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ONEDOST

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One DOST, One message... OneDOST4U!



In communicating science, technology, and innovation to various publics, it is very important that the Department of Science and Technology, composed of 18 agencies, 16 regional offices, and 80

provincial S&T offices, is viewed as ONE working together and speaking in unison with One message, and that is OneDOST4U!

This slogan, coined by Director Richard P. Burgos of the Science and Technology Information Institute, underscores the desire of the present administration under the leadership of Secretary Renato U. Solidum Jr., to further strengthen the spirit of unity and synergy among the different agencies and regional offices of the DOST to serve the people.

To give life to this slogan, the S&T Post, as the communication channel in print and digital platforms, takes on the challenge as the messenger of science, technology, and innovation information and the vehicle for sharing stories of scientific discoveries, local innovations, success chronicles of individuals and communities empowered by science and technology, and the struggles and triumphs of scholars, scientists, researchers, and engineers.

The third quarter issue ushers in a renewed beginning with stories that align with the present administration's thrust to promote wealth creation, wealth protection, human well-being, and sustainability through the use of science, technology, and innovation. Featured stories are varied that cuts across different sectors: banana fruit stalk as composite boards; nuclear power as solution to energy supply; CubeSats Maya-3 and Maya-4 completes mission; green energy and eco-industrial park development in Palawan; R&D based solutions to enhance PH disaster preparedness; black garlic innovation; nine new mango varieties introduced; science bus promotes STEAM education; the Dighub FabLab's orthopedic disabilities stand; and a special feature on DOST Secretary Solidum; to name a few.

More than anything, we want our readers to appreciate our stories and find value in them, not only because they are informative but also entertaining, as a knowledge hub to draw inspiration from.

Savor the stories to your delight. Go beyond reading and engage our different agencies and regional offices by seeking more information from them because we will never know that in our future magazine issues, your own innovation, your own enterprise, your own story may land in the pages of the Post because we are all OneDOST4U!

RODOLFO P. DE GUZMAN
Executive Editor

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This issue's cover features the logos of the 18 DOST agencies in one unified element that emphasizes the DOST's signifying message — OneDOST4U. Featured also in this issue are stories about DOST's initiatives on programs and technologies developed by DOST aligned with the current administrations's economic priorities.

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UN recognizes DOST SETUP 4.0, now on SDGs Platform

Karen Lou S. Mabagos, *DOST-ITCU*

On 12 July 2022, the United Nations Department of Economic and Social Affairs (UN DESA) published on its website the Department of Science and Technology's flagship program, "Small Enterprise Technology Upgrading Program 4.0 (SETUP 4.0)" as part of the SDG Acceleration Actions under "The Partnership Platform".

The Philippines was recognized by the UN DESA during its interventions at the Seventh Annual Multi-Stakeholder Forum on Science, Technology, and Innovation for the Sustainable Development Goals (STI Forum) and the 2022 ECOSOC Finance for Development Forum.

According to the recent communications received by the Philippines from UN DESA, the DOST's "SETUP 4.0", along with



two other identified national initiatives, "stood out as interesting contenders for [the] SDG Acceleration Actions Platform" and is recommended to be registered in the Platform. The DOST gratefully concurred with the recognition and registered SETUP 4.0 in the SDG Acceleration Actions Platform.

Through the representation of then Secretary Fortunato T. de la Peña, the DOST delivered the Philippine Statement at the STI Forum which was held on a hybrid format in New York on 5-6

May 2022. The DOST's SETUP 4.0 has been a recurrent component of country statements developed by the Department.

The special recognition given to the SETUP 4.0 signifies that the Department's unrelenting efforts and active participation in UN conferences provide great opportunity for the Philippines to showcase its innovative programs and policies in the global arena. The DOST remains steadfast in elevating the country's standing in the STI international community.



The Partnership Platform

The Partnership Platform is a global registry of voluntary commitments and multi-stakeholder partnerships made by stakeholders in support of the implementation of the Sustainable Development Goals (SDGs), and through various UN conferences and thematic action networks, including the UN Ocean Conference, the Small Island Developing States Conference, the UN Sustainable Transport Conference, the Rio+20 Conference, and others (sdgs.un.org/partnerships). The SDG Acceleration Actions online database is a tool to help inspire and mobilize actions around the world to promote the implementation of the SDGs, as well as build resilience and bring inclusive recovery in the context of new realities post COVID-19, so that the global economy, planet and people we serve could emerge stronger together from the crisis. (bit.ly/UNSDGAccelerationActions).

The DOST's SETUP 4.0

Set to run until 2030, the SETUP 4.0 will be at the forefront in the advancement of the technological needs of the MSMEs. The program intends to categorize MSMEs in terms of their level of development to deliver the appropriate S&T interventions. It shall likewise provide industry-level assistance. The program supports the vision of an "Innovative, Resilient, Sustainable and Globally-Competitive Gender-Responsive MSME Sector" that will nurture a sustainable economy and society for Filipinos in support of AmBisyon Natin 2040. It aims to transform the MSMEs into smart MSMEs through the SMARTER Strategic Themes as follows: Sustainable Economy, Market Competence, Able Human Capital, Responsive S&T Support Infrastructure, Technology and Innovation, Enterprise Support, and Resiliency and Continuity.

Banana fruit stalk, ideal material for composite boards used as insulation



The Philippines makes around 1.35 billion kilos of banana fruit stalk wastes every year. These stalks need not be thrown away, they can be made into thermal insulation boards.

By Rizalina K. Araral, DOST-FPRDI

What can be done with banana processing wastes?

A researcher from the Forest Products Research and Development Institute of the Department of Science and Technology (DOST-FPRDI) says that if these wastes are banana fruit stalks (also called peduncles), they can be used to make thermal insulation boards.

The Philippines makes around 1.35 billion kilos of banana fruit stalk wastes every year. These stalks need not be thrown away, they can be made into thermal insulation boards.

According to the Institute's Engr. Gilberto N. Sapin, "Our study shows that fibers from the fruit stalk of the saba banana

(*Musa paradisiaca*) are promising material for composite insulation boards. Such boards can be used in tropical countries to keep heat outside of

homes and buildings. The sample panels we produced are not yet perfect. We still need to make a few adjustments on them, but our initial findings are very encouraging."

Incidentally, the Philippines is one of the world's top producers of banana and therefore, one of the top generators of banana fruit stalk wastes. In Mindanao alone, some 1.35 billion kilos of these stalks are produced every year and left in the fields to rot.

Reports Sapin, "Mixed with the right amount of fibers and binders, the banana peduncle fibers we studied gave us

boards suitable for thermal insulation. For tropical countries like the Philippines which are getting hotter temperatures due to the climate crisis, insulation panels will be very useful as they keep heat outside of homes and buildings."

Sapin also learned through an initial study that the peduncle fibers of lagkitan banana (*Musa acuminata*) are also promising material for composite boards. At present, natural fiber composites are commonly used worldwide for walls, ceilings, floors and cabinets, crates, and car parts.

The findings stated above were part of Sapin's thesis for his MS in Material Science at the University of the Philippines Diliman under the supervision of Dr. Leslie Joy L. Diaz.

DOST-ASTI's Kooha hold smartphone photography workshop series

By Rachel R. Perez, DOST-ASTI

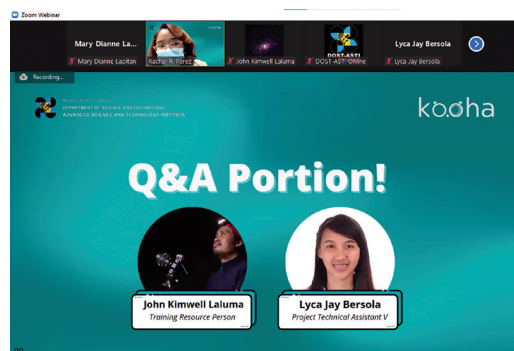
The Kooha project, a mobile photo sharing application, successfully conducted its two out of three online workshop series titled, “Kooha Smartphone Photography Workshop Series,” with participants from different agencies of the Department of Science and Technology (DOST), last 13 and 18 July 2022. The webinar series is organized by the DOST's Advanced Science and Technology Institute (DOST-ASTI).

Kooha was first launched last March 2021 and started to catch interest from its media partners. As DOST-ASTI attempts to further improve the Kooha app and gain more users and testers, the team organized the online workshop series that aims to strengthen the knowledge, understanding, and skills of photography enthusiasts from DOST: to make the most of their smartphone cameras through the Kooha app; to establish a community

of Kooha users and testers; to generate interest among DOST staff in using the application; and, to gather feedback to further improve the application. Furthermore, the webinar will enable the participants to promote and increase



Download the app via Google Play Store (<https://bit.ly/3OTTZl8>). Kooha na!



Screenshot photo during the Q&A portion of “Kooha Smartphone Photography Workshop Series” held on 18 July 2022.

the level of awareness on science, technology, and innovation of various publics.

John Kimwell Laluma, the resource speaker, is a Landscape and Commercial photographer that still considers himself a student of the industry as he imparted that photography is a continuous learning process. Laluma, who started in humble beginnings, was able to win in several competitions and has been featured in some publications both online and in print. He generously shared his knowledge on basic photography and gave tips on how to

achieve his eye-catching photos.

Furthermore, Laluma along with Lyca Jay Bersola, a representative from the Kooha team, warmly entertained the queries of its participants via Zoom and Facebook live during the “Question and Answer” portion. At the end of the workshop, the organizers created a mini activity with exciting prizes.

For more updates, visit and follow Kooha on TikTok (<https://www.tiktok.com/@kooha.ph>), and Facebook (<https://www.facebook.com/koohaapp>).

Pinoy students show technical knowledge in space science camp mission proposals, environmental awareness

Text & photos from PhilSA

It's not just the catchy mission names like "Sun: AOL" or "Oh my Venus" that impressed the scientists from the Philippine Space Agency (PhilSA) who evaluated the space mission proposals presented by participants during the last day of LIFT OFF: PhilSA Space Science Camp 2022 held virtually on 21 July 2022.

Jamaica Pangasinan, Senior Science Research Specialist at the Space Mission Control and Operations Division (SMCOD) of PhilSA says, she was struck by the incoming senior high school students' level of environmental and social awareness as reflected in their outputs: "The mission objectives showed the students' eagerness on solving present challenges and threats confronting our environment. It was heartening to see that. I hope they stay passionate about helping the people and the planet as they pursue their interest in space science and technology."

Touch Down Earth: Space Mission Proposals is one of the culminating activities of the three-day hybrid camp held from 19 to 21 July 2022, organized by PhilSA in partnership with the Department of Education (DepEd), Department of Science and Technology-Science Education Institute (DOST-SEI), Moon Village Association (MVA), and the University of the Philippines National

Institute for Science and Mathematics Education (UP NISMED). This activity was designed to see whether the participants were able to learn the concepts from Day 1's lectures on space missions and satellite payloads. On Day 1, Pangasinan conducted the lecture on space missions, while Dr. Paul Leonard Atchong Hilario, Space Science and Technology Applications (SSTA) Researcher II at PhilSA Spacecraft Payload and

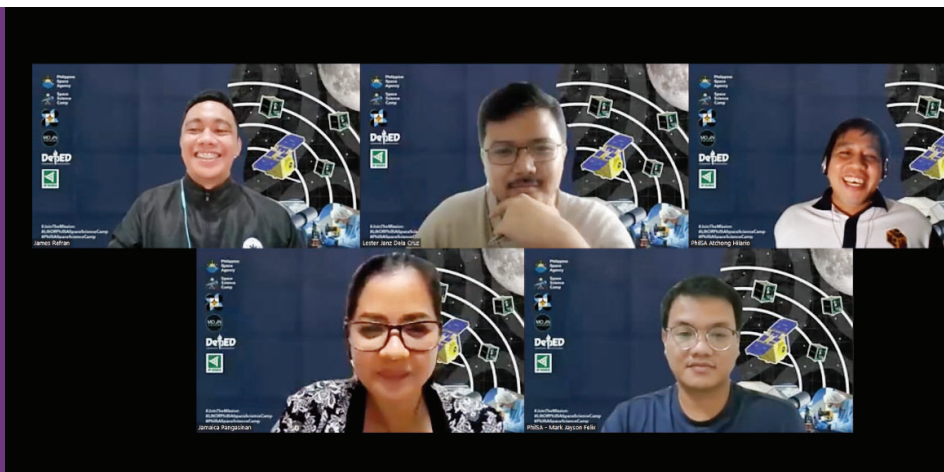
Communications Systems Development Division (SPCSDD), facilitated the discussion on satellite payloads.

"The ideas presented showed that the students researched their proposals well. They used not only what they

continued on next page



(From left to right): Felix of PhilSA ESSMSD, third placer Lee Ramses Ibannez of Makati Science High School, High Tide champion Benedict Pangilinan of Navotas National Science High School, second placer and elimination round highest scorer Lance Chrysler De Jesus of Caloocan National Science and Technology High School, Dr. Refran of the ESSMSD, and Tricia Zafra of PhilSA PRID.



(Top L-R) Touchdown Earth: Space Mission Proposal emcees Dr. Refran of the Earth Sciences Space Mission Studies Division (ESSMSD) and Lester Janz Dela Cruz of the Public Relations and Information Division (PRID) seek the comments of judges Dr. Hilario, (Bottom L-R) Ms. Pangasinan and Mr. Felix on the presented mission ideas.

Pinoy students (from page 7)

learned in the camp, which is apparent in their presentations, but also, concepts and technologies they figured out themselves,” Dr. Hilario says.

Fourteen science high schools from the 16 divisions of Metro Manila selected by DepEd to join the camp presented their space missions. Each team was given five (5) minutes to describe the mission of their satellite, its key technical features, and why it is important. PhilSA Earth Sciences Space Mission Studies Division Senior Science Research Specialist, Mark Jayson Felix noted the variety of missions the students came up with ranging from Earth Observation to space debris monitoring to planetary probes.

“I am surprised with the diversity and high level of the technical accuracy of space missions presented. This tells me that we won’t be short of space missions to pursue in the future.”

The mission presentations were rated by Ms. Pangasinan, Dr. Hilario, and Mr. Felix based on creativity, technical soundness, and time management. Two (2) missions bested the rest of the proposals. These are “MIMA” or the Monitoring Illegal Mining Activities in Remote Areas by Bianca Louise B. Cruz and Oscar A. Araja II of the City of Mandaluyong Science

High School, and “V-SAMS” or the Venus Seismic Activity Monitoring Satellite by Peter James Lyon and Ysabela Juliana Bernardo of Caloocan City Science High School.

The students behind MIMA explained that their satellite mission aims to protect the environment and strengthen the implementation of mining laws and regulations in the country. Based on their proposal, MIMA would be a Synthetic Aperture Radar (SAR) satellite that could see through the cloud cover to detect changes in areas where mining activities could be present. It would use optical imagers to capture images.

The objective of V-SAMS, on the other hand, would be to learn more about the Earth’s twin planet, Venus, particularly, its seismic activities. To be able to achieve this, V-SAMS would use infrared imaging to monitor the surface temperature of Venus’ volcanoes, identify which ones will erupt, and discover other active volcanoes on the planet. It would also have an interferometric SAR (InSAR) to detect deformations and signs of seismic activity on Venus’ surface. In addition, V-SAMS would be equipped with an optical payload to take high-resolution images.

The mission proposals as well as the camp lectures will be uploaded to this within the month.

Navotas National SHS dominates space quiz bee

On Day 2, held in person at the University Hotel, UP Diliman, Quezon City on 20 July 2022, all student campers went head-to-head at the High Tide: Space Science Contest. The participants were given 30 minutes to answer a pen-and-paper elimination test consisting of 50 questions. Lance Chrysler De Jesus of Caloocan National Science and Technology High School got the highest score in this round. De Jesus also clinched the second spot in the quiz bee finals. Lee Ramses Ibañez from Makati Science High School won third place, while Benedict Pangilinan of Navotas National Science High School won the championship.

“The space science camp team is truly grateful to our partners, resource persons, participants, facilitators, and supporters. As we prepare for a bigger camp next year, we hope everyone will continue to support PhilSA in all its initiatives,” LIFT OFF co-lead Dr. James Cesar Refran said.

For inquiries, please email publicrelations@philsa.gov.ph

Make nuclear power a part of the solution to meet energy demand, expert urged

By Geraldine Bulaon-Ducusin, *DOST-STII*

“We need to keep an open mind, make it a part of the solution to meet an increasing energy demand, while meeting low carbon diet.”

This is according to Dr. Art Romero, on the mothballed Bataan Nuclear Power Plant. Romero is a geoscientist at Lawrence Berkeley National Laboratory Berkeley, California and one of the panelists in a webinar on “Integrated Energy Solutions Addressing Security and Sustainability”.

Romero believes that the country’s transition to cleaner energy based on the Department of Energy’s (DOE) roadmap is doable in a gradual fashion, without putting a heavy burden on the economy.

The Philippine Energy Plan (PEP) is a comprehensive roadmap of programs and projects of the energy sector to ensure sustainable, stable, secure, sufficient, accessible, and reasonably-priced energy.

Romero recommended some measures to secure energy sources. One of which is to facilitate the indigenous energy exploration and development for both conventional and clean energy sources to avoid the cost of importing oil. This would drive the cost down and help ordinary consumers.

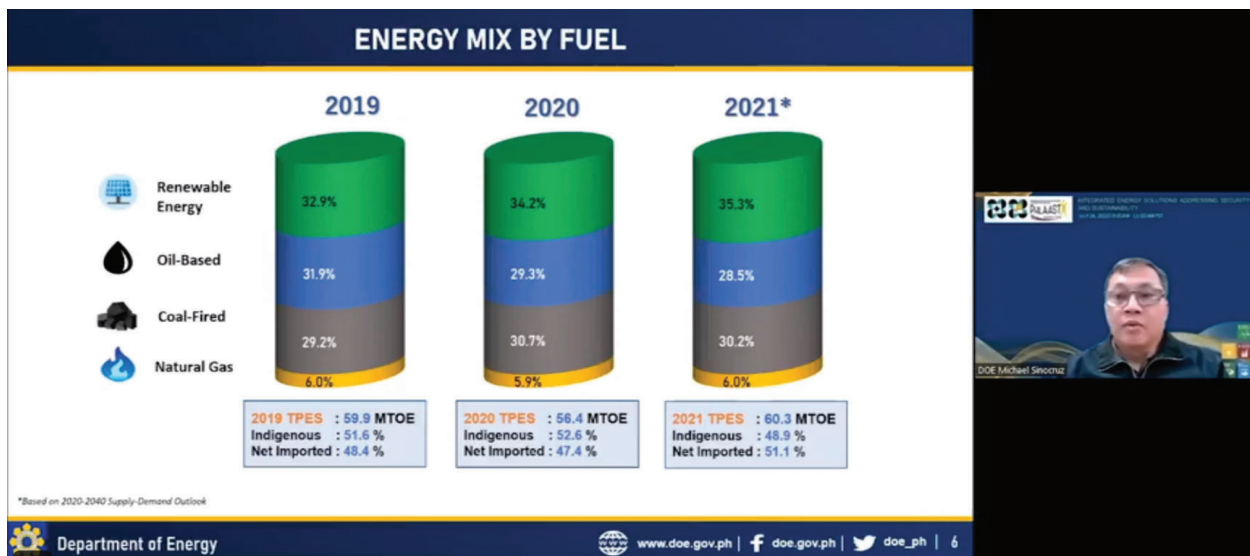
The second measure is the need to continue to diversify power generation, and distribution, while encouraging grid interconnectivity were possible; increased competition drives prices

down; and interconnected grids improved reliability and minimize power outages. The last proposed measure is the need to keep nuclear option open.

“From an economic standpoint, it may be cheaper to revive a mothballed facility than to build a new one. Note that nuclear is considered clean since it doesn’t contribute to carbon emission,” Romero explained.

Nuclear power is the second largest source of low carbon electricity today. With almost 500 operating reactors globally, providing ten percent of global electricity supply, nuclear power is safe as wind and solar, but its image has suffered from low probability, high consequence events like Chernobyl and Fukushima.

continued on page 11



(Photo grabbed from the webinar) Michael O. Sinocruz, OIC-Director III, Energy Policy and Planning Bureau, DOE, discussed the energy status, as well as the energy roadmap of the Philippines during the webinar on “Integrated Energy Solutions Addressing Security and Sustainability”.

(Photo grabbed from DOST-ITDI's World Metrology Day Celebration virtual webinar in DOST-ITDI Updates, a Facebook Page): Metrology in the Digital Era Forum: Ahdrian Camilo C. Gernale, a Science Research Specialist from DOST-ITDI, said that the proposed Modernized National Measurement System Act, submitted at both in houses of Congress and the Senate, will facilitate the development of scientific and technical knowledge and progress in the national economy by providing a modernized National Measurement System (NMS) that will ensure the integrity of measurements in the country, meet regional and international requirements, and provide support for the competitiveness of Philippine products and services.

Issues and Challenges

Background of the Bill

Recommended Action



Lack of Government Support

	Metre Convention	OIML Convention	Designated National Metrology Institute (NMI)	NMI Annual Budget (in US\$ millions)	Calibration & Measurement Capabilities
Philippines	Associate (2002)	Corresponding Member (1974)	none	< 0.5	31
Indonesia	Signatory (1960)	Signatory (1962)	Badan Standardisasi Nasional	2.4	140
Malaysia	Signatory (2001)	Corresponding Member (1999)	National Metrology Institute of Malaysia	7.0	119
Singapore	Signatory (1994)	Corresponding Member (2000)	National Metrology Centre	undisclosed	387
Thailand	Signatory (1912)	Signatory (1994)	National Institute of Metrology Thailand	7.8	281
Viet Nam	Associate (2003)	Signatory (2003)	Viet Nam Metrology Institute	3.8	36

Gov't lost about PhP 10B due to outdated metrology law

By Geraldine Bulaon-Ducusin, DOST-STII

An estimated PhP 10B in government revenue was lost due to poor market surveillance and enforcement of penalties to regulate measuring instruments. An estimated PhP 240M losses were due to inaccurate weighing instruments.

This is what Ahdrian Camilo C. Gernale, a Science Research Specialist at the National Metrology Laboratory (NML) at the Department of Science and Technology-Industrial Technology and Development Institute (DOST-ITDI), said during the recent World Metrology Day Celebration with a theme of "Metrology in the Digital Era".

A country's economic growth relies on the ability to design, innovate, manufacture and trade high-quality products and services. Metrology affects the country's measurement capabilities, which helps

the government provide domestic and international confidence in products and services, reduces technical challenges to trade exports, and ensures the quality of imports.

Currently, the country's National Metrology operates as a division or Laboratory under the DOST-ITDI and acts as the National Metrology Institute of the country. The mandates and functions of NML are limited by what's outlined in the outdated Republic Act 9236 or the Metrology Act of 2003, which are as follows: that NML will carry out the technical calibration in laboratory functions to implement the provisions of the Act efficiently. There's a downside to this, though. NML performs these four functions: Calibration and Testing; Proficiency Testing; Consultancy; and Training, but it is not structurally designed, and it does not have the mandate and full capability to carry out measurement

functions necessary to respond to the needs of industry 4.0 – which are for more technologies and industries to utilize high-accuracy measurement data like sensor-based decisions and predictions, artificial intelligence, modeling of measuring instruments, and measurement-based research and development support for our STI community as compared to the foreign national metrology institutes.

"It affects our country's calibration and measurement capabilities which equates to higher cost of exporting products, eventually becoming less competitive in the international market," Gernale explained the implication of having an outdated measurement system.

Numerous laws in the Philippines need measurement to enforce penalties or sanctions. A review of rules and regulations shows that measurements

affect the state and its citizens, such as the Dangerous Drug Act, Pollution Control, Anti-over speeding, Consumer Act, and Timbangan ng Bayan.

Gernale cited that all of the above-cited policies, which may need some refinements in measurement units to prevent the use of inaccurate, incompatible units, are outside the current scope of the NML, currently a division-level laboratory.

Gernale cited that in comparison with other member states of the ASEAN, the Philippines lack government support in funding. Its ASEAN counterparts, however, such as Indonesia, Malaysia, Singapore, Thailand, and Vietnam, have long established their respective Metrology Institute. Nearly two decades later, DOST is pushing for the passage of a bill on the Modernized National Measurement System Act. This bill will

enable the country to catch up with its ASEAN neighbors and upgrade the government's metrology services that are more responsive to the industry.

NML's importance stems from its being the authority capable of maintaining and developing national measurement standards for the country. It provides measurement traceability to the international system of units (SI) for all measurements used in the country, as well as technical support to calibration laboratories, industries, and regulators; it also appoints competent laboratories as designated institutes for specific measurement fields of national interest not covered by the NML.

NML also represents the views and interests of its own country at international meetings, fora, and conventions. Also, it carries out, engages, and coordinates research in metrology for the benefit of local users.

The proposed Modernized National Measurement System Act, submitted to both houses of Congress, will facilitate the development of scientific and technical knowledge and progress in the national economy by providing a modernized National Measurement System (NMS) that will ensure the integrity of measurements in the country, meet regional and international requirements, and provide support for the competitiveness of Philippine products and services. It aims to strengthen the National Metrology Board responsible for standardizing, delineating, overseeing, and coordinating the implementation of legal metrological controls in the country by national regulatory agencies, local government units, and other public and private entities authorized by it, in the interest of fair trade, consumer protection, health, safety, law enforcement, and environmental conservation.

Make nuclear (from page 9)

Romero emphasized, however, the need to conduct due diligence, technical hazard studies, engineering and safety reviews. Also, the need for government action support, especially on the need to raise public awareness on the consequences of global warming and the need for clean energy.

"We need public support to influence public officials to act. This is a global issue with a direct impact on the Philippines," Romero said.

DOE reported that the total primary energy supply (TPES) in 2021 reached 60.3 million tonnes of oil equivalent (MTOE), from 56.4 MTOE in 2020, indicating an increase in energy demand. Energy self-sufficiency, on the other hand, decreased from 52.6% in 2020 to 48.9% in 2021.

Michael O. Sinocruz, OIC-Director, Energy Policy and Planning Bureau, Department of Energy, reported that coal remains as the dominant fuel used for power generation at 58.2% in 2021, while renewable comprises on 22.0%.

The country's goal towards attaining the Clean Energy Scenario (CES) for the Filipinos by 2040 entails the Reference Scenario (business-as-usual) serving as frontrunner but leveling it up by expanding the use of renewable energy and other energy technologies, strengthening energy efficiency and conservation, implementing appropriate information and communication technologies (ICT) in the energy chain, and building up energy resiliency. This will pave for the sector's vision of energy security, sustainable energy, resilient infrastructure, competitive energy sector, smart homes and cities, and empowered consumers.

The total required energy investment needed to realize the CES by 2040 will be USD 153 Billion. From this, investment needed for renewable energy alone would be USD 94.3 Billion.

The DOE Act of 1992 or Republic Act No. 7638 laid the basis to develop and update the existing Philippine energy program which shall provide for an integrated and comprehensive exploration, development, utilization, distribution and conservation of energy resources, with preferential bias for environment-friendly, indigenous, and low-cost sources of energy.

The webinar was hosted by the Department of Science and Technology-Industrial Technology Development Institute (DOST-ITDI),



DOST puts up Iloilo Ground Receiving Station to benefit local communities

By Katrina Mina, DOST-ASTI

As part of its long-term goal to nurture the emerging space technology industry in the Philippines, researchers from the Advanced Science and Technology Institute of the Department of Science and Technology (DOST-ASTI) successfully communicated with Diwata-2 through the latest addition to our space infrastructure, the Iloilo Ground Receiving Station (GRS).

The team of researchers led by DOST-ASTI Director Franz A. de Leon visited the Iloilo GRS from 27 July to 04 August 2022 to personally observe the

operation of the facility. During the visit, the team conducted testing, validation, and initial operations of the ground receiving station. The team also met with Dumangas Mayor Braeden John Biron to discuss possible collaborations to better deliver the service.

“The operationalization of the Iloilo GRS is a welcome development, and it is a great addition to our existing space technology infrastructure. We wanted to establish a ground station on every major island in the country. With the Iloilo GRS in place, we now have stations in Luzon, Visayas and Mindanao. This will

allow for greater operational flexibility and the needed redundancy of critical infrastructures,” said de Leon.

The Iloilo GRS, located in the Climate Field School in Dumangas, Iloilo, is equipped with a 3.5-meter Earth Observation satellite tracking antenna. Initially erected in 2019, the testing for the operationalization of the antenna started in 2019 by researchers from the Philippine Earth Data Resource and Observation (PEDRO) Center. However, due to the restrictions of the COVID-19 pandemic, delays on the testing of the antenna occurred.

“We’re very proud to announce that the Iloilo GRS is now operational. The GRS will now be used as one of the primary ground infrastructures for Diwata operations. We initially wanted to start the operations of the Iloilo GRS in 2020, but due to the travel restrictions brought by the COVID-19 pandemic, we were only able to travel to Iloilo now,” said PEDRO Center’s Senior Science Research Specialist Harold Bryan Paler.

The satellite tracking antenna was made possible through the collaboration between DOST-ASTI and Hokkaido University in Japan through the project Understanding Lightning and Thunderstorms for Extreme Weather Monitoring and Information Sharing (ULAT). The project is also implemented in cooperation with the Japan International Cooperation Agency (JICA) and Japan Science and Technology Agency (JST) as an Official Development Assisted (ODA) project.

“The Iloilo Ground Receiving Station can provide a larger network for easier and faster download of Diwata images. The target pointing capability of Diwata can be used to capture stereo-images of convective systems to better understand their evolution and structure during or at the onset of convection,” said ULAT Project’s Senior SRS Ellison Castro.

The ULAT Project aims to understand the country’s weather patterns by studying rainfall and lightning occurrences and their relationship with each other, which may improve our short-term forecasts. One of the project’s facets is to improve extreme weather monitoring by creating 3D models of thunderclouds using meteorological satellites. With this capability, the project can help improve weather forecasting to keep vulnerable communities safe.

Aside from DOST-ASTI, the establishment of the GRS in Iloilo is also looking to benefit the local community.

“We are also in early talks with Dumangas Mayor Braeden Biron on how we can use the ground station for Dumangas. Right now, we are looking into providing satellite image services to the community and then conducting training about remote sensing applications to the academe and their relevant government agencies. Aside from satellite image services, we could also offer other technologies offered by DOST-ASTI such as wireless technologies and other ICT,” Engr. Paler added.



The PEDRO Center is the facility that established ground receiving stations in the country equipped with satellite tracking antennas that receive, process, and distribute spaceborne data. These can be used for various applications such as disaster risk management, environmental monitoring, and terrestrial and maritime surveillance. Currently, the PEDRO Center also has facilities in Metro Manila (est. 2016) and Davao City (est. 2019).

Digihub FabLab donates standing frames to help kids with orthopedic disabilities stand

Text and photo from DOST-XI

The Digihub Fabrication Laboratory (Digihub FabLab), a joint project of the Department of Science and Technology (DOST)-XI, Department of Trade and Industry-XI, and the University of Southeastern Philippines, donated Pedia Standing Frames to Tebow CURE Hospital to assist kids with cerebral palsy last 4 August 2022.

Standing Frames or Standers are assistive technologies used by people with orthopedic disabilities to improve mobility.

DigiHub FabLab fabricated the Pedia Standing Frames developed by the “Stand With Me” organization, a non-profit organization based in Hanover, New Hampshire, United States which produces and distributes affordable

therapeutic home-care devices for children and adults worldwide.

The fabricated Stander helps children with cerebral palsy by supporting their weight, providing stability which allows them to stand for an extended period.

Jade, a four-year-old a kid with cerebral palsy, was the first beneficiary of the Pedia Standing Frame.

“Happy kaayo ko kay dako na kaayong tabang sa amoa na nahatagan siya ani, ug dili na kaayo gasto (I am very happy because this (Standing Frame) is a huge help for us and will also reduce our expenses),” said Jolina, mother of Jade.

DOST-XI City Science and Technology Office Head Mr. Arnel M. Rodriguez

said that the fabricated frames used materials like wood to reduce costs and make it affordable for those who will purchase compared to standing frames sold abroad.

“These (Standing Frames) will give them an opportunity to live life standing upright,” he added.

Dr. TJ Braganza, a physiotherapist of Tebow CURE Hospital, said that the Standing Frames could help improve the muscle activity of kids with cerebral palsy.

Rosemarie Baco, Director for Hospital and Field Operations of Tebow CURE Hospital, also expressed gratitude for the Pedia Standing Frames and hopes that more children will receive them in the future.

DOST-XI launched DigiHub Fablab in 2019 as a component facility to produce designs using graphics workstations and to develop packaging prototypes. The laboratory provides various services using a 3D printer, laser cutters, large format printers, handheld 3D laser scanners, UV printers, embroidery machines, heat press for fabric, and Tungsten Inert Gas(TIG)-welding.



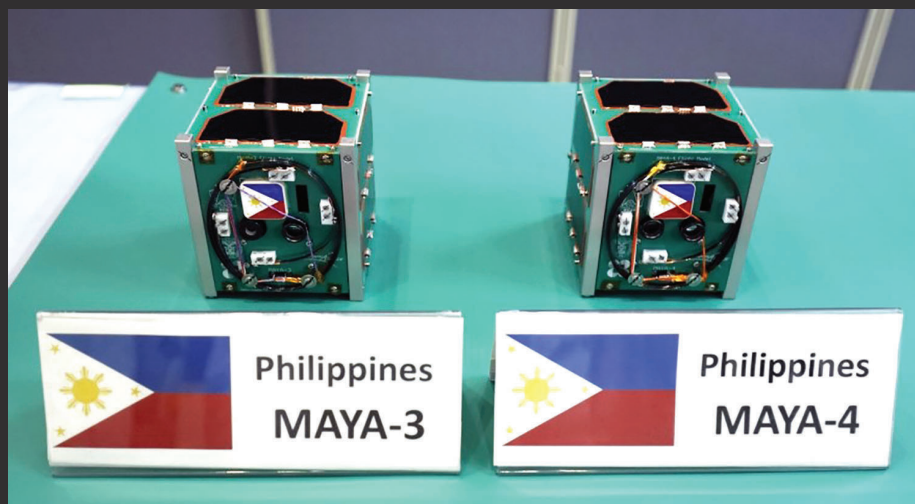
4-year-old Jade stands for the first time with assistance from the standing frames

MALIGAYANG PAGBABALIK

**MAYA-3 AT
MAYA-4!**

1st Philippine university-built CubeSats Maya-3 and Maya-4 successfully completed mission tour

Text and photos from PhilSA



First Philippine university-built satellites designed and developed by the first batch of scholars under the (STAMINA4Space) Program decommissioned.

Welcome back, Maya-3 and Maya-4!



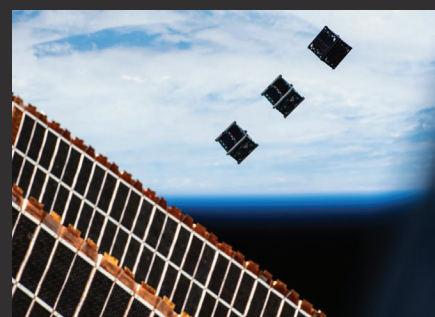
Ten months after their deployment into orbit, Maya-3 and Maya-4 re-entered the Earth's atmosphere on 04 August 2022 at 10:01 p.m. PhST, and 08 August 2022 at 4:09 p.m. PhST respectively, ending a successful mission. Maya-3 and Maya-4 were the first Filipino cube satellites (CubeSats) built in a local university setting, designed and developed by the first batch of scholars under the Space Science and Technology Proliferation through University Partnerships (STeP-UP) project of the STAMINA4Space Program.

"Maya-3 and Maya-4 were pivotal in the development of the local space industry. These CubeSats are experimental and educational platforms, and while all low earth orbiting satellites will eventually

fall to earth, what matters more are the lasting intangibles that the project brought - knowledge, skill, partnerships, and confidence that we can do it," said Dr. Maricor Soriano, program leader of STAMINA4Space Program.

Maya-3 and Maya-4's bus systems are fashioned after Maya-1's bus heritage, with enhancements in the antenna board. One of the missions of both satellites is to carry a commercial off-the-shelf APRS-Digipeater Payload Demonstration (APRS-DP mission), which uses packet radio technology to transmit information over amateur radio. The CubeSats are identical except for a near-infrared camera mounted on Maya-4, which made the only difference in their missions.

Cube satellites, Maya-3 & Maya-4, along with Binar-1 from Curtin University,



Cube satellites, Maya-3 & Maya-4, along with Binar-1 from Curtin University, Australia, are deployed from the Kibo on October 6, 2021. Photo courtesy of JAXA/NASA

Australia, are deployed from the Kibo on 6 October 2021. Photo courtesy of JAXA/NASA

Both CubeSats were able to transmit APRS beacons to ten countries on



The 1st batch of STeP-UP Scholars with the Maya-3, Maya-4 flight model. (l-r) Renzo Wee, Gladys Bajaro, Christy Raterta, Marielle Magbanua-Gregorio, Bryan Custodio, Lorilyn Daquioag, Judiel Reyes, and Derick Cancaran.

different occasions. Different amateur radio operators from eight countries were also successful in digipeating through the satellites.

“Maya-3 and Maya-4 showed that the country is capable of building satellites locally. We have successfully transferred the knowledge and know-how acquired abroad by virtue of foreign studies and proliferated those lessons locally,” said Engr. Renzo S. Wee, one of the engineers who developed the satellites.

Engr. Renzo was joined by Engr. Gladys Bajaro, Judiel Reyes, Derick Cancaran, Marielle Magbanua-Gregorio, Lorilyn Daquioag, Bryan Custodio, and Christy Raterta in the development of the satellites.

Maya-3 and Maya-4’s engineers also looked back to the challenges they faced during the development of the satellites.

“It was a great challenge to be the first to do such a project locally. Being the pioneering batch to have a local project for satellite development was not easy since expectations were high. We had a vague map of where we were going,

but we were tasked to navigate it in a local setting. But it became our greatest achievement, we were able to build the satellites and successfully deployed them into orbit,” said Judiel Reyes.

Engr. Gladys Bajaro also recalled the larger lessons she learned from developing the satellites.

continued on page 19

The Space Technology Applications Mastery, Innovation, and Advancement (STAMINA4Space) Program is funded by the Department of Science and Technology (DOST), monitored by DOST’s Philippine Council for Industry, Energy, and Emerging Technology Research and Development (DOST-PCIEERD), and implemented by DOST’s Advanced Science and Technology Institute (DOST-ASTI), and the University of the Philippines Diliman (UPD). It further aims to develop deep expertise that enables and sustains the growth of a local scientific-industrial base in space technology and applications in the Philippines.

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PhilSA, DOST-ASTI, BSP kick off financial inclusion partnership through satellite tech

Text and photo from Philippine Space Agency

The Philippine Space Agency (PhilSA), the Department of Science and Technology Advanced Science and Technology Institute (DOST-ASTI), and the Bangko Sentral ng Pilipinas (BSP) have taken the first steps toward financial inclusivity through satellite internet.

On 28 and 29 July, technical teams of PhilSA, DOST-ASTI, and BSP initiated the test deployment of the satellite internet service provided by iOne Resource, Inc. in two rural banks in Batangas—The Progressive Bank of Malvar and the Rural Bank of Cuenca. The said banks have earlier been identified by the Department of Information and Communications Technology (DICT) to be situated in Geographically Isolated and Disadvantaged Areas (GIDAs), where installation of additional terrestrial networks to boost connectivity may not be feasible.



DOST-ASTI Senior Science Research Specialist Engr. Harold Bryan Paler preparing to install a network performance monitoring apparatus to the satellite internet user equipment deployed at the Progressive Bank of Malvar

The provision of technical support to BSP is in line with PhilSA's mandate to enable other government agencies or departments, as well as the private sector, to perform their duties with the use of space science and technology applications and space data. "PhilSA and DOST-ASTI will process data to look at the network performance against the actual connectivity needs of the banks. Information from these reports will be utilized by BSP as we move this partnership forward," PhilSA Space Business Development Division Officer-in-Charge Ms. Ma. Victoria Gazmin-Basto said.

A Weather and Performance Monitoring System (WPMS) apparatus, developed by DOST-ASTI, was set up at locations near the two banks to gather data. The WPMS is equipped with a network performance monitoring device connected to the satellite internet user equipment deployed at the Progressive

Bank of Malvar and the Rural Bank of Cuenca. The said device measures network parameters such as upload and download speeds, throughput, latency, and jitter, among others. In addition, the WPMS consists of weather stations to simultaneously observe weather conditions such as rain, temperature, humidity, and pressure. The collected data will then be analyzed to examine and evaluate the performance and reliability of the satellite internet service under local weather conditions.

“DOST-ASTI welcomes this collaboration with PhilSA and BSP to demonstrate ASTI’s locally-developed technologies in applications that benefit the Filipino people. Aside from the WPMS, we are exploring how we can take our other homegrown technologies out of our labs and be of service, such as in bridging the

digital divide and in improving financial inclusivity,” DOST-ASTI Senior Science Research Specialist Bryan Paler said.

In the future, DOST-ASTI plans on harnessing the gains from the partnership by further educating people about financial literacy. “Aside from doing research on the efficiency and effectiveness of satellite internet services for banks, we also plan on using digital TV technology and internet infrastructure that we are developing to teach people in the unserved and underserved areas about financial literacy. We don’t just plan to equip them with the technology, we want to teach them how to use it for their betterment,” said DOST-ASTI engineer John Chris Kwong.

Out of 1,634 municipalities in the country, 33% or 533 municipalities are still

unbanked and do not have access to financial inclusion services. “We believe in the capability of satellite technology to enhance connectivity in rural areas, thereby expanding the capacity of banks to provide digital financial services and promote greater financial inclusion in unserved and underserved areas,” BSP Governor Felipe M. Medalla said.

With enhanced connectivity in rural areas, digital financial services such as remittances, bills payment, and opening transaction accounts, among others, would be more inclusive and accessible.

A Memorandum of Understanding (MOU) among PhilSA, DOST-ASTI, and BSP to promote access to high-quality financial services powered by internet connectivity is underway. This effort will further enable digital inclusivity as transactions and services move to online platforms.

1ST PHILIPPINE (from page 17)

“I learned a great deal about the different concepts in nanosatellite development and testing. Properly defining the design & test requirements and habitually revisiting these criteria are important as they will be the foundation when making critical decisions throughout the development phase of a satellite. But aside from that, it also helped me develop trust with my team members and nudge them to meet the project goal,” said Engr. Bajaro.

STeP-UP Project Leader Engr. Paul Jason Co said that the Maya-3&4 engineers are anticipated to be part of the country’s local space industry. He also laid out future plans for the space industry. “With Maya-3 and Maya-4, we proved that we can build our own cube satellites locally. We can locally develop the necessary expertise for our budding space industry. Now, Maya-5 & Maya-6 are on the way which will be continued by the Philippine Space Agency (PhilSA) through the Advancing Core Competencies and

Expertise in Space Studies Nanosat Project (ACCESS).”

The CubeSats were launched to the International Space Station (ISS) on 29 August 2021, aboard the SpaceX Falcon 9 rocket’s Dragon C208. On 6 October 2021, the CubeSats were deployed into orbit via Kibo Laboratory Module, along with Binar-1, developed by Curtin University in Australia. The next day on 7 October, beacons from the CubeSats were immediately received and decoded during their 9:00 AM PST pass remotely through the Philippine Universities Ground Archiving and Data Reception (PUGAD) station in UP Diliman.

Maya-3 and Maya-4 were built under the STeP-UP project of the STAMINA4Space Program, which is funded by the Department of Science and Technology (DOST) and is implemented by the University of the Philippines Diliman (UPD) and the DOST Advanced Science and Technology Institute (DOST-ASTI). The nanosatellite development track under

the Master of Science (MS) or Master of Engineering (MEng) program of the Electrical and Electronics Engineering Institute of the University of the Philippines Diliman (UPD-EEEI) is also implemented in collaboration with the Kyushu Institute of Technology (Kyutech) in Japan and with scholarship support from the Department of Science and Technology’s Science Education Institute (DOST-SEI).

One of STAMINA4Space Program’s thrusts is to cultivate the local space industry which can be achieved through building cube satellites locally. The experiences and learnings during the Philippines’ participation in the BIRDS Project which was in partnership with the Kyushu Institute of Technology in Japan led to the development of Maya-3 and Maya-4. Currently, the second batch of scholars of the STeP-UP Project is developing two more CubeSats, Maya-5 and Maya-6 which are built after the Maya-2 heritage and are slated to launch in 2023.

Green energy, eco-industrial park development in Palawan, top priority of DOST-MIMAROPA

Text and photo from DOST-MIMAROPA



Representatives from PSTC-Palawan, Palawan State University, Western Philippines University Provincial Government of Palawan, and LGU-Bataraza during the forum on “Island Green Energy Eco-Industrial Park Development Planning Masterclass Series: Second Session”.



Participants from PSU, WPU, PEZA, PPDO, MPDO-Bataraza, and MEEDO-Bataraza physically attended the activity.

In a recent forum titled “Island Green Energy Eco-Industrial Park Development Planning Masterclass Series: Second Session”, DOST-MIMAROPA through its Provincial S&T Center in Palawan showed its full support to promote the province of Palawan as a model island for green energy and eco-industrial park in the Philippines.

The activity, conducted in collaboration with the Philippine Economic Zone Authority (PEZA) and the Western Philippines University (WPU), was held last month in a hybrid setup— at the Municipal Lagoon, Brgy. Maranggas, Bataraza, Palawan and via Zoom.

As an island for green energy, Palawan will showcase and utilize cleaner, sustainable, and environment-friendly technologies and practices that will help in attracting investors and visitors in the province, not to mention preserving the province’s rich natural resources.

The second session of the said masterclass series focused on the Fundamentals of Green Energy Resource Mapping, Introduction to Eco-Industrial Park Development Planning, Fundamentals of Technology Management in the Context of Eco-Industrial Park Development, and the Palawan Island Power Development Plan 2014-2035. It was attended physically by 13 participants from Palawan State University (PSU), WPU, Provincial Planning and Development Office (PPDO), Municipal Planning Development Office of Bataraza (MPDO-Bataraza), PEZA, and Municipal Economic Enterprise Development Office of Bataraza (MEEDO_Bataraza); and virtually by 21 participants from WPU, Department of Energy (DOE), Palawan Council for Sustainable Development (PCSD), TUP-Manila, and TUP-Visayas.

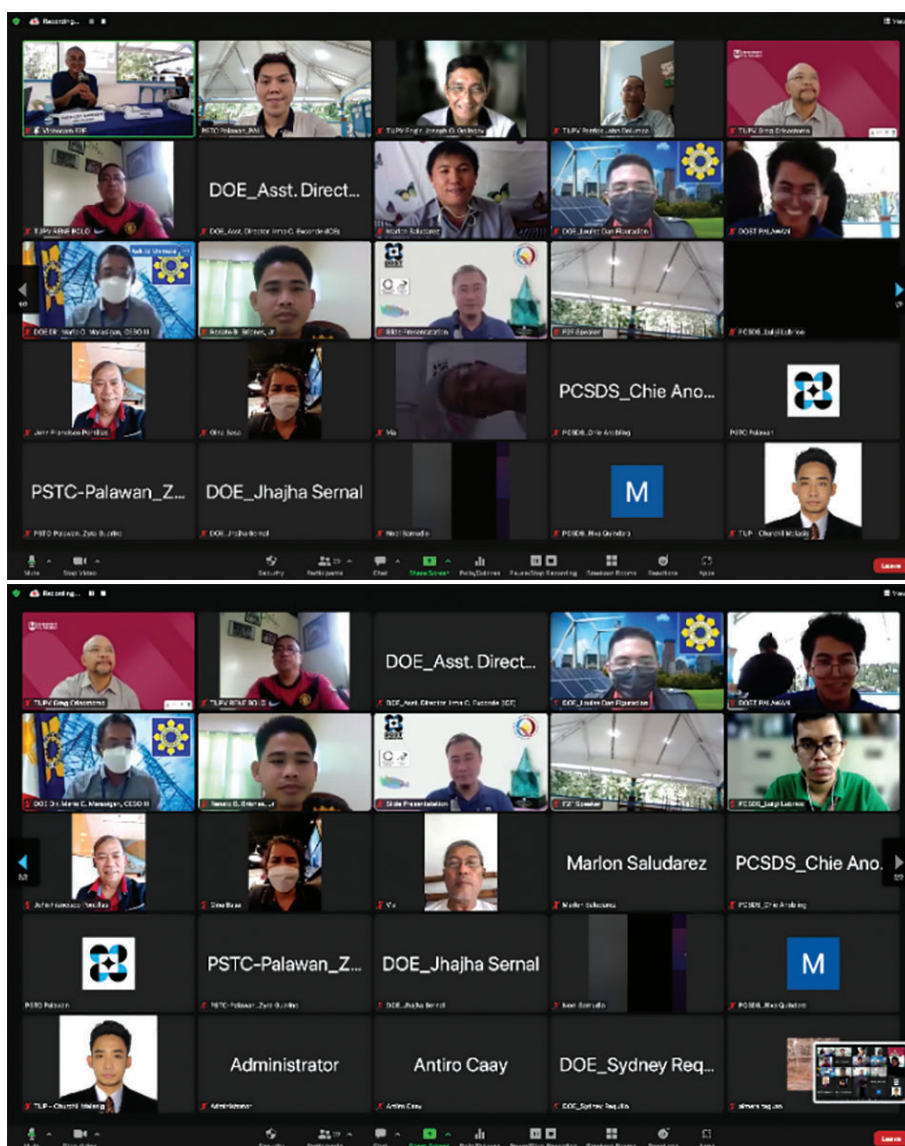
The masterclass series is composed of five (5) phases or sessions which will serve as preparation for the formulation

of a project concept paper for the use and reference of the adopters, agents, and enablers of green energy and eco-industrial park development in the country.

The other four sessions (4) are designed for other areas in Palawan that have the potential to engage and adopt the green energy and eco-industrial park framework. The first session was held in El Nido last 22 June 2022. Sessions included discussions on geoeconomics endowments and sociocultural

characteristics of Palawan, Palawan energy and power demand and supply forecasts, fundamentals of green and smart energy, and managing green power technology.

The third to the fifth session that will fortify the strategies of promoting Palawan as a model island for green energy and eco-industrial park development will be conducted in Puerto Princesa City and San Vicente, Palawan this coming September to October 2022.



Screenshots of online participants via ZOOM

Making STEAM Come True:

How DOST's Science Bus Sparks Students' Interest in Scholarships and Science Careers

By Lovely Barba-Aquino, DOST-SEI

After a pandemic-forced hiatus, the Department of Science and Technology-Science Education Institute (DOST-SEI) restarts nuLab, a mobile science laboratory for senior high school students. For its first road trip, it sailed to northern Iloilo to bring the nuLab brand of hands-on science activities facilitated by some of the country's top scientists.

“**M**ay lighter side din pala ang science,” says senior high student Kent

Venturanza after attending a session aboard nuLab, a mobile science bus of the Department of Science and Technology-Science Education Institute (DOST-SEI). The session, titled “Mathsaya,” was facilitated by Dr. Jomar Rabajante, Dean of the University of the Philippines Los Banos Graduate Studies, and Dr. Ariel Babierra, a professor from the same university.

Dr. Rabajante and Dr. Babierra inarguably captured the interest of the 24 participants, all senior high students from Anilao National High School in Anilao, a municipality in northern Iloilo. “After more than two years, we were able to run again our nuLab training module on mathematics for visual arts,” says Dr. Rabajante, who delightfully infuses the arts in his advanced mathematics module. “We hope we were able to

inspire the students to pursue STEM careers in the future. Truly MathSaya Magdrawing!”

The Mathsaya module was also conceptualized by Dr. Rabajante, especially for nuLab sessions.



2021 Outstanding Young Scientist awardee, Dr. Jomar Rabajante, and UPLB mathematics professor Dr. Ariel Babierra prove that math is fun in their Mathsaya Magdrawing module. Photo by: Kenneth Boston/DOST-SEI



Students from Anilao National High School in Iloilo create lines and drawings using mathematical equations and solutions during the Mathsaya Magdrawing module of nuLab. Photo by: Kenneth Boston/DOST-SEI



The nuLab science bus at the DOST compound in Taguig City. Photo by: Christian Chester Lozada

"In nuLab, we had a deeper experience in Mathematics," Kent adds as they learned using GeoGebra and MS Excel to draw parametric curves.

Kent's fellow participant, Gelyn Mae Rodriguez, shares how they enjoyed the activities, learning and enjoying the concepts of polynomials, combination, and Cartesian coordinate system using Bezier curves.

The students were also amazed at how approachable the facilitators were.

"Science and mathematics are intimidating subjects for many students, so in nuLab, we're trying to change that," explains Candy Ilaw, project leader of nuLab. "It helps to have a pool of young, competent, and humble scientists and educators as facilitators."

Ilaw used to teach at the Science Explorer (SciEx), the DOST-SEI's first science bus. Aware that the students' ability to learn has to do with overcoming fear and anxiety, she scouts for scientists

who can establish a good rapport with students. And as it happens, the Philippines is not lacking in science professionals who are natural at teaching. "We're lucky that despite their accomplishments and busy schedules, many scientists and engineers are willing to teach at SciEx and nuLab," she adds.

nuLab, at first sight

The bright yellow bus is DOST-SEI's second mobile learning facility for young learners.

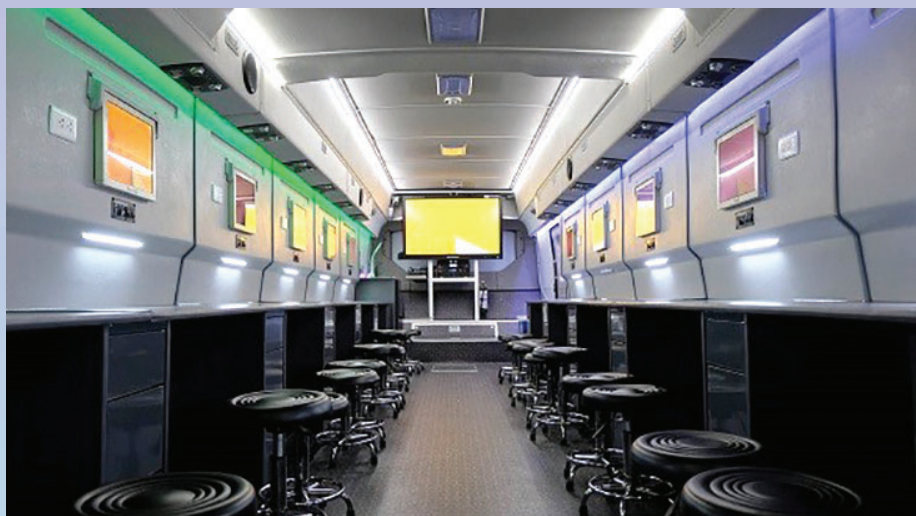
In 2010, the Institute launched the Science Explorer, catering to elementary and junior high school students. SciEx has traveled all over the country, prioritizing students from public schools in fourth and fifth-class municipalities without laboratories.

Requests for SciEx pour in from DOST regional offices and public and private schools in various cities and municipalities. While there is always a plan to refurbish the bus or purchase

another vehicle to turn it into a mobile lab, it did not materialize until the nationwide implementation of the K-12 curriculum.

In response to the new curriculum and the growing demand for SciEx, the DOST-SEI launched nuLab in 2019. The nuLab bus, aimed primarily at senior high school students, offers advanced STEM modules, focusing on emerging science courses to provide students a glimpse of these science careers.

While nuLab emphasizes science, technology, engineering, and mathematics (STEM) education and careers, the modules are designed to develop students' soft skills, particularly in communication, collaboration, and creativity. Concepts and approaches in the arts are integrated, especially in modules such as Science Filmmaking and Science Communication, giving nuLab participants the advantage of getting acquainted with STEM and STEAM (science, technology, engineering, arts, and mathematics) career paths.



DOST's nuLab bus is equipped with modern classroom and laboratory facilities. It can accommodate 24 participants. Photo by: Christian Chester Lozada

Each session is limited to 24 participants and lasts for about three hours.

The bus is carefully designed, merging the modern classroom and laboratory. There's a huge interactive board, individual monitor for students, laboratory-grade equipment, wireless sensors, and more.

There are instances when laboratory experiments are held outside the bus, in tents that the nuLab team would set up, or in classrooms to accommodate more participants. Some schools also request special sessions for the teachers who wish to learn the modules' content and the facilitators' methods to implement these in their classes.

#Push4Science

For DOST-SEI, nuLab is so much more than a science bus; it's more than STEM in motion. It is an experience. It's a chance to meet a Filipino scientist, an exemplar, a possible mentor. It's a vehicle for realization that STEM might be one's rightful career and purpose, hence a project catchphrase, "STEM is my nuLab."

Indeed, part of nuLab's call-to-action is the Push4Science segment which introduces the DOST scholarship programs to students. Marco Melgar, project leader of Push4Science scholarship caravan, says it's a challenging but fulfilling project.

"Promoting DOST scholarships is the easy part as the kids are generally interested. What's difficult is knowing the reasons behind the potential scholars' inability to apply, and yet you can't do something about it." Melgar narrates that many students in remote areas do not have the resources or information on how to secure the documentary requirements, and the ability to pay for transportation when submitting their application and attending the examination.

The DOST-SEI encourages local leaders to provide a vehicle for the submission of application forms and during the

Aerospace Engineering	By Astrophysicist Dr. Rogel Mari Sese
Earthquake	"The Big One: Handa ka na Ba?" By Charmaine Villamil of the Department of Science and Technology-Philippine Institute of Volcanology and Seismology (DOST-PHIVOLCS)
Entomology "Dalubkulisapan"	By Dr. Aimee Lynn Barrion-Dupo of the University of the Philippines Los Baños (UPLB)
Oceanography	By Dr. Aletta Yñiguez of the University of the Philippines Marine Science Institute (UP MSI)
Nanotechnology	By Engr. Myra Ruth Poblete of the University of the Philippines Diliman (UPD)
MathSaya Magdrawing: Bezier Curves	By Dr. Jomar Rabajante of the University of the Philippines Los Baños (UPLB)
Arduino Programming	By Engr. Javier Angelo Javier , DOST-SEI
The History of Science	By science writer TJ Dimacali
Astronomy	By Nico Mendoza of the Department of Science and Technology-Philippine Atmospheric, Geophysical and Astronomical Services Administration (DOST-PAGASA)
Science Filmmaking	By advocacy filmmaker and communications professor Seymour Barros Sanchez
Science Communication	By Prof. Garry Montemayor of the University of the Philippines Los Baños (UPLB)
LEGO EV3 Robotics	By Gilbert Zamora , Felta Multimedia Inc.
Nuclear Science	By Ana Jamille Restubog and Dr. Vallerie Ann I. Samson of the Department of Science and Technology-Philippine Nuclear Research Institute (DOST-PNRI)
Science Media Literacy	By science writer Shaira Panela

nuLab offers advanced science and mathematics modules. It also introduces science communication to participants.



Philippine Science High School (PSHS) Special Science Teacher Michelle Manglicmot (leftmost) conducts experiment in a tent outside the bus. Photo by: Kenneth Boston/DOST-SEI



#Push4Science project leader Marco Melgar talks about DOST scholarship programs after each session at nuLab. Photo by: Bern Arguelles/DOST-SEI

examination day. This gesture would help attract more applicants and develop scientists and engineers in their areas.

“I didn’t know that nuLab is a project of the DOST and that we would get to hear about DOST scholarships here,” shares Kent. He thought he would be attending a simple science lesson inside the bus.

Kent and Gelyn admitted that they both wanted to enroll in non-science courses but now considering science courses because of their nuLab experience. The DOST scholarships offer a monthly stipend, book and transportation allowance, and other benefits besides tuition fee subsidy.

The scholarship benefits are enticing, but Gelyn was especially inspired by the story of DOST Scholar Rene Principe, one of the featured scholar stories in the Push4Science audio-visual presentation. Principe, a proud DOST scholar and now a professor at the University of the Philippines Diliman National Institute of Physics, knows poverty so well and how it makes quality education so difficult to attain.

Push4Science, although a separate project from nuLab, joins the science bus to maximize its campaign. In the usual Push setup, Melgar and some DOST scholars visit target schools and speak to a crowd of high school students to explain scholarship privileges and encourage them to apply. In 2014, the

year Push started, only 76 percent of municipalities in the country have DOST scholars. Now, it’s at 99 percent. It’s always the road less traveled for Melgar when selecting municipalities for Push campaigns, as far-flung areas, often with communities struggling with poverty, are the best places to attract future DOST scholars.

Road trip to Iloilo

The province of Iloilo is nuLab’s first ‘road trip’ since the COVID-19 pandemic. When the bus was launched at the National Science and Technology Week in July 2019, it had a few trips before

the COVID-19 travel and gathering restrictions were implemented in March 2020.

“Iloilo province has always been on our list, and we’re excited to finally do this road trip,” Ilaw narrates. It wasn’t the easiest engagement for the nuLab team, especially with more than 24 hours of travel, including long waiting hours and an exhausting ferry ride.

The Iloilo Road Trip, held from 1-12 June 2022, consists of three schools in the municipalities of Anilao, Barotac Viejo, and Estancia. The team spends around three days in each school, delivering seven sessions per location.



nuLab project leader Candy Ilaw gives DOST’s first brand ambassador Chris Tiu a tour of the science bus during nuLab’s launch at the 2019 National Science and Technology Week Photo by: Christian Chester Lozada



DOST-SEI Director Dr. Josette Biyo encourages students to 'learn by doing.' Photo by: Julie Anne Cusi / DOST-SEI



Teachers from Anilao National High School are ecstatic to meet multi-awarded educator and their fellow Ilonggo, DOST-SEI Director Josette Biyo. Photo by: Julie Anne Cusi / DOST-SEI

For the entire trip, eight facilitators delivered six different modules to more than 500 participants.

In its first stop, Anilao National High School, teachers prepared an opening program attended by officials from DOST, the Department of Education (DepEd), and the Municipality of Anilao.

DOST-SEI Director Josette Biyo, who hails from Janiway, Iloilo, mostly spoke in Hiligaynon. She encouraged students to 'learn by doing' and reflect on the experience. "You cannot be what you cannot see," she quips. Dr. Biyo



Officials from DOST-SEI, DOST Region VI, DepEd Region VI, and the Municipality of Anilao pose with school officials, staff, and teachers from Anilao National High School at the opening ceremony held on 01 June 2022. Photo by: Kenneth Boston/DOST-SEI



The nuLab team with teachers from Barotac Viejo.

is known for her mastery of 'experiential learning' in teaching science research. This feat helped her become the first Asian teacher to win the Intel Excellence in Teaching Award and later earned her a minor planet named in her honor, "Planet Biyo."

DOST-SEI Division Chief Dr. Ruby Cristobal was also present for the opening program. Dr. Cristobal led the team behind SciEx, nuLab, and other youth science promotion programs. She reminded students to use science to think critically and that getting on the bus is a privilege they should not waste.

DepEd Division of Iloilo's Ruben Libutague pondered technology's role in education at the height of the pandemic, while DepEd Region VI's Dr. Elena Gonzaga took note of the opportunities presented. Both mentioned their excitement to see what nuLab is all about and how it can respond to the changing education landscape.

After three days in Anilao, the team went to Barotac Viejo and then to their last stop, Estancia, which is almost four hours away from Iloilo City.

The heaps of preparations and coordination for the 12-day tour are unimaginable, considering the small team behind it. Aside from Ilaw and Melgar, the DOST-SEI nuLab team comprises Kenneth Boston, who oversees logistics; Bern Arguelles, who handles post-event evaluation; and Julian Rubis and Quintin Dela Torre, who are in charge of the nuLab bus and backup vehicle.

During road trips, it's not unusual to see everyone pitching in. You could see Ilaw cleaning test tubes, Melgar carrying equipment, and Boston taking photos for documentation and assembling tents in between. There must be solid teamwork for any road trip to succeed.

It takes a village

In nuLab, the proverbial village it takes to raise a child – or a scientist – is composed of facilitators, local government units, DOST regional offices, and the DepEd. They set road trips in motion and give students scientific mileage. The hard work and generosity of the institutions and individuals involved make every trip worthwhile and memorable, not just for participants but for the team as well.

The local government provides security for the staff, resource persons, and vehicles. They also escort and assist the team whenever needed. Officials would often show appreciation by dropping by the event or hosting a simple dinner. In Anilao, Mayor Nathalie Debuque warmly welcomed the group to her home, while in Barotac Viejo, Mayor Nielo Tupas showed them the best places in the municipality.



DOST-PNRI Deputy Director Dr. Vallerie Samson demonstrates calculating background radiation and shows sample of radioactive check source using a monitoring device. Photo by: Bern Arguelles/DOST-SEI

DOST regional offices are also crucial on every road trip, especially in remote areas. They often assign staff to assist and allot a service vehicle if needed. Leo Lozada of DOST Region VI looks forward to more collaboration between DOST-SEI and regional offices for nuLab. “I hope the staff at the DOST regional offices will also get the opportunity to train and teach at nuLab. I was inspired and thrilled to be part of this road trip,” says Lozada.

Meanwhile, the DepEd helps the nuLab team identify schools that would most benefit from nuLab road trips. They also ensure the schools’ active participation and coordination with the team regarding participants, food, and accommodation. But what warms the team’s hearts most are the efforts of teachers and other school staff and officials. They always manage to make road trips special. Even with minimal resources, they try to make the team comfortable and the event extraordinary. In Anilao, the teachers prepared the opening program, even decorating the stage with miniature planets to honor Dr. Josette Biyo’s achievement. In Barotac Viejo, the teachers personally prepared meals for the team.

The facilitators, of course, are the highlight of nuLab. And while they are the “stars” of the sessions, they never fail to shine their light on the students.

Dr. Vallerie Samson of the DOST-Philippine Nuclear Research Institute did not only enlighten participants on the applications of nuclear science to health, food, and safety, but she also encouraged students not to let poverty dishearten them.

During a special session for teachers, she told teachers that they are instrumental in the success of their students. Dr. Samson, who studied in public schools since elementary, shared that her teacher discovered her talent in science and inspired her to take a science course and apply for a DOST scholarship. The scholarship enabled her to continue her studies and finish Physics at the University of the Philippines.

Always something new in nuLab

While road trips may be halted again because of the pandemic, the nuLab team remains undeterred. For the second half of 2022, the bus is slated to travel to Quezon province and

coastal areas in the Bicol region. For 2023, nuLab will sail to Mindanao to visit schools in fourth and fifth-class municipalities in Surigao, Agusan, Zamboanga, and Davao Oriental.

Its offshoot project, TuklaSiyensya, will also release more episodes. TuklaSiyensya transposes nuLab’s modules into video lessons. To date, 15 episodes have been produced.

The Science Education Institute hopes that more students like Kent and Gelyn will turn their nuLab experience as the starting point of a fulfilling science career, hence the constant effort in improving the project. “We’re working on expanding modules to include health sciences, chemistry, programming, and other fields, as well as having more facilitators and upgrading and integrating the facilities,” Ilaw shares.

There is still a long road ahead before we can confidently say the Philippines has enough science professionals to steer the country to economic development, but the DOST-SEI is optimistic that we will get there, one road trip at a time.



Some 60 teacher-participants from 20 member-schools of ASMEPPS were trained on social media content creation and digital broadcasting through the guidance of DOST-STII resident experts. (Photo by Joy M. Lazcano, DOST-STII)

Science and math teachers go beyond basics on social media and digital broadcasting content creation

By Allan Mauro V. Marfal, *DOST-STII*

Photos by Joy M. Lazcano, *DOST-STII*

With the continuous evolution of social media and other digital-based platforms, numerous opportunities and tools have become readily available, particularly when it comes to promoting products, services, and advocacies of our respective organizations.

With this in mind, the Department of Science and Technology-Science and Technology Information Institute (DOST-STII) and the Association of Science and Mathematics Educators of the Philippine Private Schools (ASMEPPS) are working together to come up with activities and programs that would instill a culture of science among Filipino students and teachers using social media and the broadcast platform.

On July 14-15, 2022, a two-day seminar for 60 science and math teachers from the 20 member-schools of ASMEPPS was held at the St. Francis of Assisi

College in Bacoor City, Cavite. Titled “Communicating Science through Social Media Posting and Digital Broadcasting”, the science and mathematics teachers learned how to craft compelling S&T related content suitable for various social



Resty R. Balila, program manager of DOSTv, gives a brief overview of DOSTv and its regular programs and segments that serve as promotional vehicles for the DOST and its knowledge products and services.

media, like Facebook, and in using digital broadcast platforms.

“It has been shared to us that several member-schools of ASMEPPS have been maintaining their own FB pages, wherein they are posting all the activities and other relevant posts and journals that would spur the interests of young students on science and technology,” said DOST-STII Director Richard P. Burgos in his video message.

Burgos added that DOST-STII would like to help ASMEPPS, especially the science and mathematics teachers, learn how to communicate and promote scientific concepts and knowledge in easy-to-understand and entertaining ways to enable the students to appreciate them more.

“We are very fortunate to have a reliable partner like DOST-STII. Aside from sharing their resources and products like STARBOOKS and S&T Post to our



Carmela P. Aguisanda (left), resident video editor from DOSTv, guides the teacher-participants during the workshop session on scriptwriting and storyboard making.



Lanquin Seyer Gacusan (inset), resident multimedia artist from DOST-STII, shares with the teacher-participants some tips and concepts on digital layout and design and branding.

member-schools, they have been helping us to find our niche in terms of promoting our activities and advocacy by providing several capacity building activities,” said ASMEPPS President Eloisa Olivera.

Olivera stressed that all their member-schools have tons of available materials and content from their recent science-related activities that they would want to promote to a wider audience. This is the reason why the two-day training was very timely as participants are interested in learning how to repackaging their materials suitable for social media channels like Facebook and YouTube.

On the first day, Jachin Jane Aberilla, DOST-STII’s social media manager, shared with the teacher-participants the benefits of utilizing various social media platforms such as Facebook, Twitter, Instagram, YouTube, and TikTok to promote various science related activities and advocacies to a larger audience.

Meanwhile, DOST-STII’s multimedia artist, Lanquin Seyer Gacusan emphasized in his lectures the basic concepts of layout and design as well as the importance of identifying and developing one’s own brand in various social media pages. He also conducted a hands-on demonstration session for the teacher-participants in crafting layout design using Canva.

On the second day, Resty R. Balila, program manager of DOSTv, gave a brief overview of DOSTv and its regular programs and segments that serve as promotional vehicles for the DOST and its knowledge products and services. On the other hand, Carmela P. Aguisanda, Information Officer II and resident video editor of DOSTv, provided a comprehensive lecture on video production for broadcast platforms. It included scriptwriting, storyboard making, video shooting, lighting techniques, camera framing, and video editing.

The seminar-workshop is just one of the major activities of the Science Journo Ako Advocacy program of the DOST-STII under the partnership between DOST-STII and ASMEPPS that seeks to strengthen science communication in the country and to instill a culture of science among the students and teachers from the member-schools of ASMEPPS.

Some 60 teacher-participants from 20 member-schools of ASMEPPS were trained on social media content creation and digital broadcasting through the guidance of DOST-STII resident experts.



Jachin Jane Aberilla, DOST-STII’s social media manager, shared with the teacher-participants the benefits of utilizing various social media platforms such as Facebook, Twitter, Instagram, YouTube, and TikTok to promote science related activities and advocacies to a larger audience.



Teacher-participants from the University of Perpetual Help- Molino campus discuss their workshop output for the scriptwriting and storyboard making learning sessions.

PH's 1st S&T digital library lands on island school in Albay, two more for Bicol

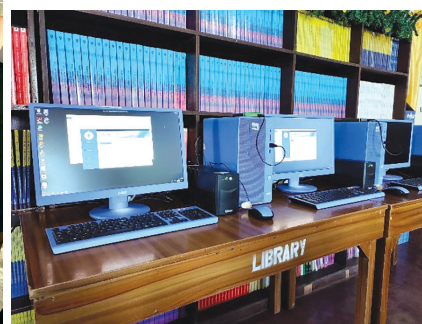
Text and photos from DOST-V

Easy access to S&T learning has docked on the island of San Miguel in Tabaco, Albay as San Miguel National High School (SMNHS) received the Science and Technology Academic and Research-Based Openly Operated Kiosks or STARBOOKS of the Department of Science and Technology (DOST). On 05 July 2022, DOST Region V STARBOOKS deployment officer Anthony B. Andes facilitated the orientation and hands-on training for SMNHS.

Developed by the Science and Technology Information Institute (DOST-STII), STARBOOKS is the country's first digital science library. It is a stand-alone information source designed to reach those with limited or no access to S&T information resources. The project aims to provide contents on



Ligao National High School (LNSHS)



San Miguel National High School (SMNHS)

Science, Technology and Innovation (ST&I) to geographically-challenged schools and communities throughout the country. STARBOOKS contains numerous digitized S&T resources in various formats (text and video/audio) placed in specially designed "pods" that is set in a user-friendly interface.

The orientation and turn-over ceremony were also attended by the science faculty of SMNHS and student representatives led by the school's Supreme Student Government (SSG) president Jhun Carl C. Belenzo, as well as local officials from barangays in the island: Brgy. Captain Saeed Ahmed Tango of Brgy. Rawis, Brgy. Captain Carlito Boral of Brgy. Sagurong, and Brgy. Councilor Hilario Borres of Brgy. Visita. Malictay High School—another school on San Miguel Island—was also represented by its Science Coordinator, Maily Bio.

As aptly put by SMNHS teacher John Darnell Balbastro, STARBOOKS is "one way of elevating the scientific and technology literacy" among the students in their school. Its wide array of digitized S&T resources in various format will "intensify the curiosity among our young learners", and its offline access will address the unavailability and inaccessibility of S&T learning resources in San Miguel.

continued next page



St. Louie de Marillac College of Sorsogon

PH's 1st...(from page 31)

Balbastro was also instrumental in bringing STARBOOKS to the island school through his initiative "Project STARBOOKS: SMNHS's Library in a Box", which was launched with the support of SMNHS Principal Shirley V. Bataller and Tabaco East District 3 Public Schools District Supervisor Dr. Agnes B. Bonaobra.

The STARBOOKS for SMNHS was only the first for the month of July; it heralded two more deployments which followed closely after: Ligao City National High School in Albay on 15 July 2022 and St. Louie de Marillac College in the province of Sorsogon on 20 July 2022. These schools are the latest in the roster of STARBOOKS beneficiaries in Bicol, coming up to a current total of 321 units deployed since its debut in the region in 2012.

DOST Region V, along with its dedicated Provincial S&T Centers and implementers, will continue to promote and empower S&T knowledge and education through this program... Dahil star ang kaalaman sa DOST-STARBOOKS!

IT scholars to have their OJT at DOST.

IT scholars to have their OJT at DOST. The Department of Science and Technology-Science Education Institute (DOST-SEI) and State Universities and Colleges (SUCs) entered into a memorandum of agreement to have their I.T. students provided with the opportunity for On-the-Job Training (OJT) with DOST. The League of Developers project

will create a continuous pool of programmers who will be given the chance to put their acquired knowledge on information and communication technology to practical use in the pursuit of the government's thrust to upscale digital transformation of the public and private sectors. The pool will be coming from DOST Scholars of the government. (S&T Media Service)



(Photo Credit: Geraldo Palad. From L-R front: Rogelio N. Roasa, Jr., Chief Science Research Specialist-DOST-IT Division; Cezar R. Pedraza, Director-DOST-Planning and Evaluation Service; Josette T. Biyo, Ph.D.-Director, DOST-SEI; Engr. Albert G. Mariño, Deputy Director, DOST-SEI; Back: Peter Gerry Gavina, Chief, Science and Technology Scholarship Division; Renato U. Solidum, Jr. OIC-Secretary, DOST; Prof. Fortunato T. de la Peña, Consultant, League of Developers; and Richard P. Burgos, Director, DOST-STII)

EdukSine launched, a local streaming platform for indie films

Text and photo from DOST-SEI



Photo from Eduksine Facebook Page

Local indie film lovers out there, Eduksine is something you would be excited about!

Eduksine is a social enterprise funded by the Department of Science and Technology (DOST) that serves as a streaming platform that showcases educational and socially-relevant independent Filipino films.

Officially launched on 13 August 2022, at the Cine Adarna, Film Institute of the University of the Philippines Diliman, Eduksine features films with global impact that strengthens the Filipino cultural roots and narratives through online, face-to-face, and hybrid block screening events.

The initiative is being led by Karen Jane Salutan, she said that she aims to provide contextual and transformative film content to audiences, meaningful engagements, and sustainable support to independent Filipino film producers,

directors, actors, and film marketers.

EdukSine will serve as a new & unconventional platform to promote indie films that are made by small film producers & filmmakers.

The platform also aims to bridge the gap between socially conscious, independently-produced films and to reach far-flung areas of the country. Aside from its streaming platform, it will hold pre-arranged screenings in schools, government offices, companies, and organizations, including those in mountainous, coastal villages.

“Film is a powerful tool for education by telling our stories. Once a story is told, it stays with you. Let’s keep telling our stories,” said Hector Gloria, Executive Director of EdukSine Philippines during the launch.

At the launch, Russell Pili, DOST-Philippine Council for Industry Energy

and Emerging Technology Research and Development (DOST-PCIEERD) Chief of the Technology Transfer Division, also gave an overview of the Women Helping Women: Innovating Social Enterprise (WHWise) Program.

WHWise is the DOST program that helped EdukSine and all other grantees improve their causes to create a great impact on their target communities. “EdukSine in that sense uplifts the lives of many filmmakers and producers who have limited support and access to distribution and have no means to make their films accessible to a wider audience,” she said.

To access Eduksine using your phone and/or your laptop, just open “www.eduksine.com” and click on search. Browse the type of genre you want to watch (e.g. Women Empowerment, Indigenous culture, politics, etc.). Register and click on purchase.

PIPAC – the Philippines' Most Successful Spin-Off and Academe-Industry-Government Collaboration

By Dr. Armando M. Guidote, PIPAC

The Philippine Institute of Pure and Applied Chemistry (PIPAC) is a not-for-profit scientific organization that is a government-registered corporation with the aims of providing chemical and microbiological testing, capacity building, research & development, and technical consultancy to Philippine industries as well as international clients. PIPAC serves everyone – the academe, government, agencies, private individuals, and industry whether small, medium-scale, or large national or multinational corporations.

In the 1960's there were no third party testing laboratories in the Philippines which industry needed. Many companies sought the assistance from the Department of Chemistry of the Ateneo de Manila University. The faculty members – Dr. Modesto T. Chua, Dr. Amando Kapauan, Fr. William Schmitt, S.J., Dr. Ana Javellana, Mr. Balalta, and others discussed about putting up a separate entity from the Department of Chemistry as a collaboration and handle

third party testing and other needs of academe, industry, and government.

When Dr. Chua went to return to Germany for a post doctoral assignment he had good opportunities of interaction with the Alexander von Humboldt Director General, Dr. Heinrich Pfeiffer. He discussed with him the Department of Chemistry's plan of putting up a separate institute to serve the public. Dr. Pfeiffer liked the idea as this academe-industry-government collaboration is successfully implemented in Germany. He asked Dr. Chua to submit a proposal. The proposal for the "Installation of the Institute for Chemical Analysis, Applied Research and Technical Training" was approved.

In December of 1972, PIPAC was incorporated with substantial funding for equipment from the Alexander von Humboldt Foundation and the Ministry of Economic Cooperation of the Federal Republic of Germany. It is said that up to today, considering inflation, this is the biggest grant ever given by the Alexander

von Humboldt Foundation. PIPAC was registered in the Securities and Exchange Commission in 1973. PIPAC was housed in the Chemistry Building of the Ateneo de Manila University with a laboratory and an office. Dr. Modesto T. Chua was PIPAC's first Institute Director.

Over the next years, PIPAC made requests for funding for a equipment and a separate building from the Japan International Cooperation Agency (JICA). With the collaboration from government agencies, which are now the Bureau of Product Standards and the Department of Trade and Industry, a JICA grant was secured. The present PIPAC building was inaugurated in 1984 on land provided by the Ateneo de Manila University. Other major donors were the Philippine Manufacturing Corporation (Procter & Gamble Philippines, Inc.), Philippine Refining Company (Unilever Philippines, Inc.), and Filipinas Synthetic Corporation.

PIPAC is an ISO/IEC 17025 Laboratory. As such, analyses done in PIPAC adhere to the highest standards and are recognized all over the world.

An Academe-Industry-Government (AIG) Collaboration

PIPAC is managed by faculty members of the School of Science & Engineering of the Ateneo de Manila. Dr. Armando M. Guidote Jr. (Professor, Department of Chemistry) is the present Institute Director. Dr. Ronaldo M. Fabicon (Associate Professor, Department of Chemistry) is the Head of Analytical Services. Dr. Crisanto M. Lopez (Associate Professor, Department of Biology), is the Head of Microbiological Analysis. Dr. Giselle Grace Lim Co Yu Kang (Assistant Professor, Department of Chemistry) is the concurrent Head of R&D and Head of Trainings. Dr. Armando Jerome De Jesus Jr. (Assistant Professor, Department of Chemistry) is the Quality Assurance



Standing strong for 38 years. Situated in the Ateneo de Manila University, the 3-storey fully-equipped building of the Philippine Institute of Pure and Applied Chemistry (PIPAC) was established in 1984 through a JICA grant. (Photo from PIPAC)

Manager. The non-faculty administrators are Mrs. Thelma Jane Parrenas, the Head of Operations, and Mrs. Cristina Portilla, the Laboratory Manager. Dr. Ian Ken Dimzon (Assistant Professor and Chair of the Department of Chemistry) is a consultant of PIPAC.

PIPAC provides analysis and capacity building to researchers and students from many education institutions. Among those that PIPAC has worked with are the University of the Philippines (Diliman and UPLB), De La Salle University, University of the Bahamas, the Philippine Science High Schools, Xavier University, ...

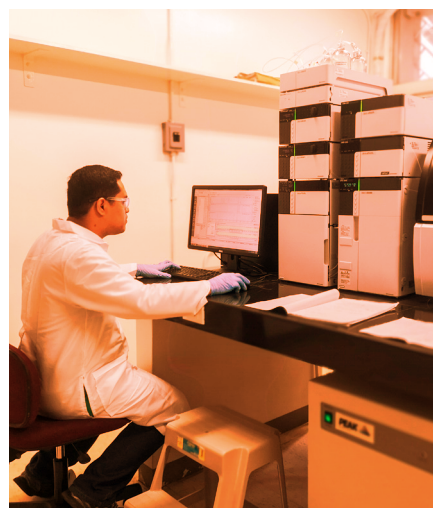
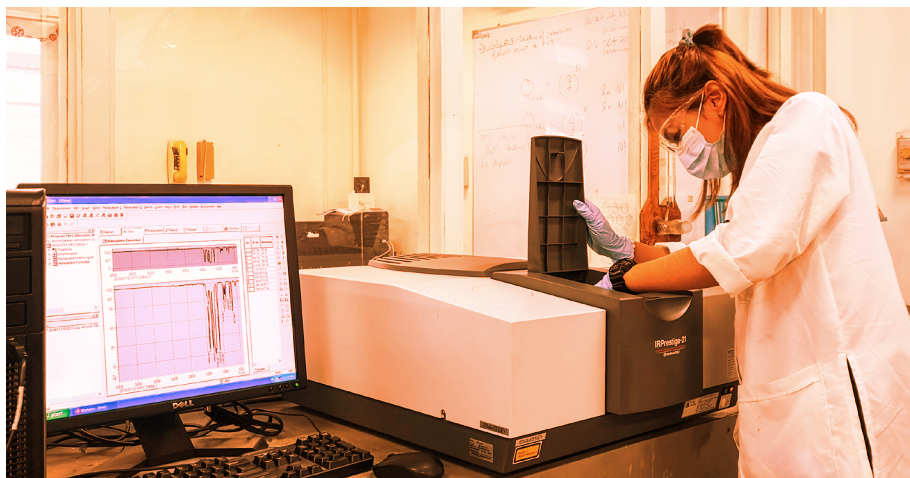
PIPAC serves the industry for their various testing needs for metals and minerals analysis, pharmaceutical finished products and raw materials, food, disinfectants, drinking water and other beverages, gases, soil, fire extinguishers, blood and other human samples, pipes and other industrial products, lakes/ rivers and sea water, and many more. PIPAC is instrumental in assisting small- and medium-scale enterprises that have no analytical laboratories to support their quality and safety assurance requirements. On the other hand, PIPAC supports big industry that despite having their own laboratories still have so many samples that need analysis. PIPAC also assists industry for their R&D needs in product, process, and method development. PIPAC is a sought-after troubleshooter and problem solver of industry.

PIPAC is a partner of government in fulfilling its mandates. PIPAC through the years has supported and continue to support the following agencies: Department of Trade and Industry (Bureau of Product Standards), Department of Health (Food and Drug Administration), Department of Agriculture (Bureau of Animal Industry, Philippine Rice Research Institute, and Pesticides and

Fertilizer Authority), Department of Environment and Natural Resources (Environmental Management Bureau and Mines & Geosciences Bureau), and the Department of Science and Technology. PIPAC is a proud member of the DOST OneLab.

PIPAC is guided by a Board of Trustee that mirrors PIPAC's Academe-Industry-Government collaboration. The trustees are headed by the Chair, Mr. Alberto Manlapit who has a long industry experience with Procter & Gamble, San Miguel Corporation, and United Laboratories, Inc. The Vice-Chair is Fr. Antonio "Ting" Samson who was former President of Ateneo de Davao University and Xavier University in Cagayan de Oro. The other trustees are Dr. Ma. Assunta C. Cuyegkeng (Professor), Dr. Fabian M. Dayrit (Professor), and Dr. Raphael Guerrero (Professor and Dean of School of Science & Engineering), represent academe and are all from the Ateneo de Manila University. From Industry, there is Mr. Meneleo Carlos Jr. (President, RI Chemicals, Inc.), Mr. Dean Lao Jr. (Managing Director, Chemrez Technologies, Inc.), Mr. David Lim (Chief Sustainability Officer, Universal Robina Corporation), and Mr. Benel Laguna (former Executive Vice President of the Development Bank of the Philippines). Government is represented by Dr. Rafaelita Aldaba (Undersecretary of the DTI).

This 2023, PIPAC will be celebrating its 50th year. PIPAC has withstood various challenges in the Philippines' history



PIPAC offers a wide-range of services from chemical analysis to R&D and training activities for public and private stakeholders. (Photo from PIPAC)

– political, economic, financial, etc. It has become stronger because of the AIG collaboration. Today, there is much talk about start-ups and spin-offs and the many challenges that they face. PIPAC was there before in 1973. It was really a start-up or a spin-off even before those terms were coined. PIPAC is a reminder to everyone that with passion, dedication, and collaboration, success can be attained.

PIPAC moves on to the next 50 years, proud of the valuable services it provides. PIPAC is grateful for the trust from its partners and collaborators, especially the major donors who invested in PIPAC: the Alexander von Humboldt Foundation of the Federal Republic of Germany and the Government of Japan through the Japan International Cooperation Agency.

Libraries in the digital era: Do libraries need to outsmart Google?

By Geraldine Bulaon-Ducusin, *DOST-STII*

“We do not need to compete with google.”

This is what Mary Grace P. Golfo-Barcelona, Dean, School of Library and Information Studies, University of the Philippines Diliman said during a webinar on Nutrinet: Thriving during the Pandemic, as part of Nutrition Research Information Network's (NUTRINET) 35th anniversary.

Barcelona said that the challenge for the librarians and libraries in the era of digitization is how to make reliable and relevant resources that are available online more accessible to the researchers, and to make what's available in prints that are not available online be digitized and transformed to formats that are more readily accessible to the users.

As libraries move on and emerge into complete digitalization of libraries and making the institutional repositories readily accessible anytime to target users, there is no need to compete with Google, she added.

Barcelona encouraged her colleagues in Nutrinet to continue to work together in building the most comprehensive repositories of information that respond to the needs not of all researchers, but rather, their target community of researchers, knowing that other network of libraries will continue to do the same.

“With the end goal of creating your version of universal libraries that are relevant, accurate, reliant, accessible and readily available,” Barcelona said.

While it is not possible to completely build a universal library alone, which is what google wanted to achieve digitally, with the help of different library and information networks such as Nutrinet, librarians can aspire to come up with the

most comprehensive digital collections of resources, specifically selected to fit the specific research needs of the community of users, within the available resources that member libraries have.

Former members were asked what they think was the most memorable thing being with the NUTRINET. One cited the difficulty of finding certain information because journals were expensive in the old days.

“During the times na napakahirap ng mga information, probably, for one, because very expensive ang pag-purchase ng mga journals, it was NUTRINET that helped one agency to get access to journals or

yung mga publications that are otherwise expensive,” Dr. Zenaida Nar, former NUTRINET member from DOST-FNRI, said.

NUTRINET was established in 1987 to form an information network on food and nutrition research and development, of which the goal is to promote and improve the flow of nutrition R&D information in the country by facilitating exchange of information among different nutrition and related agencies. From the initial 14 member institutions from 1987 to 1999, NUTRINET now has 24. The Department of Science and Technology-Food and Nutrition Research Institute (DOST-FNRI) hosted the 35th year anniversary event.

“I enjoined you, my colleagues in Nutrinet, to continue to work together in building the most comprehensive repositories of information that respond to the needs not of all researchers, but of your target community of researchers. Knowing that other network of libraries will continue to do the same. With the end goal of creating your version of universal libraries that are relevant, accurate, reliant, accessible and readily available.”



(Photo grabbed from YouTube's video on Nutrinet's 35th Anniversary event via Zoom) Mary Grace P. Golfo-Barcelona, Dean, School of Library and Information Studies, University of the Philippines Diliman during a webinar on Nutrinet: Thriving during the Pandemic.

DOST's #MAGHANDA learning sessions tackle disaster warning systems to ensure safer communities

By Rowena Peter, DOST-STII

In compliance to the Memorandum of Agreement (MOA) between the Department of Science and Technology (DOST) and the Department of Interior and Local Government (DILG) signed last 16 March 2022, Project #MAGHANDA rolled out its learning sessions that started on 4 July 2022, via the zoom platform.

The #MAGHANDA project aims to conduct both asynchronous and synchronous learning sessions for all regions in the country components. The first batches were conducted in Regions XIII, XII, XI, X, IX, VIII, and VII, that include local chief executives (LCEs), disaster risk reduction and management officers (DRRMO), municipal local government operations officers (MLGOOs), information officers from national and local government units, first responders (Philippine National Police, Bureau of Fire Protection,

Armed Forces of the Philippines, and the Philippine Coast Guard), and media practitioners.

The DOST's two warning agencies, the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) and the Philippine Institute of Volcanology and Seismology (PHIVOLCS) prepared visually compelling presentations and workshops that covered the following hazards: tropical cyclones, gale warnings, thunderstorms, storm surges, heavy rainfall, flood, ENSO (El Niño and La Niña), volcanoes, earthquakes, and tsunamis.

Several tools and services such as the DOST-PAGASA website and the development of the impact-based Forecasting and Warning System, the GeoRiskPH platform, Rapid Earthquake Damage Assessment System (REDAS), and How Safe is My House, among others, were also explained in full detail by meteorologist and geologist from both aforementioned agencies.

#MAGHANDA PhotoRelease



Project #MAGHANDA conducts Broadcasters' Manual Writeshop

The writeshop gathers experts from concerned agencies as well as the private sector, discuss and finalize the strategies in producing a compelling yet simplified Broadcasters' Manual, prepared by the Office of the Civil Defense (OCD), for media practitioners covering Science and Technology.



#MAGHANDA
Meteorological And Geological Hazard Advisories,
Warnings and Notifications for Decisive Action









The learning sessions were conducted virtually to educate and develop the skills of the participants in understanding correctly the various warning messages for meteorological and geological hazards and in planning for appropriate disaster response actions.

Aside from the learning sessions that will run until December this year, Project #MAGHANDA conducted a Broadcasters' Manual Writeshop held at the DOST-PAGASA Amihan Conference Room on 26 August 2022. It aims to update the existing Broadcasters' Manual prepared by the Office of Civil Defense (OCD) and its partner agencies like the DILG, DOST-PAGASA, DOST-PHIVOLCS, and the Mines and Geosciences Bureau of the

Department of Environment and Natural Resources.

The writeshop was participated in by various media practitioners from the Philippine Information Agency (PIA), Kapisanan ng mga Brodkaster ng Pilipinas (KBP), Department of Environment and Natural Resources-Mines and Geosciences Bureau (DENR-MGB), communication consultants, and experts from DOST-PAGASA, DOST-PHIVOLCS, and DOST-Science and Technology Information Institute.

The Broadcaster's Manual will serve as a guide for media practitioners like news anchors and broadcasters in delivering

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DOST provides R&D based solutions to enhance PH disaster risk reduction and mitigation efforts

By Allan Mauro V. Marfal, *DOST-STII*



The Department of Science and Technology has, for so many years, never wavered in its mission to provide science-based solutions to the country's problems related to natural hazards like typhoons and earthquakes, to name a few.

On the occasion of the observance of the 2022 National Disaster Resilience Month (NDRM), Undersecretary Renato U. Solidum Jr. shared on 07 July 2022 that the Department of Science and Technology (DOST) has always focused on strengthening the disaster risk reduction and mitigation programs of its two frontline agencies, namely the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) and the Philippine Institute of Volcanology and Seismology (PHIVOLCS).

"Science and technology have the power to save lives and livelihoods, and we must use them," said Usec. Solidum during the webinar on disaster prevention and mitigation which is part of the observance of the 2022 NDRM.

Usec. Solidum pointed out that the country's long-term vision is to build a society where families thrive in vibrant, culturally, diverse, and resilient communities.

"Gusto natin ng matatag, maginhawa, at panatag na buhay. But the most often asked question is how can we achieve this? If the country periodically suffers from the impacts of disaster. This is where prevention and mitigation come in," added Usec. Solidum.

He also emphasized that disasters are preventable by understanding the

risks and anticipating future scenarios so that people can avoid and mitigate the negative impact by building local capacity and producing research-based products and systems.

In highlighting that science is useful, usable, and used when it comes to disaster risk reduction and mitigation, Usec. Solidum referred to the different projects spearheaded by the DOST like the Dynaslope project, GeoRisk PH, Hybrid Electric Road Train, and Project SARAI.

He said that the Dynaslope project reduces landslide risk in communities with a community-based early-warning system. The landslide sensors installed in strategic locations detect movements even before the hazard is visually manifested and the rain gauge measures the amount of rainfall in the area.



GeoRisk Philippines serves as a source of information for accurate and efficient hazard and risk assessment that serves as a platform to inform the public with information not only about the hazards but what the hazard can do to them. (Screenshot from GeoRisk PH)

The next one is GeoRisk Philippines which serves as a source of information for accurate and efficient hazard and risk assessment. Through this innovation, the public is informed

about the hazards and what the hazards can do so that the communities can prepare and implement mitigating strategies.

Meanwhile, in the past five years, Usec. Solidum said that DOST has been supported by Project SARAI or Smarter Approaches to Reinvigorate Agriculture as An Industry in the Philippines. It aims to reduce climate risks by providing agricultural stakeholders with site-specific crop advisories using advanced technology.

“Project SARAI’s advisories focus on integrating local weather data and crowd forecast with farm management activity, specifically nutrient and water

management and proactive and disease monitoring,” said Usec. Solidum.

He also shared that DOST is pushing for the use of the electric vehicle as a way to cut greenhouse gas emissions, carbon footprint, and to reduce the production and operational cost in the transportation sector. The DOST-Metals Industry Research and Development Center built the Hybrid Electric Road Train and Hybrid Electric Train which are made from locally available materials designed and made by Filipino engineers.

“So, what do these innovations have in common? These are technologies developed through rigorous scientific research. They are evidence of why resilience building cuts across sectors. The community is the heart of the innovations but they are also the co-owners and co-implementers,” said Usec. Solidum.

Usec. Solidum, sometimes referred to as the ‘fault finder’ [for being a geologist], further said that prevention and mitigation can be demonstrated through the installation and use of warning systems, use of risk assessment, smart land use planning, effective city design, establishing lifelines and disaster-proof houses, prioritization of greening programs and agriculture, and increase in resilient livelihood activities. He added that it might be expensive but it is cost-effective in the long run.

The National Disaster Risk Reduction Management Council (NDRRMC), through the Office of Civil Defense, leads the month-long observance of “National Disaster Resilience Month” that runs from July 1 to 29, 2022 with this year’s theme: ‘Sambayanang Pilipino, nagkakaisa tungo sa katatagan at maunlad na kinabukasan’ which seeks to advocate unity towards resilience and sustainable development.

DOST’s #MAGHANDA (from page 37)

the news on the weather and other hazards like volcanic eruption, earthquake and tsunami with easy-to-understand information to ensure that the warning messages are clear to the audiences.

In his statement during the writeshop, DOST-PAGASA Administrator Vicente B. Malano, PhD stressed the importance of properly communicating the warning messages and scientific terms for disaster managers and the communities to be prepared to appropriately create and implement effective disaster mitigation plans.

“Tamang kaalaman tungo sa tamang kahandaan. #MAGHANDA para sa ligtas na Pilipinas.” Dr. Malano said.

More income for small farmers, MSMEs with DOST-supported marketing tech platforms

By Allan Mauro V. Marfal, *DOST-STII*

Considered as the backbone of the Philippine economy, agriculture plays a critical role in pump priming the country's economy but it is hounded by various challenges such as lack of fully mechanized equipment, high prices of farm inputs, and damaging natural calamities, to name a few, that affect the income of farmers.

Despite offering quality and fresh farm produce in the market, the income of our local farmers suffers due to limited access to their customers.

In the episode of the DOST Report aired on 02 September 2022, several technology-based platforms developed and supported by the Department of Science and Technology (DOST) were introduced and shared where social marketing and data analysis could open more livelihood opportunities and increase the income of local smallholder farmers and micro, small, and medium enterprises (MSMEs).

Farm Konek: Connecting local farmers with institutional buyers

Farm Konek was developed by Project Zacchaeus. It is an impact-focused and community-based farm management platform for inventory and management. It aims to create a sustainable clustered production of high-value and lowland vegetables through data-driven clustered and climate-proofed production among the smallholder farmers living below the poverty line.

"If you look at the population ng mga farmer sa buong Pilipinas, mostly they are smallholder farmers and we know naman na maraming platforms out there that offer marketing services but in reality, it is not known to be sustainable kung hindi natin namomonitor ng maayos ang production and inventory lalo na iyong mga maliliit na magsasaka," said John Gastanes, general manager of Project Zacchaeus.

Gastanes also shared that there are a lot of marketing opportunities provided by the government through a very strong marketing network like the Kadiwa marketing services that buy directly from smallholder farmers.



According to John Gastanes (standing), Farm Konek focuses on inventory management and technical support for clustered farmers that enable them to sell their products more efficiently. (Screenshot from DOSTv)

However, Gastanes said that one of the biggest concerns is the sustainability of the production. He said that most of the time, we expect our farmers to send the data and upload it to the computer every time they harvest. But if we look at the ecosystem of the supply chain of food security, we need to plan ahead of time.

“For that kind of system, we need to cluster our farmers. One of the things na nakita ko for you the people to cluster efficiently, may maayos na farm plan and schedule of harvest,

you need to have the help of each farmer to supply this Kadiwa store or these groceries,” explained Gastanes.

Gastanes said that basically, they offer those services to cluster farms that have at least one hectare of land and they need to commit 30% of their actual production.

He said that Farm Konek’s main interventions are inventory management and reporting system as well as capacity building especially since a lot of smallholder farmers are not familiar yet with climate change protocols and new production strategies.

Gastanes further shared that they started with a few associations ranging from 35 to 70 memberships in one barangay in Puerto Princesa, Palawan.

“Dati yield na minamarket lang naming is to test it, ranging from 10,000 to 30,000 pesos worth of transactions. Now, we are ranging from 300,000 to 600,000 monthly transactions,” said Gastanes.

Gastanes said that they now have an estimated 5,000,000 farmers in the Philippines, and they are targeting to reach as many farmers as they can through the clustering system.

“If the government can work with young leaders like us, we will embrace that because I believe in proactive change in national transformation built by synergy,” shared Gastanes.

OneStore City App: Enabling MSMEs to overcome economic disruption from the pandemic

OneStore.ph is an e-commerce platform that helps micro, small, and medium enterprises (MSMEs) market their products online. The platform creates a borderless marketplace that allows MSMEs to sell their products to more customers; thereby indirectly contributing to the increase in job generation and address the issue of food insecurity in the country.

Surprisingly, due to the pandemic where the movement of people was restricted, the operation of OneStore.ph was



Farm Konek aims to create a sustainable clustered production of high-value and lowland vegetables through data-driven clustered and climate-proofed production among the smallholder farmers living below the poverty line. (Photo from Project Zacchaeus)

intensified. Due to the lockdown, OneStore walk-in-transactions definitely decreased but the upside was that the use of the e-commerce platform increased, thereby translating to more sales.

In response to this promising trend, the DOST launched the OneStore City, a delivery app for android that was designed and developed to provide a better and effortless shopping experience for consumers through digital means.

According to Verlyne O. Gorospe, project assistant III from DOST Region II, OneStore City is a same-day delivery application created and developed for fresh and major agricultural goods. She said that once they partner with the Department of Agriculture through its Kadiwa program, the initiative can boost the sales of our local farmers.

She added that OneStore.ph partnered with several logistics companies such as J&T Express, Ninja Van, and 2GO Express to cope with the increasing demand of online buyers.

For more details about the Farm Konek and OneStore City app, as well as other recent updates and development in the local scientific scene, you may watch the full episodes of DOST Report at the DOSTv Facebook Page: <https://www.facebook.com/DOSTvPH> and DOSTv YouTube channel: <https://www.youtube.com/c/DOSTvPH>.

Science department reinforces livelihood of women of Brgy. Palisoc, Bautista, Pangasinan

By Lyngel B. Ulanday, DOST-I



Livelihood opportunities to communities in the provinces are very important in driving the economy back to its feet after the surge of the COVID-19 pandemic. Realizing this need to build back better, the Department of Science and Technology Region I conducted a training on chicken meat processing for the Palisoc Women's Association (PWA) of Barangay Palisoc, Bautista, Pangasinan on 22 July 2022.

The DOST- Provincial S&T Center in Pangasinan organized the training as part of the Community Empowerment thru Science and Technology or CEST, one of the DOST's flagship programs to empower micro, small and medium enterprises particularly in the regions.

As a follow up effort to further develop the skills of the PWA members, the training provided its members with skills on proper handling and accurate methods to process pork meat products such as pork tocino, pork longganisa, siomai, and embotido that are

now marketed in the barangay. Three (3) processed chicken meat products will be added to their products such as

chicken tocino, chicken longganisa, and chicken nuggets to further enhance their market potential.

There were 12 members trained in curing and processing chicken meat. Imelda P. Soriano, trainer and owner of Chatita's Food Products, reminded the participants about the steps in food safety. "We must always follow proper handling, preparation, and storage of our processed meat products especially we are dealing with food," Soriano emphasized.

The participants were also trained on the preparation of tools needed for the process, washing and deboning the chicken meat, and measuring the ingredients for each recipe.

Several equipment like meat grinder, food processor, mixing bowls, and impulse sealer were awarded and used during the training. Ana Marie Abaya, the new elected president of PWA, said, "Thank you for choosing us (association), We will take this opportunity to grow our business."

Currently, the association has 23 active members. They have been producing meat products after completing their training last year and affirms their commitment in sustaining the CEST program's advocacy to empower the women in the community.

LGU Mutia benchmarks innovative horticulture projects in Benguet and Bulacan

By Mark Vincent J. Baliña, DOST-IX PSTO-ZDN



The Department of Science and Technology-IX (DOST-IX) through the Provincial S&T Office of Zamboanga del Norte (PSTO-ZDN) facilitated the benchmarking activity of LGU-Mutia to various innovative horticulture projects in Benguet and Bulacan on 1-3 August 2022. The team from LGU-Mutia was led by no less than its Municipal Mayor, Engr. Lorrymir S. Adasa.

The benchmarking activity included visits to various innovative projects in horticulture—cut flowers and high-value vegetables—assisted by DOST. In Benguet, the team visited the flower and strawberry farms in La Trinidad and high-value vegetable farms in Mankayan and Atok. In Bulacan, the team visited some projects of LGU-Guiguinto in its “Garden City” initiative.

Mayor Adasa said Mutia can learn a lot from Benguet, known by its moniker as the “Salad Bowl Capital” of the country. Mutia has a lot in common with municipalities in Benguet—situated at a relatively higher altitude with colder temperatures. These are important elements in the production of high-value crops and cut flowers.

“Just like the beautiful province of Benguet, I envisioned my town to be one of the major producers of quality highland vegetables and ornamentals in our province as it has a similar climate; and through the application of the latest and relevant farming technologies, I believe we can realize that,” Mayor Adasa said during the courtesy call with the DOST-CAR team headed by Dr. Pepita S. Picpican, assistant regional director. He added that their town is one of the highland municipalities located in the northeastern part of Zamboanga del Norte province, bordering Mt. Malindang Range.

Some of the innovative horticulture projects visited included the tissue culture laboratory for export quality cut flowers like

Malaysian mums of Benguet Fresh Produce Multipurpose Cooperative in Alno, La Trinidad and greenhouse farming with manual and automated drip irrigation systems for high-value vegetables like lettuce of different varieties, celery, basil, pak choy, and carrots of Reinzi Natania Farm and JLM Farm in Mankayan, Benguet, respectively.

The team also visited the Agri-based Technology Business Incubator or Innovation Center (ATBI/IC) of Benguet State University. The center showcased some of the initiatives and interventions of the institutions to assist local strawberry farmers in La Trinidad. The team also met local strawberry farmers who generously shared their best farming practices and techniques in high-value crop production. The visit to these projects was facilitated by Melecio Balangen, Jr. of PSTO-Benguet.

“The purpose of this benchmarking activity is to learn from the best practices of successful enterprises, which we can hopefully duplicate in our province,” said Nuhman M. Aljani, provincial director of PSTO-ZDN, who together with his team – Marc G. Cachin and Mark Vincent J. Baliña – accompanied LGU-Mutia in this activity.

“We are happy that LGU-Mutia, through the leadership of Mayor Adasa, has this interest in making their municipality thrive in horticulture. In PSTO-ZDN, we are always ready to provide the needed support to realize that vision,” Aljani added.

Meanwhile, in the Province of Bulacan, the team was warmly welcomed in the Municipality of Guiguinto by no less than the Municipal Mayor, Atty. Agatha Paula A. Cruz. At a brief welcome ceremony attended by other municipal officials and heads of various departments in the locality, Mayor Cruz quipped, “We are now convinced that we are on the right track as another



town is benchmarking our practices and initiatives.”

In Guiguinto, the team visited the Innovative Laboratory (iLAB) for Tissue Culture for Ornamental Plants. The project is a joint initiative between the LGU and DOST-III through PSTO-Bulacan.

According to PSTO Bulacan Director Angelita Q. Parungao, the iLAB project is included as one of the big-ticket initiatives of DOST dubbed as “21 in 2021,” citing its huge contribution and impact. The iLAB project provides technical assistance and know-how to ornamental plant farmers in the municipality of Guiguinto through the tissue culture laboratory intended to produce and propagate hybrid and disease-free ornamental plants.

The three-day benchmarking activity was realized through the strong support of DOST-CAR through PSTO-Benguet and DOST-III through PSTO-Bulacan.

For more information about calibration, simply drop us a message or visit our provincial offices. For more information, kindly call (062) 991-2050 or email us at dost9info@gmail.com or visit our Facebook page at www.facebook.com/DOSTRegion9

SETUP & LIVELIHOOD



Black garlic innovations developed in Region I thru DOST-NICER Program

Text and photo from DOST-OUSeRD

Black Diamonds of the North. DOST NICER on Garlic and Other Agri-Condiments Center in Mariano Marcos State University are developing food innovations from black garlic.

Have you tried black garlic ice cream? How about the dry condiment called furikake?

These curiously delicious food innovations are being developed by the Mariano Marcos State University (MMSU) - Garlic and Other Agri-Condiments Center funded under the Department of Science and Technology (DOST) - Niche Centers in the Regions for Research and Development (NICER) Program.

One of the food innovations is the black garlic – a processed garlic product prepared by heat treatment at high temperatures and humidity for several days. The process that is used in making black garlic is known to amplify the nutrient properties of garlic, thus, making it beneficial to health. Black garlic, with its marketing potential, can be suited to those who are health conscious and determined to supplement their diets with nutritious food.

“The NICER program is designed to support regional development,”

says DOST Assistant Secretary for International Cooperation and Officer-In-Charge of the Office of the Undersecretary for R&D, Leah J. Buendia. “Through sustainable innovation programs like the NICER in every region, we support the interests of every Filipino like the garlic farmers, traders, and local businesses to promote national economic progress.”

The NICER Garlic and Other Agri-Condiments Center aims to uplift the garlic industry in the region by developing an integrated crop management system, enhancing garlic storage processes, improving the usability and profitability of garlic through black garlic processing, and determining the key strategies in improving the competitiveness of local garlic through value chain analysis. Through the development of low-cost but sustainable technologies, the garlic farmers and processors are expected to increase their yield (from 3.8 t/ha to 5 t/ha), reduce bulb weight loss (from 50% to 10%) and increase their income (30%).

For those interested to apply for funding from the DOST-Science for Change Program, please visit their website at www.s4cp.dost.gov.ph. A nationwide call for proposals is open to accept applications from September 14, 2022 to October 14, 2022.

DOST-PCAARRD introduces 9 new mango varieties and selections

By Danica Louise C. Sembrano, DOST-PCAARRD

Promising mango varieties and selections open new doors for growers as they were introduced in a virtual presser held by the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development under the Department of Science and Technology (DOST-PCAARRD).

Livestreamed via DOST-PCAARRD's Facebook page, the virtual presser served as a platform to highlight the accomplishments of the recently completed 6.5-year program, "Enhancing the Competitiveness of Philippine 'Carabao' Mango through Varietal Improvement," implemented by the University of the Philippines Los Baños (UPLB).

In his welcome remarks, DOST-PCAARRD Executive Director Reynaldo V. Eborá emphasized that the Philippine 'Carabao' mango, internationally known as 'Manila Super,' is the only export variety of the Philippines. This limits the industry competitiveness due to limited varietal options for export.

This led to the first mango breeding program in the Philippines that aims to increase pest and disease resistance, increase volume of exportable quality production, and prolong the shelf life of mango.

Program leader Carolyn E. Alcasid of the Institute of Plant Breeding (IPB), UPLB served as the resource speaker for the virtual event and shared the new mango varieties and selections identified through the program.

Alcasid clarified that the term "variety" is a mango selection already registered to the National Seed Industry Council, while a "selection" is an identified line with distinct and promising traits.

Two new NSIC-registered varieties, 'Mangoming' and 'Farrales,' were among the highlights of her presentation, with their potential as processing and table-type mango, respectively.

Alcasid also revealed mango selections 'Carotene,' 'Kyla Luz,' 'Tommy Atkins,' and four 'Carabao' strains: 'IPB Carabao 1,' FOC Accession Nos. 12-053, 12-209, and 12-127 which were all deemed promising for their qualities such as resistance to pests like fruit fly and anthracnose, thick peel, and red-blushed skin color.

Industry stakeholders expressed their interests on the availability of the mango varieties and selections during the open forum.

Alcasid said that the planting materials of the featured mango selections will be available by the end of the year, once they are approved by the

Germplasm and Technology Release and Registration Office of IPB-UPLB.

"We need more plant breeders in our country to catch up with other countries, especially with the fast-changing markets and environment. Fruit breeding is fun, especially if you aim to produce a new variety that will really benefit the people," said Alcasid as she addressed the aspiring mango breeders.

Media representatives, mango growers, researchers, students, and interested individuals across the country attended the virtual presser. More than 400 individuals registered in the said event.

The virtual presser was conducted by the Crops Research Division (CRD), led by DOST-PCAARRD CRD Officer in Charge Dr. Allan B. Siano and ISP Manager for Mango Ms. Ma. Cecilia S. Alaban.



Mango selections and varieties featured in the virtual presser: 'Mangoming' (upper left), 'Farrales' (upper right), 'Tommy Atkins' (lower right), 'Carotene' (center left), 'Kyla Luz' (center right), and IPB Carabao 1 (lower right). (Image Credit: Institute of Plant Breeding-University of the Philippines Los Baños)

The locally manufactured four-in-one Rice Combine Harvester was developed to help our farmers to enhance their competitiveness and rice productivity of the country. (Photo from DOST-PCAARRD)



DOST-funded combine harvester eyes to reduce post-harvest losses of Filipino farmers

By Allan Mauro V. Marfal, *DOST-STII*

Agriculture is one of the sectors in the country that is being hounded by numerous challenges. This includes the lack of machines that fit our local agricultural settings.

In recent data, it shows that only 2.2% of agricultural lands have fully mechanized harvesting equipment in the country.

This is the reason why many Filipino farmers still settle for manual harvesting. It would take 16 to 25 days for our

farmers to finish the harvest time for a one-hectare land. In most instances, it resulted in high production losses due to the inefficient harvesting process.

To address these pressing concerns, a four-in-one Rice Combine Harvester that could lessen the post-harvest losses of our Filipino farmers from 4.5% to 2.2% was developed by the Philippine Rice Research Institute (PhilRice). The funding was provided by the Department of Science and Technology- Philippine Council for Agriculture, Aquatic and

Natural Resources Research and Development (DOST-PCAARRD).

This locally manufactured Combine Harvester can be readily mounted and dismantled from the hand tractor unit and maximizes the utilization of hand tractors which are common agricultural equipment among rice farmers in the Philippines.

In the recent DOST Report episode, Dr. Caesar Joventino M. Tado, branch director of PhilRice Agusan, also shared

how this Rice Combine Harvester could address agricultural labor's shortfall, give our farmers increased income, improve productivity and help in the country's pursuit to attain food security.

This locally manufactured and designed Rice Harvester is already combining the reaping, cleaning, threshing, and bagging operations. Dr. Tado said that it could provide appropriate solutions to the problems that beset the rice production in the country which is the lack of appropriate tools and equipment suitable to the local agricultural setting.

"Compared to imported combine harvester available in the market, RCH

DOST-PCAARRD funded Rice Combine Harvester has an estimated cost of around 750,000 pesos only.

"One of the most common problems of our machines is the after-sales service since most of the parts are imported. But since this Rice Combine Harvester is locally manufactured, we would have an easier time and process for its after-sales service, especially for its repair and maintenance," said Dr. Tado.

Dr. Tado said that most of our rice fields are already using synchronous planting and manual harvesting, which would require a high number of farm labor. But with the Rice Combine Harvester,

possible source of income," explained Dr. Tado.

Meanwhile, Secretary Renato U. Solidum Jr. of the DOST emphasized some possible significant impacts of this Rice Combine Harvester developed by Filipino scientists and researchers.

"Lubos na napakaganda ng rice combine harvester na ito. First, adopted siya sa sitwasyon dito sa ating bansa at bukod sa food security, may ilang industriya siya na matutulungan para makapagbigay ng karagdagang kabuhayan. Gawang Pilipino na solusyon sa problema ng Pilipinas," said Secretary Solidum Jr.

(This Rice Combine Harvester is adapted to the actual situation of our rice field conditions in the country and aside from food security, there will be other industries that would benefit from this and eventually, would allow them to provide additional livelihood opportunities. Made by Filipinos to give solutions to the problems of the Philippines).

For more details about the Rice Combine Harvester and other recent updates and development in the local scientific scene, you may watch the full episodes of DOST Report on the DOSTv Facebook Page: <https://www.facebook.com/DOSTvPH> and DOSTv YouTube channel: <https://www.youtube.com/c/DOSTvPH>.



In the recent episode of DOST Report, Dr. Caesar Joventino M. Tado, branch director of PhilRice Agusan, shares how the locally manufactured Rice Combine Harvester could address agricultural labor's shortfall and give our farmers increase productivity income. (Screenshot from DOST Report episode)

(Rice Combine Harvester) is smaller with 1.3-meter harvester width which fits most of the field conditions in the country. Those bigger and imported combine harvesters could not operate in some rice fields in the country," said Dr. Tado.

Dr. Tado shared that those imported combined harvesters usually cost around 1M to 1.5M pesos while the

the problem of a labor shortage during harvest time would be lessened.

"We must consider the average age of our farmers which is around 57-58 years old. And for them, it is so difficult to do manual harvesting. But with Rice Combine Harvester, aside from making their harvesting operations easier, it would also free up them to do another

ANO KAMO? TE?

Ang superfood na sweetpotato!



Marvin Agustin hopes to change negative perception of sweetpotato from ‘nangangamote’ to ‘nakakayaman’

By Rose Anne M. Aya, *DOST-PCAARRD*



Dr. Lilibeth Laranang, director of the Rootcrops Research and Training Center of Tarlac Agricultural University (TAU)

‘KAMOTE,’ THE Filipino term of sweetpotato, may have a negative connotation unique to our culture but for Filipino farmers, it is a source of their livelihood – and even their reason for becoming rich.

It only took conversations with Tarlaqueño sweetpotato farmers, in their simple and unassuming attires, to open the eyes of matinee idol Marvin Agustin regarding the reality of sweetpotato farming in the country. He featured this in a video, “Superfood na nakakayaman pa?” in his YouTube channel accessible here: <https://tinyurl.com/SweetpotatoEpisode>.

The episode is part of his role as Agri-Aqua ambassador to the Philippine Council for Agriculture, Aquatic and Natural Resources Research and

Development of the Department of Science and Technology or DOST-PCAARRD. It is also part of the DOST-PCAARRD Flavors of Science campaign, which aims to popularize the science behind food production.

In the episode, Dr. Lilibeth Laranang, director of the Rootcrops Research and Training Center of Tarlac Agricultural University (TAU) likened the process of harvesting sweetpotato to harvesting gold. She said that planting this root crop has created many millionaire farmers.

Mr. Arturo Tabago, former vice chairman of Sapang Multipurpose Cooperative in Tarlac, agrees with Dr. Laranang, as he said, a farmer can earn P218,000 in net profit in farming a hectare of sweetpotato. This value, however, depends on the selling price of sweetpotato for the month.

Tabago is part of Sapang Multipurpose Cooperative, which organizes and supports sweetpotato farmers in the province.

It is not only in Tarlac that sweetpotato is valued, according to Dr. Laranang. “Sweetpotato is an important crop worldwide. It is resilient and has many uses. In Tarlac, it is considered an important cash crop. Most importantly, sweetpotato is highly nutritious,” she said in Filipino.

Sweetpotato, the superfood

Sweetpotato has been known in the global market as a superfood as it is high in vitamins, minerals, micronutrients, and is low on glycemic index but high in quality dietary fiber. Dr. Laranang said that different colors of sweetpotato offer different types of nutrients: white-flesh camote has more calcium; yellow to orange is loaded with beta carotene, and purple-fleshed sweetpotato is high in anthocyanins.

“It is an almost complete human food,” said Dr. Laranang.

In the video, Agustin said, “Sobrang sustansya ho talaga ng sweetpotato. Ang alam ko nga ho dito ay talagang maganda sa katawan - ang mga kaibigan kong nag-g-gym at ako rin dati, kapag ayokong tumaba - sweetpotato, kamote ang pinapakain sa amin para muscle-muscle.”

To which Dr. Laranang said that they produce sweetpotato juice intended for those who want to build their muscles since the juice is high in potassium.

In the video, Dr. Laranang said, “Yung understanding ng mga magsasaka, ang dahilan ng kulot ay nagsasawa na sa lupa o kaya dahil pumutok si Mt. Pinatubo. Nakita namin na hindi yun ang dalawang dahilan kung di dahil ito sa mga viruses na nakita namin, at ang sakit na ito ay nakakahawa. So doon po nag-umpisa ang tulong ng DOST.”

Currently, DOST-PCAARRD continues its partnership with TAU through various research on sweetpotato.



Aside from juice, TAU processed sweetpotato as ‘kamote pie,’ ice cream, cookies, ‘buchi,’ and brownies.

According to Dr. Laranang, studying which among the processes can be done with sweetpotato aside from boiling or steaming them, will help farmers create more value to their harvest.

Injecting science in sweetpotato farming

DOST-PCAARRD has partnered with TAU to develop the sweetpotato industry through research and development in the 1990s. Dr. Laranang cited that it was the Council that shed light to the Tarlaqueño farmers on sweetpotato viruses.

The Sweetpotato R&D Center was established through the Niche Centers in the Regions for R&D (NICER) Program of the DOST, which is being monitored by DOST-PCAARRD.

Agustin capped his vlog with the statement, “Ang galing ho, ang galing ng DOST-PCAARRD kaya naman nagtutulungan kami ngayon para magbigay ng magagandang impormasyon at tamang impormasyon para sa mga katulad kong gusto pang malaman ... kung ano ang mga nagiging innovations para ipagpatuloy na magkaroon tayo ng stable at quality na produce sa Pilipinas.”



DOST to refocus major programs aligned with PBBM's economic agenda- Sec. Solidum

By Allan Mauro V. Marfal, *DOST-STII*

Dr. Renato U. Solidum, Jr., the newly appointed Secretary of the Department of Science and Technology (DOST), shared that refocusing some of its major programs and aligning them with the economic agenda of the current administration will be the top priority of the department in the next six years.

In a broadcast statement, Sec. Solidum assured the public that the current programs of the DOST will be continued since they are already addressing the current administration's priority concerns in pumping up the economy. He said that they are discussing the refocusing of some of DOST's major programs, particularly in the areas of agriculture and food security, transportation, health, renewable energy, and job creation, and aligning them with the economic agenda of President Ferdinand Marcos, Jr's administration.

"When we think about science, technology, and innovation, it cut across all sectors. The DOST has service and research and development (R&D) institutions that could provide innovative and timely solutions to the challenges faced by the various sectors and areas in the country," said Sec. Solidum.

He further explained that DOST's main goal is to work closely with other national government agencies (NGAs) and help them address the problems of their respective stakeholders.

Sec. Solidum also said that in the areas of agriculture and food security, there are R&D institutions under DOST that are currently doing research to enhance the agriculture and nutrition sectors' post-harvest, value-chain, and food processing capabilities.

He also mentioned that DOST will continue to further improve its initiatives on transportation innovation and renewable energy.

"DOST has been partnering with various local government units and educational institutions when it comes to the research process and implementation of our projects on hybrid and electronic vehicles like the Hybrid Electric Road Train and e-Scooters in Cauayan City, Isabela, and the Hybrid Trimaran with the Aklan State University," shared Sec. Solidum.

He shared that the Center for Advanced Batteries under the Niche Centers for R&D or NICER program is one of the ongoing initiatives on renewable energy in partnership with the academe.

Meanwhile, Sec. Solidum said that DOST also has programs that could help in creating numerous livelihood and employment opportunities in all parts of the country. For one, he cited the assistance of the department to our MSMEs through its banner program, the Small Enterprise Technology Upgrading Program or SETUP.

"SETUP has been there for the local businesses in the regions for past decades, providing funding assistance to acquire equipment and technologies that would improve its overall production and operation and technical knowledge to ensure the quality and safety of their products," revealed Sec. Solidum.

On the plans and discussions to give the health sector the much-needed support especially amidst the global health pandemic, Sec. Solidum said that DOST has been helping push the passage of the law that would create the Virology Institute of the Philippines (VIP).

"We heard in the State of the Nation Address of President Marcos that the creation of the VIP will be one of his priorities in the legislative agenda. On the side, the DOST, through its agencies, have been preparing in terms of R&D initiatives and staff capabilities once



The newly appointed Secretary of the Department of Science and Technology Dr. Renato U. Solidum, Jr shares that while they will continue all major programs of the past administration, they will refocus them to align with the economic agenda of President Ferdinand Marcos, Jr. (Photo from the DOST-Office of the Secretary)

the VIP is enacted into law,” said Sec. Solidum.

The new science chief also shared his plans for the two DOST agencies that deal with various natural hazards, the DOST-PAGASA and DOST-PHIVOLCS.

“It is given that we need to continue improving the capabilities of our forecasters, geologists, and volcanologists and add equipment and facilities. But we would like also to focus on changing our approach to delivering messaging once a natural calamity is about to hit in certain areas. Aside from relaying what the weather will be? We should follow what the weather, an earthquake, or a volcanic eruption will do to us?” Sec. Solidum explained.

Sec. Solidum also disclosed that the DOST will continue to offer its resources and expertise in nuclear research as well as provide opportunities for S&T scholarships at the secondary, undergraduate, graduate, and Ph.D. levels that will enable the country to

increase the pool of highly dedicated and competent local scientists and engineers.

“We, at the DOST is discussing and will continue to do it together with our partners and the academe on how our resources and capabilities could offer solutions that are relevant and innovative and help other NGAs to fill the gaps of all sectors and communities in the country that would result to inclusive development,” said Solidum.

Prior to his appointment, Sec. Solidum was the Undersecretary for Scientific and Technical Services and officer-in-charge of the DOST- Philippine Institute for Volcanology and Seismology (PHIVOLCS).

Sec. Solidum has been serving at the DOST for 38 years. He served as the Director of the DOST-PHIVOLCS since 2003 and was also appointed as the DOST Undersecretary for Disaster Risk Reduction and Climate Change Adaptation and later as an Undersecretary for Scientific and

Technical Services. He graduated BS in Geology at the University of the Philippines-Diliman before earning his master’s degree in Geological Science at the University of Illinois at Chicago. He got his doctorate degree in Earth Sciences at Scripps Institution of Oceanography from the University of California, San Diego.

In recognition of his exemplary service in government and as a true professional, Sec. Solidum was bestowed with several awards like the Presidential Citation for Public Service, the Presidential Lingkod Bayan (Civil Servant) Award by the Civil Service Commission, the Excellence Award for Government Service by the Philippine Federation of Professional Associations, the Presidential Career Executive Service Award by the Career Executive Service Board, and the Professional of the Year in the field of Geology by the Professional Regulation Commission.



DOST chief wants local scientists, researchers, and engineers to develop the entrepreneurial mindset

By Allan Mauro V. Marfal, DOST-STII

SECRETARY RENATO U. Solidum Jr. of the Department of Science and Technology (DOST) said in his pronouncement that refocusing some of the programs of the department to align with President Ferdinand Marcos Jr.'s economic agenda would be their priority in the coming months.

These economic agendas pertain to food security, transport and logistics, health, renewable energy, education, disaster risk reduction and climate change, and job creation. And when the newly-appointed DOST Secretary discussed refocusing, it is more on presenting clear narratives of how several DOST programs, services, and research development (R&D) projects could provide a significant impact on these priority areas.

"We (DOST) need to ensure that all of our programs, projects, and services have clear objectives and can really address the needs of specific sectors and stakeholders. And I believe, the first step to do that is we need to give attention to our human resources development efforts," said Sec. Solidum in his interview with DOSTv's DOST Report aired on August 19, 2022.

In the aspect of R&D efforts of the science department, the Science chief cited that it is high -time already that our local scientists, researchers, and engineers should enhance their entrepreneurial skills even more.

"I think it is beneficial for many of us if our scientists and engineers have an entrepreneurial mindset. While developing and providing us innovative solutions to our pressing concerns, they can assess already how the industry and consumers would accept their products and technologies," explained Sec. Solidum.

He also added the plans of the DOST to enhance its existing programs for Micro, small and medium enterprises (MSMEs) such as the Small Enterprise Technology Upgrading Program or SETUP and OneStore, not only to provide further boosts to the local businesses' operations but also to expand its market beyond their areas.

Meanwhile, Sec. Solidum also shared how DOST can strengthen its relationship with various industry partners when it comes to technology transfer and adaptation.

"As part of our mandate, it is our responsibility to promote the conduct and ensure the feasibility of our different R&D projects. We have several R&D institutes that are focusing on food and nutrition, textile, forest products, metals, nuclear, agriculture, health, and other emerging technologies. We have an ongoing roadmap on these efforts as well," shared Sec. Solidum.

Aside from working closely with the industry and state universities and colleges in terms of identifying the gaps in several sectors and areas that R&D could play crucial roles, improved

messaging and narratives could also be a big help so that the public would understand and appreciate the practical benefits of science, technology, and innovation in their lives.

"As we are currently promoting #OneDOST4U, we would like to send a clear message to the public and to our partners in the industry. The entire DOST system, our R&D and S&T Service Institutes as well as our regional and provincial offices, are here to listen to your concerns and challenges and willing to provide you with innovative, appropriate, and timely solutions," said Sec. Solidum.

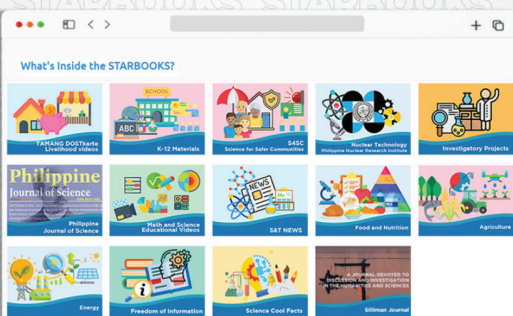
For the full interview with Sec. Solidum, please watch the DOST Report by scanning these QR codes for the DOSTv Facebook page & DOSTv YouTube channel.



In a sit-down interview with Gel Miranda and Onin Miranda in the recent episode of DOST Report, newly-appointed DOST Secretary Renato U. Solidum Jr. shares all of his plans and goals for the country's science department. *(Screenshot from the DOSTv YouTube Channel)*

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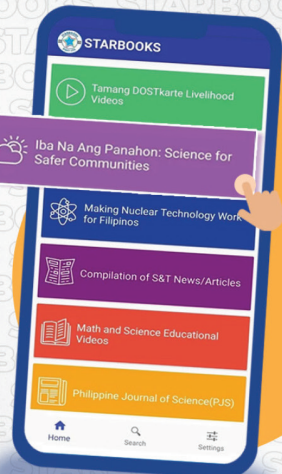
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