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# DOST backs revisit of nuclear energy policy to address rising power cost

By DOST-PNRI S&T Media Service

**A**t the heels of President Rodrigo Duterte's signing of Executive Order 116, the Department of Science and Technology-Philippine Nuclear Research Institute (DOST-PNRI) throws support for the renewed efforts to engage in a nuclear power program as it also pushes for an independent regulatory body through a pending bill in Congress.

DOST-PNRI, the country's lead agency in atomic research and development, underscores that adding nuclear to the current energy mix will pave the way for more efficient and less costly power cost.

The Institute is a member of the Nuclear Energy Program Inter-Agency Committee (NEPIAC) created by EO 116. NEPIAC, tasked mainly to study the adoption of a national position on nuclear power, is chaired by the Department of Energy (DOE) with the DOST as vice chair.

### Nuclear energy as best option

Dr. Carlo A. Arcilla, DOST-PNRI director, asserts that nuclear energy is the best option for the country's long-term plans for more affordable power generation.

"Ask anyone who has relatives abroad, and they will tell you the stark difference between their electricity rates and ours," said Dr. Arcilla, who strongly advocates for the Philippines to finally establish its own nuclear power program. "That's how the Philippines lags behind other countries in terms of power cost."

"Nuclear is simply the cleanest, cheapest and most efficient means of producing electricity. Nuclear power will especially spare the poorest among the Filipinos who are the ones actually allotting the lion's share of their income just for electric bills," said Dr. Arcilla.

Increasing electricity rates and occasional power outages only worsen the national mood as the country continues to grapple with the COVID-19 pandemic.

### Solution to climate change

Nuclear energy has the capacity to produce baseload power for a continuous supply of electricity 24/7, according to Dr. Arcilla.

Conventional sources such as coal and natural gas also has similar capacity, but nuclear does not entail the high cost of refueling fossil fuels or the carbon emissions that are the bane of a world ravaged by climate change.

A single pellet of uranium fuel almost the size of a pencil eraser contains as much energy as a ton of coal (907 kg), three barrels of oil (149 gallons), or as much as 17,000 cubic feet of natural gas, says Dr. Arcilla.

These advantages of nuclear energy have been acknowledged by the DOST-National Academy of Science and Technology (NAST), the country's leading advisory and scientific recognition body.

In a statement issued last year, DOST-NAST formally recommended nuclear power for the country's energy mix, saying that "nuclear fuel can be a viable solution to mitigate the effects of climate change."

DOST-NAST further states that nuclear serves as an alternative to fossil fuels not only in terms of environmental impact, but also in terms of its economic feasibility.

"[T]he dependence on imported fossil fuels makes the country vulnerable to world energy price volatility. By comparison, the cost of generating nuclear energy is less sensitive to nuclear fuel price due to the larger component contributed by its capital cost."

### Regulatory body for nuclear

Aside from advocating nuclear science and technology, the DOST-PNRI also continues to push for the enactment of the Comprehensive Atomic Regulatory Act which will create an independent nuclear regulatory body in the Philippines. International standards prescribe a separate agency that will handle the regulation of all activities and facilities involving sources of ionizing radiation.

"While we are waiting for a law creating an independent body, RA 5207 is still a basis for pursuing nuclear power as it was when the Bataan Nuclear Power Plant was being licensed in the 70s and 80s," says Dr. Carlito Aleta, former DOST-PNRI director, DOST Balik Scientist specializing on nuclear engineering, and consultant of the International Atomic Energy Agency. "Let's hope a new bill will be passed by Congress creating a new regulatory body."

RA 5207 or the Atomic Energy Regulatory and Liability Act of 1968 encourages, promotes, and assists the development and use of atomic energy for all peaceful purposes, including the production and use of atomic energy facilities and atomic energy materials, subject to regulations.

The regulations will cover matters involving nuclear power, nuclear and radioactive materials, facilities and radiation-generating equipment used for diagnosis and treatment of diseases in hospitals and medical centers, and other industrial activities in the country.

Currently, the DOST-PNRI serves as the national regulatory body for nuclear and radioactive materials.



# DOST, UP launch online course for LGU planners

By DOST-PCIEERD

Screenshot of the Training Launch on 10 August 2020. The event was graced by DOST Secretary Fortunato de la Peña, DOST Undersecretary Brenda Nazareth-Manzano, and UP Diliman Chancellor Dr. Fidel Nemenzo.

**The Department of Science and Technology and the University of the Philippines today launched an online training course for local government planners to help them project growth in their area.**

Dubbed the DOST-PLANADES Settlement Model Training Module, the online course will be a useful tool in identifying suitable locations for urban expansion, predicting future demand

for housing and its financial requirements, and planning for the spatial development of these emerging areas.

The training module is a product of a research conducted by the University of the Philippines (UP) Planning and Development Research Foundation Inc. (PLANADES), supported by DOST and monitored by the DOST Philippine Council for Industry, Energy and Emerging Technology Research and Development (DOST-PCIEERD).

DOST-PCIEERD Executive Director Dr. Enrico Paringit lauded the timeliness of the training module especially its shift to the online platform.

“As leader and partner in enabling innovations, we believe that the DOST PLANADES Settlement Training Module is an essential tool for local government planners who would like to come up with data-driven, science-based plan for their development. This training module will be helpful in their journey towards sustainable growth in the regions,” he said.

The training module offers an online course consisting of eight modules and is expected to be completed within 22 hours. The project will maximize the use of Canvas Network to aid the trainers and learners in completing the entire course.

The Human Settlement Modeling Project under PLANADES was created to deal with two concerns: first, to project settlements development in new growth areas in the country, and second, to estimate the corresponding housing requirements in the identified growth areas. Its four outputs are as follows:

A settlement development model for new growth areas in the Philippines

An estimation of projected housing requirements in the new growth areas.

The adoption of a model by a pilot LGU in its Comprehensive Land Use and Comprehensive Development Plan

A training module on the use of the settlements development model

PLANADES has identified nine (9) drivers of growth that would affect the development. According to the study, they are: (1) Internal Revenue Allotment; (2) Average Family Income; (3) Government Expenditure; (4) Resilience to Flood Hazards (5) Presence of Ecozones; (6) Proximity to Airport/Seaport; (7) Groundwater Allocation; (8) Proximity to Road Network (9) Within developable areas (outside Protected areas)

The research team has also identified the top 20 growth provinces.

Paringit expressed optimism that the outputs of the DOST PLANADES Settlement Model will boost economic activity in the region as it can pave the way for better local government planning.

“DOST-PCIEERD will continue to support endeavors like the DOST PLANADES Settlement Model Project and provide solutions and opportunities that can make change happen and accelerate development in our regions,” he said.

Interested individuals may inquire about the training program by sending an email to [dostplanadestraining@gmail.com](mailto:dostplanadestraining@gmail.com).

## ABOUT US

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# DOST linking universities' researches to industry adaptors

By Allan Mauro V. Marfal, DOST-STII

**M**embers of the industry sectors and academe have shared their respective success and gained benefits from collaborating from one another in the recent episode of DOST Report aired on 07 August 2020.

As beneficiaries of the Collaborative Research and Development to Leverage Philippine Economy (CRADLE) of the Department of Science and Technology (DOST), the private companies were able to address some of the existing challenges in their operations and services through the research and development (R&D) efforts of the experts from the universities.

The CRADLE program encourages synergistic relationship between the academe, research and development institutions and the industry through collaborative R&D projects. The private sector industry will identify the problem and the Higher Education Institutions (HEI) and research and development institutions (RDI) will undertake the R&D to solve the problem.

## Aquafeeds for Lab-Lab

Aquaculture can be considered a multi-million and important sectors in the country. However, the cost of the aquafeeds which plays a crucial role in this sector, have rise and it has been a huge concern for the farmers. In the Philippines, *lab-lab* was noted as one of the primary feeds used for milkfish production.

Through the Development of a Cost-Competitive from Lab-Lab project of De La Salle University (DLSU)-Manila and Santeh Feeds Corporation, they were able to develop Lab-Lab Harvester Autonomous Mode, Lab-Lab Harvester Vision System, Drying and Preservation Machine.

According to Dr. Alvin B. Culaba, project leader of the Aquafeed Lab-Lab, with the help of CRADLE program, researchers and scientists from DLSU-Manila developed a technology wherein *lab-lab* will be harvested every summer so it can be preserved and can be used during the rainy season. He said that *Lab-lab* is a natural material that grows in watery areas, particularly during summer season.

"With the use of Automated *Lab-lab* Harvester, the collection of *lab-lab* has been made quicker. During manual collection, it takes around 30 minutes and four (4) to five (5) people are needed to complete the collection of *lab-lab* but with the help of the newly-invented machine, the process only takes five minutes," said Dr. Culaba.

He also added that the dried *lab-lab* which is being made into powder is being placed into the dryer wherein the process preserves *lab-lab* so its moisture content will decrease and



As the Banana Disease becomes a huge problem for the local growers, researchers from the University of Southeastern Philippines (USEP) developed a Disease Surveillance System to enhance the disease control interventions of HIJO Resources Corporation in Davao City.

will extend its shelf life. Through this, *lab-lab* becomes available even during off-season such as rainy season.

Dr. Culaba said that CRADLE program of DOST is really great because private companies are given the chance to work with scientists and universities which have the capacity to research, share knowledge, and develop technology that will solve the real problem of the industry.

"I agree with Doc Alvin (Culaba), though we are also making R&D initiatives in the industry, we admit that we have limited resources when it comes to the financial aspect and our skills are inadequate for these tasks," said Rico.

She said that with this kind of arrangement, the academe partnering with the industry and government providing the funds is a huge help to us to innovate, be more cost-efficient and more effective in our production.

## Surveillance System for Banana disease

Banana Disease is a major problem for the growers as it takes time to work on eradicating affected plants. It has damaging effects to the production which resulted to big profit loss and increased prices of the product in the market.

To address these problems, the University of Southeastern Philippines (USEP) and HIJO Resources Corporation have worked on the development of ROSANNA: Mobile Banana Disease Surveillance System.

Dr. Val Quimno, project leader from USEP said that Banana Disease Surveillance System has established and enhanced the company's disease control interventions through better understanding of pests, plant selection, harvest monitoring, inputs monitoring, plant care, fertilization, and farm operation modules.

As a result of this innovation, the system has earned substantial savings for the company

According to the owner, Rosanna Tuason-Fores, Hijo is not a large company so it has limited resources, particularly for R&D. However, they are looking ways of to innovate in order to change the traditional farming practices and improve their banana disease management.

"I wanted an authentic R&D for more sustainable ways to go a more sustainable approach to address our problem. I have noticed over the last three years that from 55 cycles of deploying pest disease systemic and contact pesticides into farm, they have grown up to 76 with no significant impact on the pest and disease management," said Tuason-Fores.

Dr. Quimo said that the intention for the disease surveillance system is to minimize the frequency of non-spraying by coming up with a more realistic surveillance and gave chances the farm managers to learn appropriate interventions.

"Basically, we have spotters in the field who are helping us in data collection through our mobile application and then our mobile application will send the data to our system or to our server and then perform a number of crunching analysis to come up with a intervention options for the farm managers," explained Dr. Quimo.

Secretary Fortunato T. de la Peña said that DOST aspire to ensure that the research projects of our universities and research centers will be put into good use by various industries.

"We don't want to limit our researchers in merely publishing their works in universities; we also want some sectors to benefit from their works," said de la Peña.

# DOST-supported startup biz allows company's HR dept to become more of a strategic business partner

By Allan Mauro V. Marfal, DOST-STII



Payruler is a startup company supported by the Department of Science and Technology (DOST) that provides web-based application tailor-fits HR process automation for different businesses in the country. (Screenshot from the Payruler website)

**A** startup firm supported by the Department of Science and Technology (DOST) has a management system that they would like to introduce to different companies in the country.

Called Payruler, it is a web-based application that tailor-fits HR process automation for different businesses in the country. It could give a comprehensive and customizable system to allow human resource (HR) group of companies to focus more on being a strategic business partner.

According to its co-founder Timmy de Jesus, Payruler would minimize or if possible, eliminate some clerical and manual works of the HR section of the company and allow them to focus on the role of being a strategic business partner.

"When we created Payruler, our overarching goal is to take care of all the tedious and repetitive administrative things so that our HR people could focus more on strategic things," said de Jesus in her interview in the recent episode of ExperTalk Online aired on 12 August 2020 in DOSTv Facebook page.

Payruler has customizable modules that

cover the employee's life cycle. These are Hire for recruitment, Identify for employee information, Track for timekeeping, Compute for payroll, Employee for self-service, and Analyze for analytics purposes.

Currently, it has more than 100 companies in Metro Manila and Cebu is now availing of their services.

Meanwhile, as most of the areas in Metro Manila and Cebu are still under the community quarantine which limits the movement of the people, Payruler's web login feature has supported the work from the home arrangement of their client during the pandemic.

De Jesus also shared that they are also planning to integrate a contact tracing app in their system called WeTrace. It is a community tracing app that can be used for patient mapping, case reporting, and location tracking.

"Some of our clients are asking us when we go back to the office after all the work from home stuff, how can we ensure that our employees are safe? That is the reason why we would like to integrate WeTrace in our app to add another layer of protection to the employees of our client." explained de Jesus.

**Significant impact role of DOST to Payruler's growth**

In the latter part of the interview, de Jesus shared that the essential part of their growth as a company when DOST helped them to have a conducive environment for developing innovative and game-changing ideas.

"DOST has been at different points in the life of Payruler. Aside from providing us our first home, they opened the doors for us in terms of opportunities to build game-changing products to our client through a grant they offered us," said de Jesus.

From 2018 to 2019, Payruler has received a research grant from the DOST-Technology Application and Promotions Institute (TAPI) under Technology Innovation for Commercialization (TECHNICOM) program. Then currently, the said company is housed at the Cebu Business Incubator in IT (CEBUNIT) in University of the Philippines (UP) Cebu supported by the DOST- Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD).