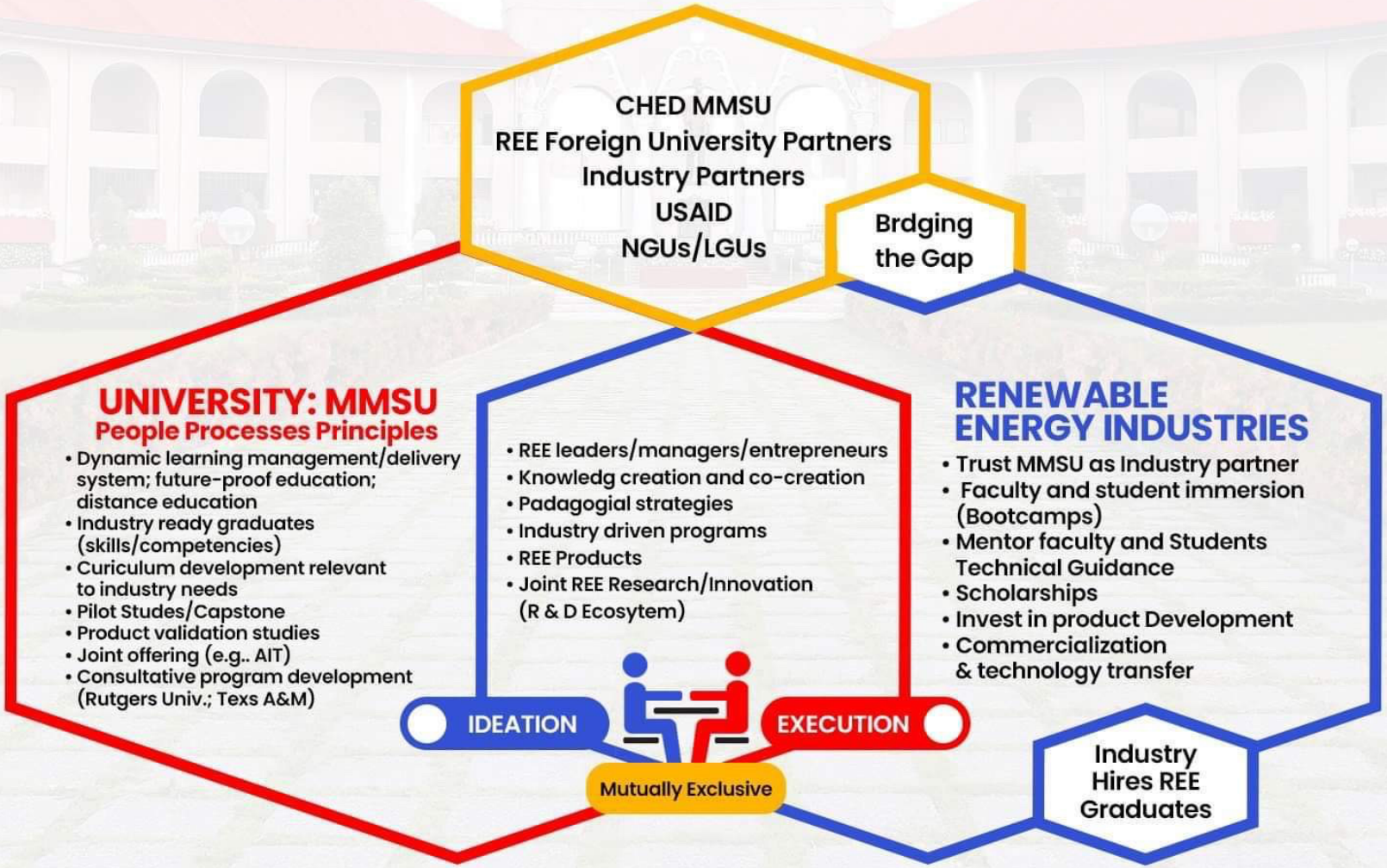
Role of Academe and Research Institutions in the Energy Transition

- 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)



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

Industry Partners

USAID FROM THE AMERICAN PEOPLE

energy DEVELOPMENT CORPORATION

NGCP BRIDGING POWER & PROGRESS

MARIANO MARCOS STATE UNIVERSITY

RUTGERS THE STATE UNIVERSITY OF NEW JERSEY

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-Stride, 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

Student Recruitment
Alumni and Industry Partners are actively engaged in the process of finding and recruiting the best-qualified students

Employers

- Mariano Marcos State University
- AMD Construction Corp.
- Bureau of Fire Protection
- BCS Realty Holding and Development
- EDC Burgos Wind Power Corp.
- Omicron Cons. / Tekton Construction Corp. - JV
- JSB Engineering Services
- Ilocos Norte Electric Cooperative
- EMAPTA Phil
- DPWH Apayao
- St. Ruiz AgroFarm Supply
- DTI-CAR
- DA RFO1
- Shell Exploration Philippines
- Busilac Builders Inc.
- Universal Robina Corp. – Sure CARSUMCO
- Pangasinan State University
- Ilocos Norte Provincial Government
- VENVI – Agro Industrial Ventures Corp.
- ABEIAN Construction
- LGU Claveria

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.

SUSTAINABLE DEVELOPMENT GOALS 4 QUALITY EDUCATION 7 AFFORDABLE AND CLEAN ENERGY 11 SUSTAINABLE CITIES AND COMMUNITIES 17 PARTNERSHIPS FOR THE GOALS

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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

NIPA BIOETHANOL EXPANSION

Existing partners in a nation-wide bioethanol research and production

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

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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

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