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S&T POST

VOL. XXXI NO.4

DOST
8 OUTCOMES

Developing and optimizing science, technology and innovation for inclusive growth

- Agriculture
- Enterprises
- Industries
- IT-BPM
- Connectivity
- Health
- Education
- Disaster preparedness

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Aiming high

Yes, we can! This belief that Filipinos can excel in many things is a strong message that the Science Department is sending across the archipelago and even the world.

For the DOST, there are eight feasible ways where it can contribute to overall competitiveness of the country in the global arena especially that the ASEAN integration is just around the corner. These eight doable, achievable targets are simply called “8 DOST Outcomes”.

For this issue of **S&T Post**, the last for 2013, the editorial team tries to explain in the most understandable manner the details of DOST’s intended “outcomes” through various write-ups. For instance, there is the *Science-based know-how and tools that enable the agriculture sector to raise productivity to world-class standards*, as one of the eight. Here and for the other seven, science, technology, and innovation play a crucial role in raising productivity of the agriculture sector. All the basic questions: what, who, why, where, when and how, including the question “for whom” are hopefully answered in the feature articles carefully prepared for general readership.

They may seem a mouthful; but given enough push (with reality check on the side), one can safely assume that they could really be achievable. And who else shall pursue them aside from the Department’s three sectoral councils, seven research and development institutes, eight service institutes, two collegial bodies, and 16 regional offices which are all headed by directors who are experts in their respective fields. Steering all these is the command post at the central office headed by Secretary Mario Montejo who is ably assisted by his undersecretaries, assistant secretaries, and program managers; all working day in and day out and not letting any stone left unturned.

In the collective, the DOST system is a fortress with networks of scientists, researchers, science administrators, and the most reliable and capable hands of the rank and file; majority of whom are of the highest caliber comparable to, if not even better than, their counterparts elsewhere.

Understandably, with this superstructure, the DOST can truly claim that the identified outcomes that are anchored on science, technology, and innovation, will soon be felt by everyone even those who are usually left out. A solid strategy like this may spell the difference in defining *inclusive development,* leading to a truly “Smarter Philippines”.

Aristotle P. Carandang, PhD

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NATIONAL TIME CONCIOUSMESS WEEK

01 - 07 JANUARY 2014

DEPARMENT OF SCIENCE AND TECHNOLOGY

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FOURTH QUARTER 2013

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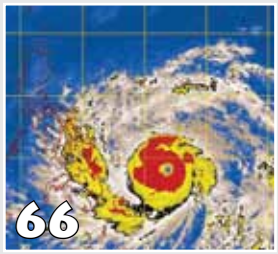
OUR COVER

The gears, representing S&T, form the number 8 shape to illustrate **DOST's 8 outcomes**. Inside the gears are images of the outcomes (agriculture, enterprises, industry, IT-BPM sector, government connectivity, health, education, and disaster preparedness). The gears are made to work together to push the country towards "Smarter Philippines" and reach the summit of inclusive growth and global competitiveness.



DOST, Microsoft tie up for Imagine Cup to boost support for Pinoy software developers

By ALLAN MAURO V. MARFAL
S&T Media Service, *DOST-STII*

THE DEPARTMENT of Science and Technology (DOST) has embarked on a partnership with Microsoft Philippines to conduct the 12th edition of Imagine Cup, an annual student competition of software applications addressing national problems in health, education, e-government, and others, as DOST's Information and Communications Technology Office (ICTO) continues to support local talents in the industry.

To be held in April 2014, Imagine Cup aims to encourage schools to institutionalize ICT-enabled innovation initiatives in their respective campuses in order to become hubs for ideas that will help solve real-life problems.

DOST-ICTO Deputy Executive Director Monchito Ibrahim, who represented the Department in the signing of the Memorandum of Understanding with Microsoft last November 5 at Shangri-la Makati, said that Filipino software developers are definitely at par with their foreign counterparts as they are naturally resourceful and creative.

According to him, it is not impossible to see their out-of-the-box concepts implemented and make the operation of government offices faster, more reliable and more efficient. The key to a concept's marketability, he said, is for the software developer to consider issues and challenges in the Philippines that may be addressed by ICT-enabled solutions prior to product development. Having fulfilled this, the software developer may be considered as a viable contributor in the country's drive towards sustainable development, Ibrahim noted.

Some of the recent winners of Imagine Cup are team Divide Zero that developed KidCAMP, a web and mobile application that enhances special education to improve autism communication tools, and Team Signum Fidei that developed a mobile application puzzle game called Conjuct, where the player is required to clear boards overlaid with photos of real-life problems around the world. The Imagine Cup 2012 grand prize winners will represent the country in the Microsoft Cup Design Competition.

The Department of Science and Technology partners with Microsoft Philippines for the 12th edition of Imagine Cup set for April 2014 as part of its support to Filipino software developers. Shown in photo are Imagine Cup 2012 winners (from left) Jeriah KJell Miranda, Thomas Tiam-Lee, Keven Hernandez and Jenina Chua of Team Signum Fidei, after finishing second place in the Microsoft Cup Design Competition in 2011 in New York. The team's winning technology was a mobile application puzzle game called Conjuct where the player is required to clear boards overlaid with photos of real-life problems around the world. The team earned the right to represent the Philippines in the New York competition after winning the Imagine Cup in the country. *(Information and photo from website of Microsoft Philippines)*

"Microsoft's Imagine Cup is vital to promoting the science and technology capability of our student developers in achieving innovations that are geared towards delivering economic and social benefits," said DOST Undersecretary Louis Casambre.

"We look forward to more partnerships like this with Microsoft in order to sustain the development of programs that harness the talents and skills of Filipinos in science and technology and at the same time, give them the opportunity to potentially contribute to the economy through entrepreneurship," he added.

Last year, DOST-ICTO teamed up with the Philippine Software Industry Association (PSIA) for the Spring.ph initiative, a start-up coaching and mentoring program that aims to produce at least 10 start-ups with annual revenues of at least US$1M by 2016. DOST-ICTO intends to align and harmonize efforts in promoting entrepreneurship in ICT, in order to strengthen the Philippine startup ecosystem and support new and upcoming startups for them to be globally recognized, Ibrahim said.

Based on a report released by PSIA, the software development industry is expected to generate revenues of $1.5 billion by the end of 2013, compared with the $1.16 billion it earned last year. At the same time, the number of I.T professionals is also expected to grow higher by 33 percent from 60,000 in 2013 to 80,000 by the end of 2013.

ALLAN MAURO V. MARFAL

Local researchers develop high-yielding, disease-free abaca hybrids

By ARJAY C. ESCONDO
S&T Media Service, *DOST-STII*

IN A project dubbed "Production of High Yielding and Virus-resistant Abaca Hybrids", experts used pacol, a wild variety of banana and a close relative of saging na saba, to create a disease-free breed of abaca.

They were able do this by using molecular markers in a biotechnology process called genetic engineering. This collaborative project among agencies such as the Department of Science and Technology's Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (DOST-PCAARRD), University of the Philippines Los Baños (UPLB), Institute of Plant Breeding (IPB), and Department of Agriculture-Biotech

The project is part of the DOST's commitment to provide S&T solutions that will address gaps in the major stages of production.

According to the project leader, Dr. Antonio Lalusin Jr. of IPB in UPLB, the project worked on the development of molecular markers to assist in the hybridization of bunchy top virus free abaca.

Dr. Lalusin said that the pacol variety, endemic in the Bicol region, has been used by breeders for hybrid purposes. Lalusin's team made use of the resistant gene marker of pacol by cross breeding it with abaca and then breeding it back to pure-bred abaca.

"Through the use of gene markers, the selection process for the bunchy-top resistant genes of pakol was significantly reduced," said Dr. Lalusin. "While the conventional breeding takes 10 years or so, we were able to produce resistant abaca in about five years or less using modern genetic technologies.

The bunchy top virus is the most injurious among the three diseases that affect abaca in the country. Aside from lowering the quality of harvested fibers, this virus also hinders the growth of infected abaca, resulting in no harvest at all.

The project also aims to increase good quality fiber yield by about 0.2 MT/hectare through the use of hybrid abaca plants. This translates to an additional 14,488MT of good quality harvest or roughly Php 579.5 million in revenues.

The team also targets to mass produce 2.5 million hybrid plantlets through tissue culture by 2014. Currently, the project houses about one million tissue cultured plantlets in different stages of growth in their laboratory, greenhouse and field trial station.

The top ten abaca producing regions, most of them hit badly by typhoon Yolanda, will be given planting materials to revive the industry.

Currently, the local abaca industry holds 85 percent share in the world market, with the Bicol region contributing about 36 percent production.

Abaca, commonly known as Manila hemp, the country's premier fiber, is known worldwide for its incomparable tensile strength. Commonly used as clothing and footwear materials in the past, abaca's application has expanded to sophisticated industries such as production of pulp for specialty papers such as currency notes, stencil papers in addition to textiles, handicrafts. Today, abaca fibers are being used by car manufacturers as automobile composites.

However, there is an increasing threat of disease incidence in the country, in addition to losses due to typhoons and other natural calamities. Viruses such abaca bunchy top, abaca mosaic, and abaca bract mosaic are the top three being studied on. Millions of pesos are lost to said diseases, with as much as 23 million pesos in Bicol alone.

ARJAY C. ESCONDO

DOST health experts bat for functional food regulations

By ESPIE ANGELICA A. DE LEON
S&T Media Service, *DOST-STII*

GLOBAL INTEREST on functional foods is ramping up and the Philippines is expected to catch on to this trend, said an official from the Department of Science and Technology's Food and Nutrition Research Institute (DOST-FNRI). Yet these foods should come with valid health claims that are government approved and market accepted, he stressed.

Dr. Mario V. Capanzana, director of FNRI, spoke on the topic during the 62nd Annual Convention of the Philippine Association for the Advancement of Science (PhilAAS) held recently at the Pearl Manila Hotel with the theme "Nutritional and Functional Food for Health and Wellness." In his presentation titled "Functional Foods: Global Trends and Issues", Dr. Capanzana revealed that functional foods, valued at US$ 168 B in the global market,is part of the new "health and wellness" market segment which also includes fortified foods, organic foods, traditional herbal products, and slimming products, among others.

Also called nutraceuticals, functional foods, as defined by the International Life Sciences Institute-North America, are those containing physiologically active food components, thus providing health benefits other than basic nutrition. Functional foods also refer to products isolated or purified from foods and generally sold in medicinal form like pills, or products that serve as supplement diets such as herbs. Some examples are rice, sotanghon noodles, coconut, malunggay, bitter gourd, sweet potato, taro, fruits, nata de coco, achara, and legumes that exhibit antimicrobial, anti-cancer, anti-diabetic, and anti-allergenic properties.

What are lacking but necessary, according to the FNRI director, are regulations to protect the public from false and misleading claims but will not put a dent on trade. "We need to develop functional foods with acceptable health claims," said Dr.

(next page)

The Philippine Association for the Advancement of Science 62nd Annual Convention unreels at the Pearl Manila Hotel in Manila from September 12-13, 2013 with the theme "Nutritional and Functional Food for Health and Wellness". *(Photo by Gerry Palad, S&T Media Service, DOST-STII).*

Dr. Jaime Montoya, executive director of the Philippine Council for Health Research and Development, shares with convention participants and the media what the public should know about or look out for in a functional food before buying it. Among others, he cited food safety and government approvals as essential information which consumers should look for. *(Photo by Gerry Palad, S&T Media Service, DOST-STII)*

Dr. Mario V. Capanzana, director of the Department of Science and Technology's Food and Nutrition Research Institute, explains the necessity for valid health claims on functional foods backed by scientific studies during his talk on "Functional Foods: Global Trends and Issues." *(Photo by Gerry Palad, S&T Media Service, DOST-STII)*

Special working group created to speed up e-Gov

By ROJO E. ESPIRITU
S&T Media Service, *DOST-ICTO*

THE DEPARTMENT of Science and Technology created a body to fast track the development of an e-Government framework that will ensure the "interoperability" of systems and allow the smooth exchange of information and services among government agencies.

A special order issued by DOST's Information and Communications Technology Office (ICT Office) tasked said group to develop the Philippine eGovernment Interoperability Framework (PeGIF) that will define the e-government to be established.

The PeGIF working group – comprised of information and communications technology (ICT) stalwarts from the government, academe and the private sector – will be tasked to develop standards and processes for governing the technical and informational interoperability of government ICT systems.

DOST Undersecretary Louis Casambre

The PeGIF shall be aligned with the E-Government Master Plan (EGMP), as well as other relevant national plans, frameworks and strategies.

DOST Undersecretary Louis Casambre, executive director of the ICT Office, said, "Through this PeGIF, we aim to attain true e-government sooner in the country. Our citizens can expect that queuing for basic government services such as health care and taxes will be faster and forms will no longer be needed to be filled out repeatedly, allowing for citizens to spend more time in what matter most, like earning a living."

"Likewise, it will also ensure the accomplishment of our goals for good governance, transparency accountability, enhance citizen engagement and effective delivery of public service," he said.

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*(*DOST health...*from previous page)*

Capanzana. To establish these health claims, he emphasized, clinical, biological or animal, and in vitro studies that involve isolated cells, molecules and other organism components, and epidemiological studies that look into links between food and diseases, should be looked into.

According to the European Food Information Council, consumers must have a clear understanding of, and a strong confidence level in, the scientific criteria used to document health effects and claims.

Dr. Jaime C. Montoya, executive director of the Philippine Council for Health Research and Development, another DOST agency, echoed Dr. Capanzana's statement. "There needs to be a global framework that cuts across countries," he declared in his presentation titled "Health Claims and Functional Foods: A Global View" during the PhilAAS Convention.

Dr. Montoya suggested that before buying any functional food or product, consumers should get information on product safety, the amount of beneficial ingredients present in the food, whether the herbs and other ingredients were tested for government approval, and nutritional benefits, among others.

Global trends in regulations actually point to the need for a broad range of safe ingredients and sufficient information about the foods, as well as globally recognized manufacturing standards and appropriate technical requirements, among others. Dr. Capanzana added that we also need to look at the increasing number and variety of supplements in the market for over-the-counter purchase.

"We do not know how many spoonfuls of a functional food should we eat to have enough amount of nutrients, or how many capsules or tablet should we take per day," stated Academician Dr. Evelyn Mae Mendoza of the National Academy of Science and Technology, a DOST advisory body, during her talk on "Functional Foods of the Philippines."

"Let food be thy medicine,"the FNRI head intoned as he expressed the need for government, the academe, and the local food industry to join hands in solving the issues related to functional food.

The current surge of interest in functional foods is driven by several factors. Among these are globalization, urbanization, science and emerging technologies, the global aging population, increased health care costs, changing regulations, and business opportunities provided by functional foods. The new risk factors involved in strokes and heart attacks also contribute to this upward trend. Around the world, guidelines and regulations on functional foods are now being developed, with Japan leading the way for such efforts. The others are China, Brazil, Brunei, Israel, Estonia, Vietnam, Laos, Russia, Thailand, Venezuela, Vietnam, UK, and Cambodia to name a few.

ESPIE ANGELICA A. DE LEON

DOST's water hyacinth dryer helps Cainta women weave better lives through handicrafts

By APPLE JEAN C. MARTIN
S&T Media Service, *DOST-FPRDI*

A LIVELIHOOD cooperative specializing in water hyacinth products can expect more productivity after receiving a water hyacinth dryer developed by Department of Science and Technology's Forest Product and Development Institute (DOST-FPRDI).

The Rizal-based Bangon Kababaihan Bagong Cainta (BKBC) cooperative acquired the dryer through "Shared Service Facility" project of the Department of Trade and Industry (DTI) - Region IV-A in a turnover ceremony held recently at the BKBC Livelihood Production Center.

"The local government of Cainta recognized the need to harvest the thick patches of water hyacinth in the Manggahan floodway that regularly cause severe flooding in their area," said Ms. Grecelda A. Eusebio, chief of FPRDI's Business Development and Intellectual Property Section.

"The collected plants are dried and processed into bags, wallets, home accents and other handicraft products by the women of BKBC," Eusebio added.

The dryer shortens drying time of water hyacinth stalks from several days to only a few hours, thus lessening the risk of fungal attack. It enables small and medium enterprises to sustain and even increase production as the equipment makes drying possible even during the rainy season.

"Using the dryer, the cooperative can dry as much as 5,000 water hyacinth stalks a day. This is a welcome development since the BKBC supplies dried stalks to La Casa Décor, a company that exports water hyacinth wall coverings to 45 countries, including Canada and the United States," explained Ms. Wency H. Carmelo of FPRDI's Technology Innovation Division.

Among those present during the turnover were FPRDI Deputy Director Felix B. Tamolang, DTI Region IV-A Director Marilou Toledo, former Cainta Mayor Mon Ilagan, BKBC head Veronica Ilagan, and representatives from the Villar and Meralco Foundations.

DOST's water hyacinth dryers have already benefitted several groups. Among them are the Taguig-based Kabuhayan ng Mamamayan Producers' Cooperative in 2011, and the Pasig City Jail in 2012 for its livelihood programfor inmates and locals.

Aside from developing the dryer and giving technical assistance to adopters, the DOST-FPRDI also conducts training courses on water hyacinth processing and treatment. Several groups of women and out-of-school youth, mostly from poor communities near Laguna Lake, have beneffited from these courses.

APPLE JEAN C. MARTIN

Wise mariculture practices eyed in forum

By MARIA LUISA S. LUMIOAN
S&T Media Services, *DOST-STII*

WISE MARICULTURE practices such as carefully choosing sites least affected by environmental stresses can help insulate us from climate change consequences. This was one of the major points discussed in the recently held Second National Conference on Climate Change at the Traders Hotel Manila.

In one of the conference's plenary sessions, Prof. Laura T. David, deputy director for instruction at the Marine Science Institute, University of the Philippines Diliman (UP-MSI), tackled the effects of climate change on food security and pushed for a solution via adoption of wise mariculture practices. Mariculture refers to the cultivation of marine organisms for food and other products in their natural habitat.

FAO Aquaculture photo library/A.Coche

Wise mariculture practices which include proper selection of cultivation sites, proper stocking density and maintaining biodiversity will help us cope with the effects of climate change.

Unhealthy or damaged marine habitats impact on food security. Under certain conditions, floods resulting from extreme weather events may wash off sediments into the coast, burying sea grasses and corals which are home to fishes and other marine animals.

According to David, wise practices involve the selection of cultivation sites least affected by environmental stresses while minimizing the impact on marine environment, and maintaining proper stocking density which refers to the number of fish in a cage.

Emphasizing that "biodiversity is key to securing our food resources especially under the climate change lens", David also recommended raising various species in a mariculture site to lessen the likelihood of all the fish stocks being depleted due to a certain illness or condition thus saving fisherfolks from major economic losses.

Aside from wise mariculture, she also prescribed protection and rehabilitation of coastal habitats such as mangroves, the practice of seasonal fisheries, watershed management and site selection for intensive fisheries.

David backed up her recommendations with studies by UP-MSI showing the varying effects of climate change on our coastal environment. According to the studies, Sulu-Sulawesi is most affected by sea level rise. When sea level rises beyond normal levels, younger mangroves become fully submerged in seawater and mature mangroves are exposed to more saltwater that they can handle.

The MSI studies also indicated that aside from sea level rise, most of the Pacific and Northwest areas such as Ilocos, Pangasinan, Batangas, and Mindoro, have to deal with increase in sea surface temperature as well. An increase of just one degree in sea temperature lasting for four weeks could result to coral bleaching which may lead to partial or total death of coral colonies, explained Prof. David. During bleaching, corals expel the algae living in their tissues, thereby exposing the former's white color and inhibiting the coral colonies' growth and reproductive capacity among others.

Rise in sea temperatures can also cause fishes go to deeper waters or to higher latitudes, making it more difficult and costly for fishers to make a living.

According to Prof. David, mariculture accounts for 49 percent of our fish consumption and fish constitutes 25-45 percent of dietary protein in the region. Many Filipinos depend on marine resources for livelihood, said the UP professor.

Also discussed in the conference were Renewable Energy and Climate Change Mitigation, Analytical Tools for Climate Adaptation, Settlements and Housing, and Risk Insurance, among others. NAST, the country's highest recognition and advisory body on science and technology, organized the conference to identify priority research and development agenda on the issue.

Organized by the Department of Science and Technology- National Academy of Science and Technology (DOST-NAST), the conference carried the theme "Linking climate knowledge into action" to provide a venue for Filipino scientists and researchers to share knowledge and practices on climate change which primarily affects marine habitats.

MARIA LUISA S. LUMIOAN

Local MSMEs poised to be smarter via DOST's Food Innovation Centers

By ALLAN MAURO V. MARFAL
S&T Media Service, *DOST-STII*

NEW EQUIPMENT and extensive training on innovative food processing techniques are out to provide micro, small, and medium enterprises (MSMEs) in the country that much needed boost with the establishment of one Food Innovation Center per region by the Department of Science and Technology (DOST).

These facilities, which are among the 58 million worth of technological interventions allocated by DOST, will enhance the quality of products and services offered by these enterprises via the provision of modern equipment and practical training, thus giving them the necessary competitive edge.

This was announced by DOST Assistant Secretary for Strategic Plans and Programs Robert O. Dizon during the press conference for the 2013 Visayas Science and Technology Fair last October 16 at SM Iloilo City. According to Asec.Dizon, this effort is part of their retooling process for the Small Enterprise Upgrading Program or SETUP, one of DOST's banner projects to produce smarter MSMEs.

Recognizing MSMEs' contribution to the country's economic growth, Asec. Dizon said that these Food Innovation Centers will encourage creative minds to make innovative products that will offer additional livelihood and job opportunities for local residents. According to the DOST official, MSMEs are commercially sustainable and attuned to global markets' demand. They are responsive to the country's development agenda, not only when it comes to providing employment opportunities but also in terms of manufacturing products, which addresses food security, promotes health and nutrition, supports tourism and offers solutions that impact the lives of Filipinos.

"MSMEs are not merely an engine of economic growth but rather they are the critical engines of inclusive growth," Asec. Dizon said.

According to DOST Region VI Director Rowen Gelonga, in 10 years, SETUP has helped more than a hundred MSMEs in Western Visayas with P 150 million worth of technology assistance.

He also added that through the interventions received by MSMEs from the regions, they are now more equipped to improve the packaging and quality of their respective products . In addition, these also help strengthen their chance to at least keep pace with products abroad.

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PCIEERD Executive Director
Dr. Rowena Cristina L. Guevara

PCIEERD pushes for directed research

By MARIA ELENA A. TALINGDAN
S&T Media Service, *DOST-PCIEERD*

THE PHILIPPINE Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD) has laid down its guiding principle in funding researches. Specifically, the Council will infuse funds to projects that are directed towards specific sectors with immediate impact to the economy or directly address a pressing national concern.

Such firm principle on PCIEERD's research agenda is hinged on the government's policy directions for rapid, inclusive and sustained economic growth; poverty reduction and empowerment of the poor and vulnerable; and integrity of the environment and climate change adaption and mitigation.

Meanwhile, the PCIEERD is now ready to accept research and development (R&D) proposals for funding opportunity in CY 2015 from public and private universities, research and development institutes (RDIs), R&D consortia, non-profit S&T networks and organizations, and other proponents seeking funding for their R&D initiatives.

This funding opportunity intends to encourage S&T collaboration and applied research among these agencies and institutions.

Accordingly, the R&D proposals should be directed towards harnessing the potential of emerging technologies, expand technology development and innovation for the industry and energy sectors, and develop S&T interventions and solutions for climate change adaptation and mitigation and disaster risk reduction.

In keeping with its directed research, funding opportunity will be prioritized for R&D proposals that fall under the following areas: 1) Appropriate Technologies for Industry Competitiveness; 2) Sustainable Energy; 3) Sustainable Mass Transport; and 4) Environment, Climate Change and Disaster Risk Reduction.

The total estimated funding for this competitive opportunity is approximately PHP500,000,000 under the PCIEERD Grants-In-Aid. The PCIEERD-DOST anticipates R&D award ranging from approximately PHP500,000 to PHP10,000,000 of research agreements resulting from this announcement, subject to availability of funds and the quality of proposals received. Likewise, PCIEERD foresees about 40 research agreements under this announcement, subject to the availability of funds and quality of proposals.

Only proposals submitted through the PCIEERD-DOST e-Proposals will be accepted before the closing date on January 31, 2014. The complete package of the Call for Proposals and Proposal Forms can be downloaded at http://www.pcieerd.dost.gov.ph. Inquiries can be made via postal mail, facsimile, or electronic mail to Engr. Albert G. Mariño, chief, Policy Coordination and Monitoring Division, 5th Level Science Heritage Building, DOST Complex, Gen. Santos Ave.Bicutan, Taguig City or e-mail agmarino@dost.gov.ph.

MARIA ELENA A. TALINGDAN

Online payment system for gov't transactions in the pipeline

By ALLAN MAURO V. MARFAL
S & T Media Service, *DOST-STII*

Image above is the official logo for the Department of Science and Technology's (DOST) PhPay, a government online payment system that will enable the public and institutions to undertake government transactions through online delivery channels including debit instructions (ATM accounts), credit instructions (credit cards) and mobile wallets. The system will prevent long lines for government transactions, travel time and bureaucratic red tapes. DOST through its attached agencies, Information and Communications Technology Office and Advanced Science and Technology Institute developed PhPay, which is under the Integrated Government Philippines Project or iGovPhil. *(Photo from iGovPhilippines website)*

BY FEBRUARY 2014, expect the long queues for government transactions to start disappearing as PhPay – an Internet-based electronic payment facility developed by the Department of Science and Technology (DOST) – is expected to go live by that month.

This was revealed during the year-end activity of the Integrated Government Philippines iGovPhil) Project last December 11, 2013 at Ayala Land Techno-Hub in Quezon City.

PhPay will allow the public to pay for government transactions through online delivery channels, including ATM accounts, credit cards, bank and non-bank over the counter payments, mobile wallets (SMS), mobile banking and rural banks, among others. It is among the products and services under iGovPhil, a joint project of DOST agencies Information and Communications Technology Office and Advanced Science and Technology Institute, which aims to make interactive, interconnected, and efficient government collaboration possible.

According to Jops Josef, project leader of PhPay, several private payment aggregator companies have offered their services for PhPay including Dragon Pay, Master Card, LBC and Rural Net.

"What it offers is convenience to citizens and government agencies. A citizen will not spend for fares or gas and parking fees, and food. Paying online will also save the citizen time for not falling in line. It also lessens the opportunity for graft and corruption as it eliminates face-to-face contact and promotes transparency on payments made to the government," Josef said.

A convenience fee will be collected for each online transaction, which possibly costs 10-40 pesos per transaction.

The Bureau of Treasury (BTr) will play a crucial role in implementing this system, as it will serve as single-government merchant in the whole electronic payment process. Traditionally, each agency is required to deposit payments to BTr at the end of each transaction day. However, PhPay will shorten this process by allowing the payments to go directly to BTr.

The system may even further improve once engagement terms with the payment aggregators have been finalized, Josef revealed.

He advised government agencies with existing contracts with other online payment system providers to honor these contracts. "PhPay is only here to give them other options, especially when their contracts expired," he added.

At present, ICTO is looking forward to include government owned and controlled corporations and state universities and colleges under PhPay's coverage in the project's next phase. As of press time, 43 national government agencies have shown interest in PhPay. These agencies will undergo assessment to determine if they are qualified and capable of offering these services.

PhPay is currently undergoing pilot testing, with the Cooperative Development Authority, Department of Industry and National Computer Center of ICTO as clients. For more information about PhPay and other services and products of iGovPhilippines Project, log on to i.gov.ph or checkout the Integrated Government Philippines Facebook page at *https://www.facebook.com/iGovPhil?ref=br_tf* .

Latest IT, advanced science books now available at DOST's info institute

By ESPIE ANGELICA A. DE LEON
S&T Media Service, *DOST-STII*

THE LATEST IT and advanced science books may now be accessed by students and researchers at the Department of Science and Technology's information agency. Located at the DOST Complex in Bicutan, Taguig City, Metro Manila, the Science and Technology Information Institute (STII) recently acquired the library collection of the Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD).

With the transfer of the books and materials from PCIEERD to STII, the latter further beefed up its already vast selection of science and technology (S&T) resources being the central library of the DOST system.

The transferred acquisitions include new and up-to-date titles in computer science, information technology, veterinary medicine, statistics, mathematics, chemistry, physics, and biochemistry, among others, including theses and dissertations.

Already, the STII Library houses a significant collection of S&T resources in print and non-print formats. Among these are encyclopedias, almanacs, books, monographs, local and foreign journals, magazines, newsletters, annual reports, project and technical reports, abstracts, indexes and bibliographies, conference proceedings, investigatory projects and video packages of DOST technologies.

The Library has also kept up with modernization and the changing needs of library users via digitization and facility/ systems upgrade. Its SciNet-Phil Integrated Library Management System allows convenient access to all materials available in the entire DOST system.

Meanwhile, the science.ph website makes online search of STII library's databases easier.

Further, STII's STARBOOKS or the Science and Technology Academic and Research-Based Openly Operated Kiosk, a stand-alone digital library, enables students and researchers in remote areas and no Internet connection to access S&T materials in text, video, and audio formats. Installation of STARBOOKS kiosk is free and can be availed by public schools, libraries, and other institutions that provide free information access to the public.

STII's library materials cater to students, writers of S&T topics, S&T professionals and researchers, members of the academic community, and other stakeholders, including those from the non-academic sector.

The STII Library is located on the ground floor of the STII Building inside the DOST Complex along General Santos Avenue in Bicutan, Taguig City.

Top Left: Part of the library collection donated to the DOST-STII Library by DOST-PCIEERD, boosting the facility's already vast resources of science and technology (S&T) titles. The new acquisitions include up-to-date books, publications, and materials in computer science, information technology, veterinary medicine, statistics, mathematics, chemistry, physics, and biochemistry, among others. Lower left: Theses and dissertations are also among the new library acquisitions. Top: Students, S&T practitioners, writers, professors, and researchers benefit from the library's latest materials on various S&T fields in both print and non-print formats. *(Photos by Henry A. de Leon, S&T Media Service, DOST-STII)*

DOST to meg "Smarter Philippines" as world zooms in on emerging economies

By JOY M. LAZCANO
S&T Media Service, *DOST-STII*

www.globeimages.net

SMARTER TECHNOLOGIES and capabilities made possible by the Department of Science and Technology (DOST) are out to bolster the Philippines' global competitiveness amid forecasts that the country will rise as the world's 16th largest economy, leaping 27 places from its current position.

In his presentation during the recent opening of the North Luzon leg of the Regional Science and Technology Week (RSTW) at the Benguet State University in La Trinidad, Benguet, Alejandro Melchor III, executive director of DOST's Information Communication Technology Office (DOST-ICTO), revealed that the world is now looking at the Philippines and other Asian countries as the fastest growing economies.

"Who will deliver the fastest growth in 2050? Number one, China, traditional; second, India, and surprisingly, the Philippines," exclaimed Melchor.

Smarter Philippines

DOST leverages these projections to prepare the country towards this global economic shift as it directs the journey toward a "Smarter Philippines," a program which will enable the country to achieve global competitiveness by developing and deploying smarter technologies. In particular, Smarter Philippines aims to enhance capabilities and thus give local and global investors more options to invest in agriculture, industries, governance, climate change adaptation, human capability, jobs creation, healthcare, and micro, small and medium enterprises (MSMEs).

For smarter farming, the program will address perennial problems in rice sufficiency, mango productivity, livestock and fish productions, and improvement of coconut yield via enhancement of the fruit's genetic makeup. Coconut is one of the country's most promising crops, generating $1.45B in annual revenues.

Smarter MSMEs will strengthen the sector by providing innovative, cost-effective and appropriate technologies that enable MSMEs to develop and produce competitive products that meet world-class standards.

Meanwhile, Smarter Industries will provide state-of-the-art facilities and capabilities which will enable local industries to move up the value chain and attain global competitiveness.

For the electronics and semiconductor sectors, DOST unveiled the Advanced Device Materials and Testing Laboratory earlier this year to enhance their productivity.

Furthermore, Smarter Industries will also help widen the global market share of the local business process outsourcing (BPO) industry which is poised to attain world leadership in four more fast-growing BPO services namely healthcare information management, finance and accounting, human resources and creative process outsourcing. Further strengthening the capabilities of the BPO industry is DOST's Next Wave Cities Program which will ensure that BPO employment will be spread throughout the country.

To achieve good governance and transparency, Smarter Government will provide an ICT-based transformation of governance and the delivery of government services and information. Projects such as iGov Philippines, a secured online government payment services and TV white space, and an internet connectivity using untapped UHF and VHF TV channels, to provide innovative government services to people, even in the countryside.

To address the absence of public doctors especially in far-flung areas of the country, technologies such as the RXBox, a portable medical device that could check the patient's electrocardiogram or ECG, heart rate, blood, pulse rate and blood oxygenation, can provide immediate diagnosis by transmitting the test results to affiliated medical doctors through the internet or mobile phones.

Global seismic shift

According to Dir. Melchor, an Asian Development Bank survey showed that the combined gross domestic products of ASEAN, China and India could quadruple and exceed the combined US and European economies in the coming years. Meanwhile, the region's share in world investments is projected to reach 40 percent. "Every $100B of world investments, $40B will go to the Asian region," Dir. Melchor said.

The DOST-ICTO official also mentioned a global research by the Hongkong and Shanghai Banking Corporation indicating that by 2050, world attention will turn to "new emergers" as the world economy undergoes a seismic shift.

Seismic shift refers to a global economic transformation from the economic superpower countries to new and emerging economies.


JOY M. LAZCANO

Iloilo ready to level up IT-BPM in its fold

By ROJO E. ESPIRITU
S&T Media Service, *DOST-ICTO*

Mayor Jed Patrick Mabilog of Iloilo City addresses an audience of more than 100 students, ICT stakeholders, and industry experts at the Iloilo leg of the Next Wave Cities ICT roadshow. Iloilo City prides itself with having the right ecosystem required to support the industry such as stable energy and power facilities, an army of skilled human resource, IT-BPM-ready real estate.and robust telecommunications infrastructure, so says the Mayor.

ILOILO, DESPITE being hit hard by super typhoon Yolanda, is all set to bring the Information Technology – Business Process Management (IT-BPM) industry in the province to level with Bacolod and Cebu. This was bared at the 8th leg of the Next Wave Cities Road show held in the Iloilo City recently.

Organized by the Iloilo Federation for Information Technology (IFIT) and the DOST- ICT Office supported by IT-BPM Industry associations in the country, the event was attended by more than 300 students, local industry stakeholders, and members of the local community.

Iloilo, currently with 9,000 workers in eight IT-BPM companies, is among the top 10 Next Wave Cities, together with Baguio, Davao, Metro Laguna, Dumaguete, and Naga, among others.

According to Iloilo City Mayor Jed Patrick E. Mabilog, "As one of the leading next wave cities in the country, and a leading IT-BPM destination, Iloilo City prides itself of having the right ecosystem required to support the industry such as stable energy and power facilities, an army of skilled human resource, IT-BPM-ready real estate, and robust telecommunications infrastructure."

Meanwhile, Jess Palmares, president of IFIT, said, "Northern Iloilo was badly affected by the last typhoon but with our resilience I know we can recover. Everything is in place for Iloilo City. Development has occurred in several areas by developers such as Gaisano, Megaworld and Ayala. We have also continued to develop manpower capability in the province supported by educational institutions, DOLE and TESDA. We are ready to take Iloilo to the next level and become an IT-BPM Center of Excellence like our neighbors Bacolod and Cebu."

The Iloilo Next Wave Cities leg was well supported by the industry, coinciding with the Animation Council of the Philippines (ACPI) Animahenasyon festival which was held in the West Visayas State University, also in Iloilo City.

"Iloilo has developed a good ecosystem to attract multinationals and BPOs," IT Business Process Association of the Philippines President Jo Mari Mercado commented. "The next step is now for Iloilo to develop its local ICT industry."

Thus the association invited resource persons from various organizations such as the ACPI, Contact Center Association of the Philippines, Game Developers Association of the Philippines, Philippine Software Industry Association, and Healthcare Information Management Outsourcing Association of the Philippines to motivate students to take up IT related courses and capacity development programs supported by the industry. This is its way of helping beef up the human resource requirements of the IT-BPM industry of Iloilo.

ROJO E. ESPIRITU

DOST, IBM Phils forge alliance for disaster mitigation

By RODOLFO P. DE GUZMAN
S&T Media Service, *DOST-STII*

THE DEPARTMENT of Science and Technology (DOST) and IBM Philippines recently sealed its partnership in addressing the need to create a more responsive computer platform for disaster response.

The Memorandum of Agreement signing was held at the National Engineering Center in the University of the Philippines Diliman last December 12, 2013 with Executive Secretary Paquito Ochoa Jr. co-signing with DOST Secretary Mario G. Montejo and IBM Philippines President and Country General Manager Mariels Almeda Winhoffer.

Secretary Montejo, in his opening remarks, thanked IBM Philippines for its commitment to assist the government in finding solutions with the use of advanced software technologies as part of its corporate social responsibility program.

"The agreement we have forged with IBM Philippines is another milestone for us in master planning technology programs and enabling super computers to create solutions to problems. I thank IBM for being bullish or should I say excited for the super computer that will enhance weather forecasting, climate change adaptation and response to disasters," said Montejo.

Montejo also added that with IBM's decades of experience, the DOST will be able to maximize its use citing the computer as the engine of application that can be used not only for disaster management but in other areas that will benefit the various sectors of society.

For its part, IBM Philippines President and Country General Manager Winhoffer stressed the importance of the partnership as a step towards helping solve problems using technology to support the shared vision for Filipinos to have a better life.

"IBM Philippines is equally thankful for being given the opportunity to offer its services and seeing through what Secretary Montejo envisions to become a reality. IBM will set the foundation and the framework in finding ways to help the people of the Philippines. This is not just about a government program but about a country's future," said Winhoffer.

All for one in disaster preparedness. (L-R, seated): DOST Secretary Mario Montejo, Executive Secretary Paquito Ochoa, and IBM Philippines President and Country General Manager Mariels Almeda Winhoffer sign the Memorandum of Agreement to create a more responsive computer platform for disaster response. Among the witnesses are DOST Undersecretary Louis Casambre (middle, second row) and IBM Philippines' R&D Executive Delfin Jay Sabido (second from left) and Chief Technology Officer Lope Doromal (rightmost). *(Photo by Henry A. de Leon, S&T Media Service, DOST-STII)*

Part of the simple ceremony was a presentation by Lope Doromal, Chief Technology Officer of IBM Philippines, highlighting the main feature of the computer program that is the Intelligent Operations Center (IOC) where there is anticipated increase in situational awareness and the sharing of information to stakeholders using the geographical information system or GIS.

"Some of the advantages of the IOC include the integration of the CCTV cameras into the system where monitoring in real time in specific locations is possible. We can maximize the use of social media as our eyes and ears with Twitter feeds. The data we gather can also be integrated with Project NOAH. Lastly, GPS (global positioning system) data can be used for tracking purposes in real time like identification of schools by DepEd or hospitals by DoH," explained Doromal.

Doromal further said that the IOC for Emergency Management will provide advanced collaboration, analytics and asset management tools to help different agencies in coordinating disaster management effort by integrating all data gathered from various sources.

Also, an integrated communications system is incorporated in the system with ICTO as the data center in Manila that can be linked to the National Disaster Risk Reduction Management Council (NDRRMC), to mobile units, laptop computers and remote communications platforms like VHF/UHF, radio gateways, SMART/PLDT and VPN Router.

Others present during the signing were DOST Undersecretary Louis Casambre of ICTO, Dr. Jay Sabido of IBM Philippines, Dr. CP David of Project NOAH-ClimateX, and officers of IBM Philippines.

RODOLFO P. DE GUZMAN

DOST's wood ID service helps in applying logging ban in PH

By APPLE JEAN C. MARTIN
S&T Media Service, *DPST-FPRDI*

WOOD IDENTIFICATION, the scientific process of identifying a piece of wood based on its physical and structural features, is important in the implementation of the country's logging ban, according to an expert from the Department of Science and Technology-Forest Products Research and Development Institute (DOST-FPRDI).

Dr. Ramiro P. Escobin, Scientist 1 at the DOST-FPRDI's Anatomy and Forest Botany Section and wood identification expert for 32 years, said that the scientific way of identifying wood can serve as basis for charges against loggers and ship owners that transport illegally-cut timbers.

Cutting and harvesting of all trees in natural and second-growth forests, or those trees not planted by man, is expressly prohibited by virtue of Executive Order No. 23 (EO 23), reminded Escobin.

He added, "So far, the Institute's wood identification service has helped the Department of Environment and Natural Resources's Anti-illegal Logging Task Force seize a large shipment of illegally-cut timber in North Harbor and conduct an on-site identification of confiscated lumbers in lumberyards."

Dr. Escobin performs on-site wood identification at a lumberyard.

Aside from being instrumental in the anti-illegal logging campaign, the DOST-FPRDI also helps identify wooden archaeological artifacts and conducts training courses on wood identification for pallet companies and government agencies.

DOST-FPRDI also has an internationally-recognized Wood and Herbarium Library that houses 16,078 specimens of local and foreign wood samples.

Wood identification procedures include macroscopic identification or the use of the naked eye and hand lens, and microscopic identification, Escobin said. He also informed that some physical features of wood are important in the identification of its species.

A one-of-its-kind in the country, FPRDI's Wood and Herbarium Library has 16,815 samples available for distribution.

Juan time

PHILIPPINE STANDARD TIME (PhST)




PhST to lead towards Smarter Philippines agenda

By ANNA THERESA P. VALMERO
S&T Media Service, *DOST-STII*

BICUTAN, TAGUIG—GETTING Filipinos to adopt the Philippine Standard Time (PhST) is the first step of uniting the country to seize the opportunities for a Smarter Philippines.

This is the key message of Department of Science and Technology (DOST) Secretary Mario G. Montejo during the country's first celebration of the National Time Consciousness Week, ushered in by the simultaneous flag raising ceremonies in government offices nationwide Monday (January 6).

"The Philippines is composed of diverse culture and people. We may not all agree on everything but the Philippine Standard Time is one thing that will unite us and guide us in the conduct of our activities at home, at school, and at work," notes Secretary Montejo.

Montejo explained that the "Juan Time, On Time Ako" campaign seeks to redefine the concept of Filipino time to one that is of punctuality and not of missed opportunities due to tardiness.

Changing the concept of Filipino time brings about cultural change that will be key for the country in "redefining Philippine standard as one of top quality."

The adoption of PhST is also seen to pave the way for Smarter Philippines agenda outlined earlier by DOST.

Under Smarter Philippines, DOST has been tasked to maximize the potential use of science and technology to help improve the quality of life and drive inclusive growth among communities, especially those in the country.

Under the umbrella program of Smarter Philippines, DOST aims to create an environment that will foster local and global investments in the country as it readies for the shift in emerging economies by 2015.

An Asian Development Bank study noted that next to China and India, the Philippines will be one of the key emerging economies that will get a greater investment share by 2015.

The sectors that the country will focus on will include: agriculture, industries, governance, climate change adaptation, human capability, jobs creation, healthcare, and micro, small and medium enterprises (MSMEs).

Not yet on Juan Time? Sync your watch with the Philippine Standard Time (PhST) via:http://bit.ly/SyncPhST.

Like us on Facebook: https://www.facebook.com/PhilippineStandardTime. Follow us on Twitter: @PhST_DOST

ANNA THERESA P. VALMERO

Taguig folks enjoy a science-filled day

By JOSELITO A. CARTECIANO
S&T Media Service, *DOST-NRCP*

TO CELEBRATE its 80th Foundation Anniversary this December 8, 2013, the Department of Science and Technology - National Research Council of the Philippines (DOST-NRCP) showcased various research-based technologies and state-of-the-art science and technology information to the public in a program dubbed as *Agham Mula sa Lahat, Para sa Lahat.* This activity was held on 6 December 2013, Friday, at the NRCP Compound, Gen. Santos Ave., Bicutan, Taguig City.

One is called *Budbud Sustansiya* which involves the demonstration of preparation techniques in cooking using a nutritious food additive – the *budbud sustansiya* -- which was scientifically tested to enrich the vitamin, mineral, and nutrient content of the usual food recipes prepared by mothers, particularly those in the rural and urban poor households.

A mixture of indigenous green leafy vegetables, b*udbud sustansiya* is composed of *malunggay*, *kangkong*, *kamote leaf*, *pechay*, and *alugbati*.

This activity is based on the research project of Dr. Epifania V. Tabadda, which is now a published recipe book entitled *Veggie Healthy Recipe*. Dr. Tabadda is a regular member of NRCP Division of Governmental, Educational, and International Policies.

The Council also launched the NRCP Aquaponics Demo Park and let participants observe and learn the methods of backyard and limited space farming and livestock raising. This demo park includes two major greenhouse dome structures that confine the aquaponic system machines. The said machines are being used to raise *tilapia*, *pechay*, and *kangkong* at the same time.

The participants were informed on how the aquaponic system works well in raising *tilapia* while farming the said vegetables at the same time. They will also observe animals grown around the compound like chickens, rabbits, and goats, as well as plants like *mongo*, *sitaw*, *pechay*, *kamote*, *patola*, *upo*, *mais*, and *papaya*. This project is funded by the AKBAY Program of NRCP and managed by Dr. Chito F. Sace, associate member of the NRCP Division of Agriculture and Forestry.

Pupils of North Daang Hari Elementary School learn about dengue prevention during a storytelling session held as part of NRCP's 80th Anniversary.

Aside from the activities for parents, the Council will also held a lecture titled *DOST Project NOAH Awareness* for 100 college students and professors of the Polytechnic University of the Philippines and Taguig City University, which was led by Dr. Mahar A. Lagman, Project NOAH executive director.

In said lecture, the students learned about the various DOST projects that help manage hazards and reduce risks such as: 1) HYDROMET or hyrometeorological devices; 2) DREAM – LiDAR or Disaster Risk Exposure Assessment for Mitigation – Light Detection and Ranging Project; 3) GEOHAZARD MAPPING that uses LiDAR technology and computer-assisted analyses to identify the exact landslide prone areas in the country; 4) CHASSAM or Coastal Hazards and Storm Surge Assessment and Mitigation; 5) FLOODNET or Flood Information Network; 6) LADDERS of Local Development of Doppler Radar Systems; 7) Landslide Sensor Development Project; and 8) WHIP or Weather Hazard Information Project.

With DOST's high regard to the safety and health of children, the Council invited 50 pupils along with their teachers and principal of the North Daang Hari Elementary School to participate in a story telling activity called *Dengue Awareness for Kids*. This activity will teach the kids, in their own little ways, how to prevent dengue infection.

Dr. Judilyn N. Solidum, regular member of the NRCP Pharmaceutical Sciences and the author of three Filipino Komiks on dengue, namely *Moskee: Ang Bampirang Lamok*; *Dinugo si Dino*; and *Huwag Mo kong Kagatin, Ang Kwento ng Batang na-Dengue*, led the story telling session.

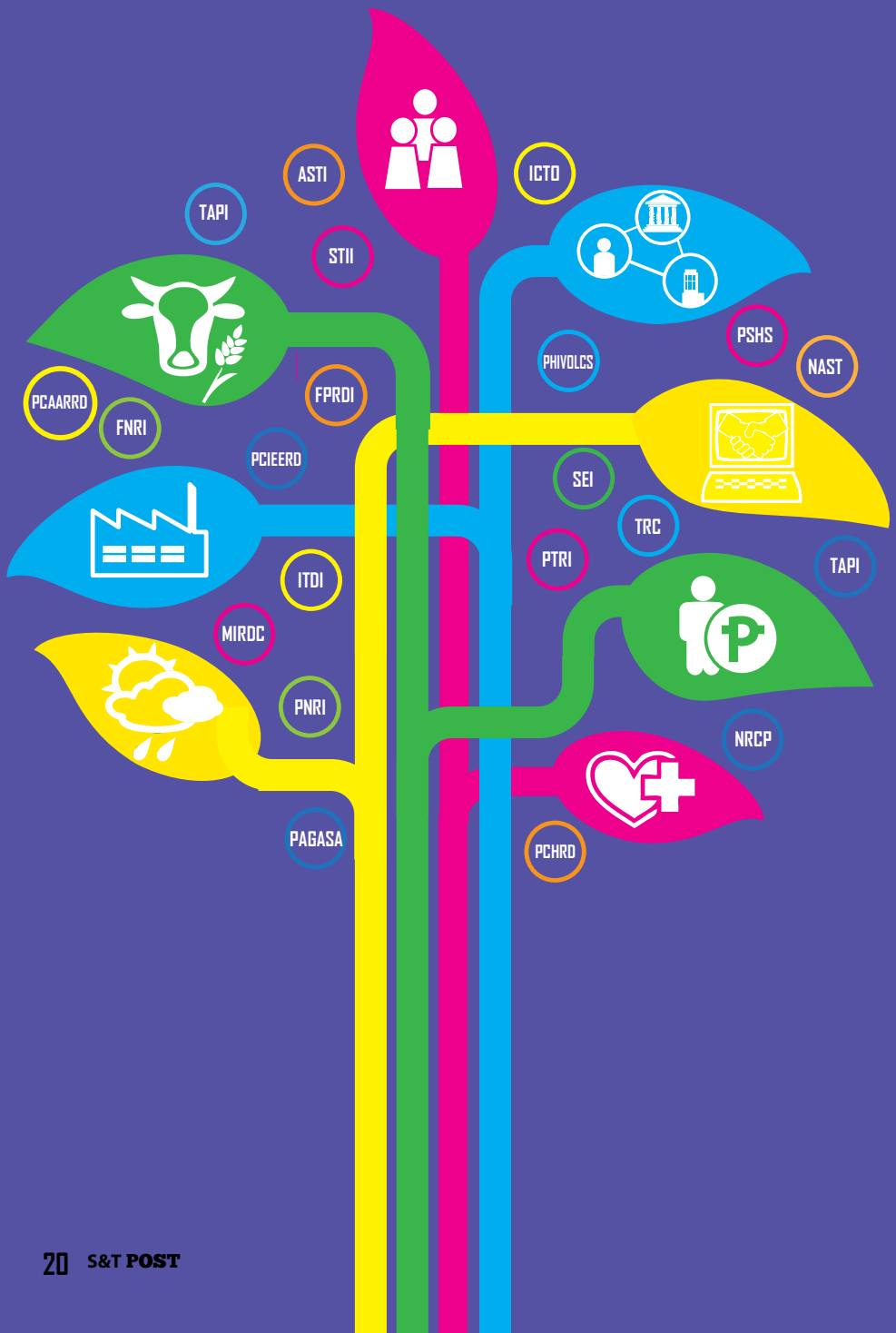
DOST Secretary Mario G. Montejo, and NRCP President and National Scientist Lourdes J. Cruz with the members of the Governing Board led the affair.

JOSELITO A. CARTECIANO

Against all odds

The 8 DOST Outcomes along the road less traveled

By ARISTOTLE P. CARANDANG, PhD



The word 'outcome' ('aʊt,kʌm), according to the Collins English Dictionary - Complete & Unabridged 10th Edition, is defined as something that follows from an action, dispute, situation, etc.; result; consequence. It is a noun that originated from the Middle English "utcume" dating as far back as 1175-1225, according to Dictionary.com.

For the Department of Science and Technology (DOST), however, the word "outcome" is one of its latest additions to its long list of ultra-modern targets, though maintaining adherence to the established definition. In fact, there is not just one "outcome" since they arrive in a huge bundle of eight – appropriately named the "8 DOST Outcomes." Secretary Mario G. Montejo has enumerated them as follows:

- Science-based know-how and tools that enable the agriculture sector to raise productivity to world-class standards;
- Innovative, cost-effective and appropriate technologies that enable MSMEs to develop and produce competitive products that meet world-class standards;
- State-of-the-art facilities and capabilities that enable local industries to move up the value chain and attain global competitiveness;
- PH a global leader in Information Technology - Business Process Management Services generating direct employment of 1.3M (520,000 in the countryside);
- ICT-based transformation of governance broadening access to government services (i.e. health and education) for those in the countryside (PH in the top 50 global ranking of e-government by 2016);
- Improved quality healthcare and quality of life thru science, technology and innovation;
- Highly skilled and globally competitive S&T human resources in support of

Dr. Aristotle P. Carandang, in this article, takes the broader view of things as he introduces DOST's eight outcomes, how they relate to each other, and how they relate to us Filipinos. He gives us a peep into the results of the outcomes which may, at the present, look like "against all odds" but ultimately, they are actually achievable.

the national S&T programs (PSHS to be the leading science high school in ASEAN by 2015 and every town to have at least one DOST scholar by 2016); and

- Science-based information on weather, climate change and geological hazards to ensure the country's survival and future in an era of extreme and rapidly changing climate

IT IS THE "AFTER" THAT MATTERS

As the premiere science and technology body in the country, the DOST is charged with providing central direction, leadership and coordination of scientific and technological efforts and ensure that the results therefrom are geared and used in areas of maximum economic and social benefits for the people.

True to its mandate, the Department has not stopped to merely leading all S&T activities but has actually been buttressing national development.

For the period 2013-2016, the DOST has set its priorities relating to the set outcomes. These include:

1. Harnessing Science , Technology and Innovation to improve productivity and enhance PH competitiveness in agriculture, industry, and various services;
2. Science-based information on weather, climate change and geological hazards to ensure the country's survival and future in an era of extreme and rapidly changing climate; and
3. Highly skilled and globally competitive S&T human resources in support of the national S&T programs.

Naturally, all the eight outcomes have specific goals to achieve. And it is the "after" that matters most. This would mean that such efforts should lead to something beneficial to both the Filipinos and the Philippines.

For instance in agriculture, the expected outcome is a science-based know-how and tools that will enable the agriculture sector to raise productivity to world–class standards. Officials from the Department said that in order to achieve the expected outcomes for the agricultural sector various strategies should be employed. These would include harnessing cutting edge technologies; adapting best practices and proven technologies; and localizing mechanization.

They also mentioned that said strategies may be implemented through various actions such as addressing S&T gaps in major stages of production of agriculture, aquaculture, and livestock. Specific to these are planting materials/broodstock; crop management/grow-out management; harvest and postharvest; and processing and value adding.

It is noteworthy that the country's major agricultural products such as coconut, rice, mango, banana, milkfish, shrimp, tilapia, mudcrab, among others are given specific focus and the needed push.

Even more interesting is the attention given to 'beyond the results' as shown in the outcomes enumeration.
For the industry sector, the Science Department gives added concentration as far as micro, small, and medium enterprises or MSMEs and those that have been identified as strategic industries. Meanwhile, in the area of services, the same focus is given to IT-BPO, Next Wave Cities, Connectivity, and Health and Wellness.

Naturally, all the eight outcomes have specific goals to achieve. And it is the "after" that matters most. This would mean that such efforts should lead to something beneficial to both the Filipinos and the Philippines. Taking the MSMEs for example with the identified Outcome 2 (Innovative, cost-effective and appropriate technologies that enable MSMEs to develop and produce competitive products that meet world-class standards) by developing and implementing necessary technology catch-up programs to be at par with benchmarked countries by 2015.

This, according to DOST officials, can be done by developing innovative, cost-effective and appropriate technologies; establishing innovation centers nationwide to make developed technologies available to majority of MSMEs for product development; enhancing/upgrading testing, calibration and quality assurance facilities and services; and expanding the Small Enterprise Technology Upgrading Program (SETUP) and sustaining jobs created.

These statements, when translated into actual figures are actually what matters most. Imagine that in 2014, the DOST's SETUP will be able to benefit an estimated 20,000 clients and 12,700 individuals employed.

Compared with the 2013 figures, there is a good increase in terms of clients and persons the program has reached. These figures, however, would not be achieved without convergence of efforts. For SETUP alone, the DOST has partnered with the Departments of Trade and Industry, Environment and Natural Resources, Agriculture, local government units, and State Colleges and Universities nationwide.

For the rest of the DOST Outcomes, it is hoped that they become the catalyst to transform the Filipinos and the country as we all walk towards change; living in a country described as Smarter Philippines.

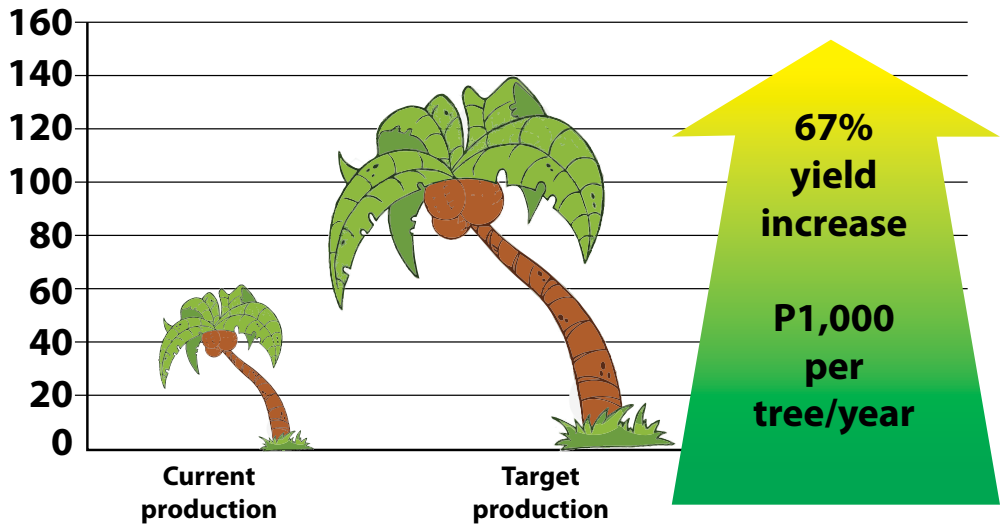
ARISTOTLE P. CARANDANG, PhD

Arjay C. Escondo unfolds in this article on the Department's directions in agriculture, a sector that contributes largely to the country's Gross Domestic Product (GDP).

Green thumb

Making our country's aggie sector more verdant

By ARJAY C. ESCONDO
S&T Media Service, *DOST-STII*



Artwork by JBIntia

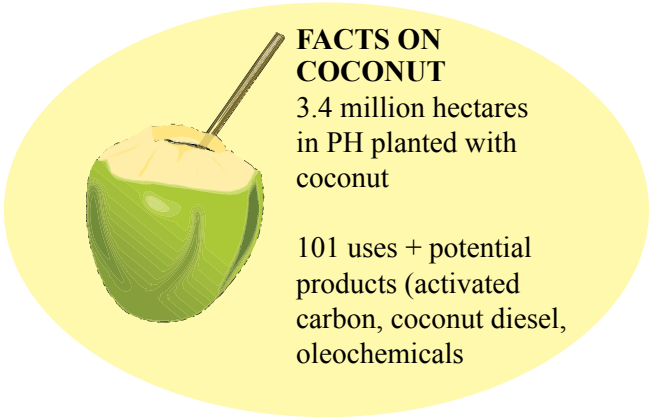
The Philippine Council for Agriculture Aquatic and Natural Resources Research and Development, one of the sectoral councils of DOST in charge of all the R&D efforts in the agriculture-aquaculture-natural resources sector, aims to address science and technology gaps in the major stages of production from planting materials/broodstock, to crop management/grow-out management, harvest and post harvest management, and processing and value adding sectors.

The following are DOST's directions in major commodities in the country:

MORE NUTS FOR COCONUTS

To meet the targets and cascade them down to the farming communities, the DOST developed and designed sets of equipment and strategies such as ultra-high temperature equipment, aseptic packaging equipment, and freeze dryer that can be availed in the regions through the DOST SET UP and through the improvement of planting material, crop management enhancement, and product diversification and value adding.

One of these is the identification and improvement of tall coconut varieties such as the San Simon Tall and Baybay Tall varieties. These coconut varieties can bear 60-150 nuts/tree/year and copra per nut of 280-440 grams, respectively. Using these improved varieties, low productivity can be addressed through replacement of old palms and rehabilitating new planting areas, especially near and coastal areas.



STRONGER FIBER INDUSTRY

Currently, the local abaca industry holds 85 percent share in the world market, with the Bicol region contributing about 36 percent production.

Abaca, commonly known as Manila hemp, the country's premier fiber, is known

HIGH YIELDING AND DISEASE-FREE BANANA

BANANA VARIETY	PERCENT OF TOTAL PH BANANA PRODUCTION	PROBLEMS	DOST TARGETS
CAVENDISH 	51%	Fusarium wilt	Reduce fusarium wilt by 95% in Mindanao Increase lacatan yields by 12.84MT Reclaim PH spot as top banana producer in the world (working with Dept. of Agriculture and the Acade**me)**
SABA 	29%		
LACATAN 	10%	Banana bunchy top virus	

worldwide for its incomparable tensile strength. Commonly used as clothing and footwear materials in the past, abaca's application has expanded to sophisticated industries such as production of pulp for specialty papers such as currency notes, stencil papers in addition to textiles, handicrafts. Today, abaca fibers are also being used by car manufacturers as automobile composites.

Currently, PCAARRD is supporting two new abaca projects, dubbed as "Rehabilitation of abaca plantation through adoption of high-yielding and virus-resistant abaca hybrids" and "Shelf-life study and commercial production of polyclonal antibody for ABTV" to reduce losses due to the dreaded Abaca Bunchy Top Virus.

These projects, led by the Institute of Plant BreedingUniversity of the Philippines Los Baños (IPB-UPLB) in partnership with the different SUCs, are being implemented in the ten abaca-growing provinces in the country,

Through this project, micropropagation of virus resistant and high-yielding abaca hybrids will be done via tissue culture, and will be evaluated in different plantations through the country.

Partnered with trainings on abaca tissue culture and nursery establishment and management to hasten the propagation of hybrids, the project aims to reach the 2.5 million of abaca plantlets by 2016.

On the other hand, commercially developed antibody for ABTV will be used to test the presence of ABTV in the 10 identified location sites of the project.

STRONGER AND SUSTAINABLE AQUACULTURE INDUSTRY

As an archipelagic country, many Filipinos also depend on marine life as the main source of livelihood, from marine fisheries to small scale aquaculture. Marine fisheries refers to the extraction of living resources in coastal and open seas to meet human and market needs, where more than half of total marine production are sourced from. On the other hand, aquaculture also known as aquatic farming involves cultivation and production of freshwater and salt water marine populations under controlled environment. These methods are dominantly used for fish, shrimp, crabs, and seaweeds.

In terms of value, the country's aquaculture production of fish, crustaceans and mollusks has amounted to over US$1.56 billion in 2011 alone. Moreover, the Philippines is the world's third largest producer of aquatic plants (including seaweeds) having produced a total of 1.80 million metric tons or nearly 9.48 percent of the total world production.

Amidst the changing climate, DOST has formulated strategies to sustain and increase seaweed production by 20 percent in the coming years.

Projects such as the small and branch technology for production of quality seedstock and biochemical and mechanical enhancement for postharvest treatment and processing are underway to increase carrageenan production.

The Philippines is the largest producer of raw material for industrial carrageenan, holding about 80 percent of the world supply. The most commonly used sources are *Kappaphycus* and *Eucheuma* seaweed varieties. *Carageenans* are widely used in the food industry, and are often used as a food additive especially in dairy and meat products.

MORE SHRIMPS FOR PINOYS

The Philippines ranks sixth in world shrimp production, with an estimated annual production of 30,000MT of pacific white shrimps and 24,000 MT of Philippine Tiger Shrimp or *sugpo* (*Paneusmonodon*).

Local market price of *sugpo* ranges between Php 350-600 per kilogram depending on size, freshness, site, and season and is a high value export niche for the country.

However, the black tiger shrimp industry has faced several challenges over the last four years, from fluctuating farm gate price, White Spot Syndrome Virus and other disease outbreaks, deteriorating rearing environment, and increasing production cost.

PCAARRD aims to help revive the Philippine shrimp industry for global competitiveness by increasing productivity from 1.0 tons/ha/year to 10 tons/ha/year. Among the key strategies in place are to enhance the country's capability to produce

CONTINUED ON P38

ARJAY C. ESCONDO

There's no way but to go up. How the DOST is pushing the industry to level up is detailed in this article by ***Joy M. Lazcano***.

Assembly line to design

Bracing up the industries through S&T support

By JOY M. LAZCANO
S&T Media Service, *DOST-STII*

The country's GDP grew to 7.7 percent last year, mainly attributed to the steady performance of the local mining, manufacturing, and construction sectors, and surpassing that of Asian powerhouses led by China.

Despite this good news though, unemployment is still up by 6.5 percent in October 2013 while poverty rates remain high, with about a third of the population living on Php84 a day.

For Mang Jimmy, the sole provider for a family of 10, the GDP growth does not make any sense. He said that the benefits of a strong economic performance were neither felt nor seen by him, his family or his community.

STRENGTHENING THE MANUFACTURING INDUSTRY

Recently, Socioeconomic Planning Secretary and National Economic and Development Authority Director-General Arsenio Balisacan presented his side of the coin, pointing out that there is a need to "deepen the role of S&T in reviving the manufacturing sector."

As such, the DOST is now gearing toward attaining the US$50B mark in revenues for the sector in the next three years.

Another area of the manufacturing industry that needs attention is the metals and allied industries and engineering (M&E) which has a very small share in the local market. M&E consists of major metal allied sectors such as die and molds, metal casting, and machine works.

According to the Metals Industry Research and Development Center (DOST-MIRDC), in tools and die alone, a segment of the M&E, 39 percent of the local market is captured by plastics, 32 percent by pressworking/ stamping, 18 percent by electronics, 10 percent by consumer electronics, 8 percent by rubber, 6 percent by diecasting, 3 percent by forging, and 1 percent by glassmaking.

The metal casting sector, meanwhile, boasted of imports valued at US$489M in 2009 while exporting products totaled US$193M in the same year. The sector, composed of 195 small metal casting companies employing a workforce of 12,285 nationwide, has the lowest casting output in the ASEAN region.

MANUFACTURING INFRASTRUCTURE

Advanced Device and Materials Test Laboratory. The ADMATEL was launched by DOST at the Industrial Technology Development Institute (DOST-ITDI) facility in Bicutan, Taguig City in early 2013.

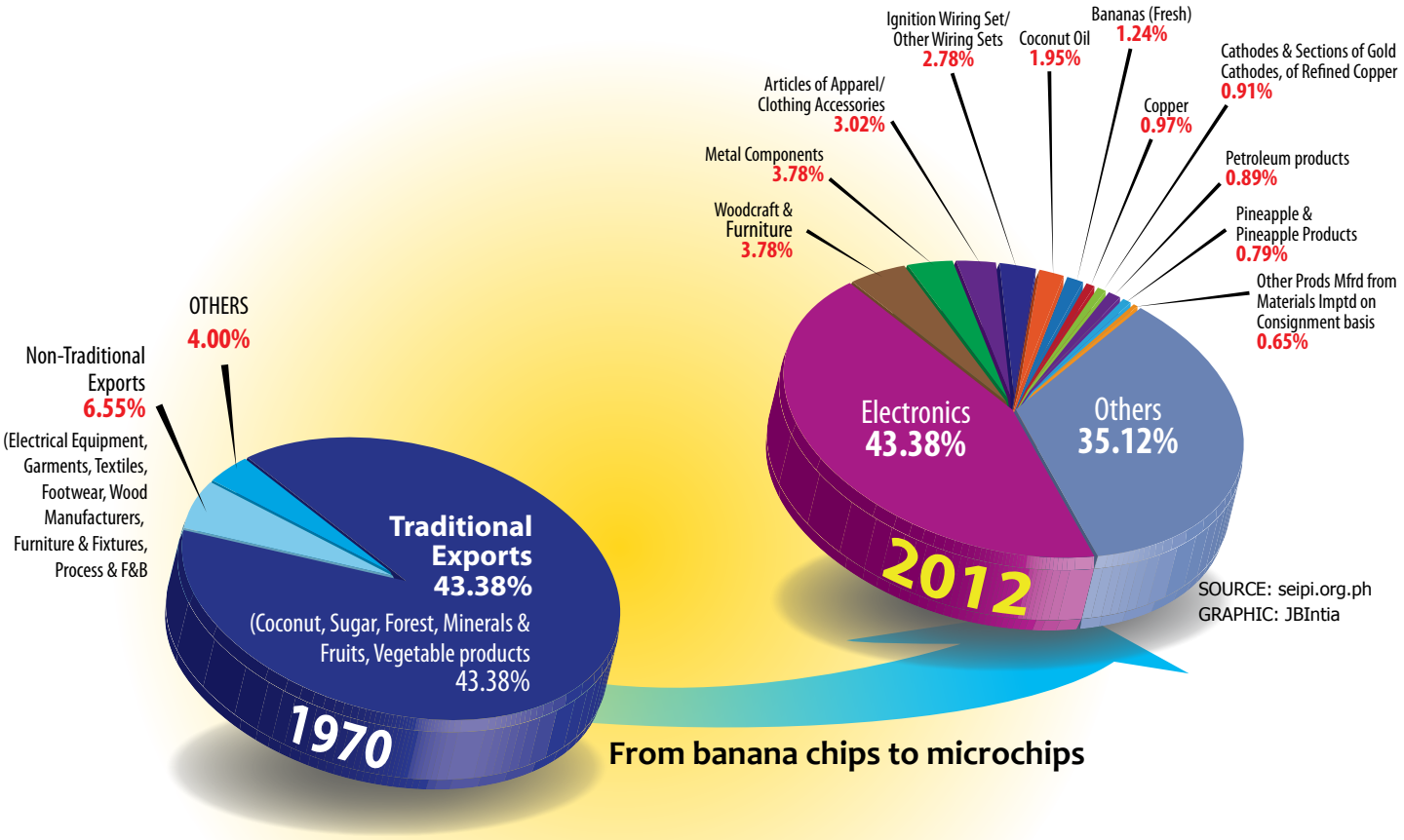
The facility conducts failure analysis tests and advanced materials characterization on several semiconductor components produced in the country thus reducing turn-around time and costs. According to Semiconductor and Electronics Industry in the Philippines Inc. President Dan Lachica, local semiconductor firms spend around US$9 million to US$18 million annually for overseas testing alone.

The ADMATEL houses cutting-edge equipment such as the Time-of-Flight Secondary Ion Mass Spectrometer which analyzes the composition of solid surfaces and thin films and determines the elemental, isotopic, or molecular composition of the surface to a depth of 1 to 2 nm.

Another is the Auger Electron Spectrometer which analyzes the surface composition of a material. The Focused Ion Beam-Field Emission Scanning Electron Microscope is used to expose defects in the Integrated Circuit. Meanwhile, the Scanning Electron Microscope with Energy Dispersive X-ray is a high-resolution imaging tool that can perform elemental analysis or chemical characterization of a sample.

The testing lab will also help local semiconductor startups to conduct advanced research and development (R&D) activities.

Electronics Product Development Center. The EPDC will provide a state-of-the-art design, prototyping, and testing facilities for Printed Circuit Boards (PCB), the primary electronics component that mechanically supports and electrically connects electronic components. Once operational in July 2014, the center will strengthen the electronics and semiconductor industry by



enabling the local companies and the academe to conduct their own R&D activities, design, and prototyping of electronic components.

DOST and Electronics Industries Association of the Philippines, Inc. President Alexander Sy believes in the EPDC's positive effects on the local electronics industry, enabling it to move up the value chain – from electronics assembly to the higher value services such as electronics design and manufacturing.

Eventually, the center will strengthen the local electronics design capabilities as many local firms will benefit tremendously. Sy explained that global electronics industry players get the biggest share of profits because of their design capabilities. He also pointed out that the country produces world-class engineers who are capable of designing local electronic components if given the proper support.

With the birth of the center, it is projected that design and manufacturing costs will be reduced to half. EIAPI stressed that companies are spending around US$5,000 to US$30,000 in design and prototyping alone. Moreover, with the local facility in place, shorter turnaround times in the product development cycle are expected as well as diminished risks of failing certification tests.

It will also draw in more foreign investments in the electronics industry which will eventually create technology spillovers similar to what China and Taiwan experienced in the last few decades.

Philippine Development Center for Integrated Circuit. This facility will be built in 2014 to complete the two tests and development laboratories for the semiconductor and electronics industry. The IC design center will house advanced technologies and facilities for IC design and development.

IC is a set of electronic circuits on one small plate ("chip") of semiconductor material, normally silicon.

MakiBAYAN. DOST also gave its full support to the M&E industry through the Makinarya at Teknolohiya para sa Bayan Program or MaKiBAYAN, another program initiated by DOST to help develop local manufacturing machines.

Initial projects under the MAKIBAYAN program include the Innovation Center for Motor Vehicle and Parts Development where customized local road vehicles (CLRV) will undergo finite element analysis to determine their structural standards. CLRV consists of locally developed vehicles such as the Filipino icon "Jeepney," tricycles, and mini-buses. Also on the drawing board is the Die and Mold Solution Center which will provide technical competencies in upgrading the die and mold industry.

HUMAN CAPACITY BUILDING AND EQUIPMENT UPGRADING

Presently, DOST is ironing talks with the United Nations Industrial Development Organization or UNIDO to bring in international support and cooperation in human capacity building and equipment upgrading of the country's manufacturing industry.

The International Center for the Advancement of Manufacturing Technology (ICAMT) program is also set to revitalize the M&E industry by bringing in

CONTINUED ON P39

JOY M. LAZCANO

Out of the 820,255 business enterprises in the country, 99.6 percent are micro, small and medium enterprises, according to the Department of Trade and Industry. ***Espie Angelica A. de Leon*** tells us in this article how science and technology can scale up this large sector to make products and services more competitive in the global market and how it can give employment to more Filipinos.

Local to global

Scaling up local entreps to world-class status

By ESPIE ANGELICA A. DE LEON
S&T Media Service, DOST-STII

Hotel and resort furniture. Handwoven bags and hats. Metalworks and automotive accessories. Squid and anchovy powder. Chicharon made from carabao skin. Frozen durian.

These are just a handful of the many products churned out by micro, small and medium-scale enterprises (MSMEs) all over the country whose seals of quality and reliability had been stamped by SETUP by the Department of Science and Technology (DOST).

SETUP

SETUP stands for Small Enterprise Technology Upgrading Program, one of DOST's centerpiece programs for harnessing the capabilities of science and technology in order to hasten the growth of small enterprises and propel the country's economic advancement.

SETUP assists MSMEs in the adoption of technology innovations to improve their operations and expand their business reach. In particular, SETUP provides its beneficiaries with financial assistance, high-grade equipment, technology training, and consultancy services.

The program covers eight key areas where local MSMEs are mostly concentrated: food processing; horticulture and agriculture; marine and aquatic resources; gifts, decors, and housewares; furniture; metals and engineering; pharmaceuticals; and information and communications technology.

These MSMEs form a central part of DOST's priority programs for the period 2013-2016. Specifically, the Department aims for "Innovative, cost-effective and appropriate technologies that enable MSMEs to develop and produce competitive products that meet world-class standards," as embodied in Outcome No. 2 among the eight outcomes which the Department plans to achieve.

Already, SETUP is fulfilling this via its numerous clients who gained the necessary resources to upgrade their product packaging and product quality. As a result, new markets opened up, sales increased and profits soared, as the quality of these products advanced to at least keep pace with that of foreign commodities. At the same time, the lives of the business owners, their employees, and of those in their community as well are now seeing better days.

SETUP also has other activities and projects geared toward upgrading the capabilities of local MSMEs.

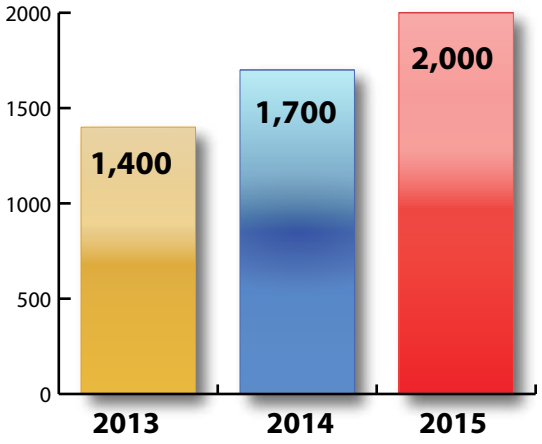
FOOD INNOVATION CENTERS

Through these facilities, MSME owners and workers can avail of modern equipment and extensive training on innovative food processing techniques. At the same time, the Centers will also serve as hubs for research and development and provide support services to enhance the competitiveness of processed foods in both local and export markets. These support services are product and process development, food testing, shelf life and sensory evaluation, consultancy, packaging and labeling, short-run production, incubator facilities, brokering, common service facilities and an information resource center.

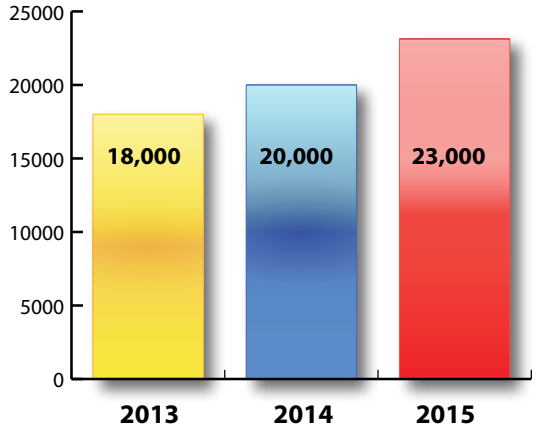
With these facilities, DOST is pushing the country's food manufacturing industry to be at par with that of neighboring ASEAN countries by the time the ASEAN economic integration rolls in in 2015.

Other activities include ICT fora which promote technopreneurship and encourage small and medium business owners to establish their presence on the Internet in order to mine its countless possibilities such as overseas market penetration, ICT road shows, and competitions. One of these competitions is the E-Marketing Mobile Application Competition for students, professors, and freelance mobile application developers, which aims to generate mobile applications that will benefit SETUP beneficiaries by helping them enhance their products' brand recall, make more sales and increase earnings.

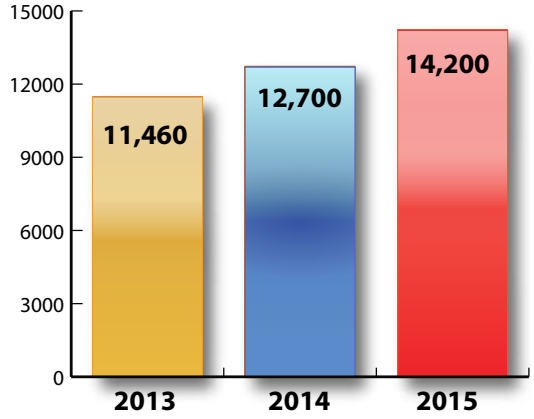
DOST will not sit on its laurels however. Much is yet to be done – especially in this ever changing economic and business landscape where lifestyles, needs and demands constantly shift.



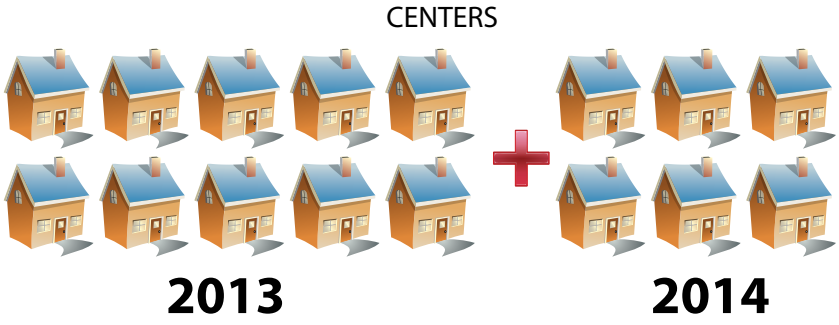
Local SMEs assisted



Clients served



Persons employed



For the coming years, DOST aims to benchmark technologies being used in countries regarded as industry leaders. For example, DOST will identify effective food processing technologies available in a country considered as a frontrunner in the food processing technology, and then compare these technologies with those used by local food processing firms. Next, DOST will then develop and implement projects that will enable local companies to better their products and services, grab a bigger slice of the market, and attain a bigger growth rate – big enough to go head to head with their foreign counterparts. In other words, the Department envisions a small or medium-scale food processor from a region outside Manila to eventually be able to compete with the best food processing companies in the world.

To fulfill this, DOST is committed to developing innovative, cost-effective and appropriate technologies for the MSMEs; establishing innovation centers nationwide to make developed technologies available to majority of MSMEs for product development; enhancing testing, calibration and quality assurance facilities and services; and expanding SETUP for the creation of sustainable jobs.

As these objectives are being met and the Department sets bigger targets and higher goals, numbers will rise – numbers that denote profits, savings, purchases, productivity, and other business components. And when these figures rise, so too will the number of people who will benefit from these positive outcomes. Together, these statistics will reflect the giant leap that the Philippines has taken – a leap characterized by economic progress, defined by possibilities of science and technology. It is a leap we all want to take eventually.

ESPIE ANGELICA A. DE LEON

It used to be that young, skilled and talented professionals migrated to Metro Manila to build their careers and eventually their families. It was because provinces offered very small chances for ambitious souls to have high-paying jobs. In this article, ***Allan Mauro V. Marfal*** shows us that through the IT-BPM industry, young professionals can stay put in their provinces and earn a decent living out of careers that they can be proud of.

Fruitful careers in the regions

Beefing up jobs in the IT-BPM industry

By: ALLAN MAURO V. MARFAL
S&T Media Service, *DOST-STII*

Previously, we thought the Information Technology-Business Process Management (IT-BPM) industry, formerly known as Business Process Outsourcing, only consists of call centers – where an agent answers questions from clients via the telephone for eight or more hours while seated in front of the computer.

Despite the higher starting salaries and tons of benefits that call centers offer, many are still discouraged from entrusting their future in the industry, questioning the kind of career growth they could possibly get from it.

However, the emergence of other growth areas in the provinces, as well as other career segments, justifies that this industry is here to create more employment opportunities for many Filipinos and bring inclusive growth to the country.

Nowadays, these employment opportunities cannot only be found in the high-rise buildings of Metro Manila.

BACK TO PROVINCES

According to Patricia May Abejo, director of the Information and Communications Technology Office (ICTO), an attached agency of the Department of Science and Technology (DOST), cities like Davao, Cebu, Bacolod and Iloilo are now considered as top locations of IT-BPM operations.

"As these cities have sufficient educational institutions that could supply the talent for the industry, infrastructure such as airports, hotels and other commercial establishments as well as a sustainable business environment, most of the industry stakeholders are not hesitating to put their investments in these places," Dir. Abejo said.

With investments directly going to these areas in the countryside, Dir. Abejo said that this scenario could allow local residents to stay put and not go to Manila to get decent employment. Now they can earn enough income that will support all their needs while staying with their own families in their hometowns or provinces.

Currently, 28 percent of IT-BPM operations are located in the provinces, but the industry is looking to expand this to 40 percent by 2016.

BEEFING UP THE COUNTRYSIDES

To sustain this countryside development, ICTO continues to provide programs and activities that will help other cities to be ideal destinations for IT-BPM operations and aid industry investors to properly assess which areas in the provinces are most likely to give them higher chances of success.

Every year, ICTO and its industry partners release the Next Wave Cities Report which recommends areas outside Metro Manila, Metro Cebu, Metro Clark and Bacolod that could be suitable and ready for IT-BPM operations.

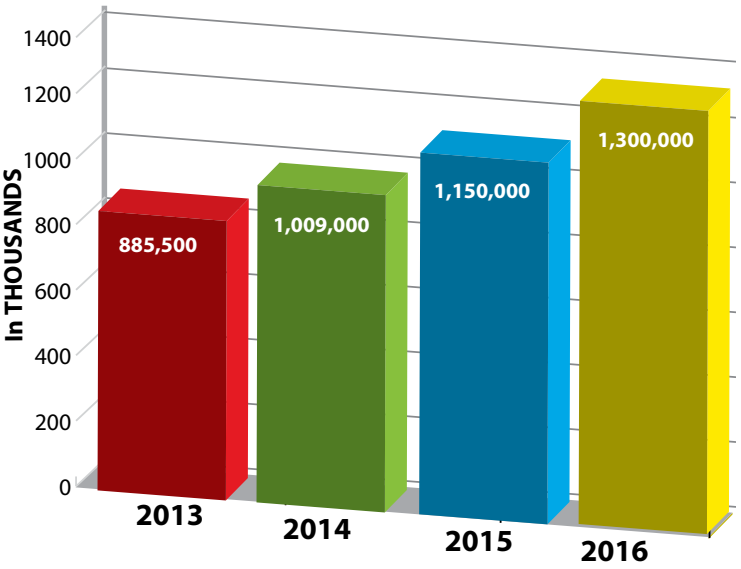
Director Abjeo said that it could help industry stakeholders to better decide where they will install their IT-BPM hubs as well as local government units to get ideas of how they will develop their cities into more suitable places for this industry.

MORE THAN CALL CENTERS

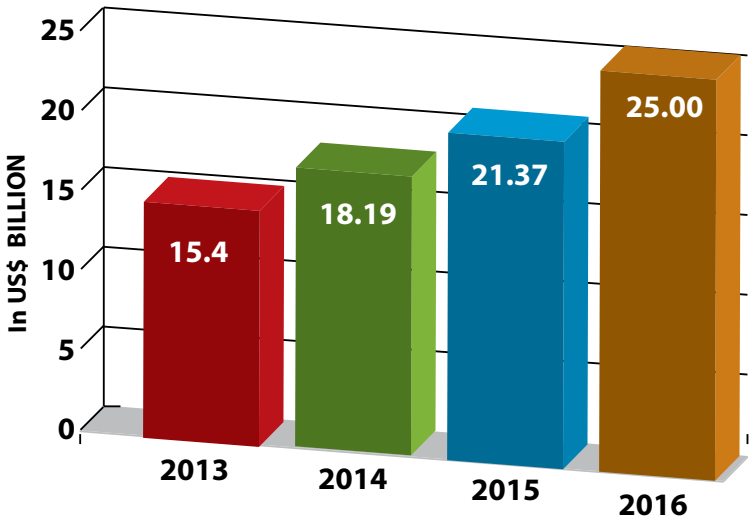
Additionally, the past two years have seen a series of road shows being held in different cities in the countryside. During these road shows, ICTO conducts several talks which help increase rural folks' awareness about the different services under the IT-BPM industry other than call center services. These include animation, game and software development, and healthcare information management – thus providing career opportunities to IT and nursing graduates, among others.

"If you are an animator, you can work in this industry. If you are a game or software developer, you can work in this industry. If you are engineering graduates, you can work in this industry," Dir. Abejo said. "These are the things that we want to impart to the mind of everyone, especially to the youth as well as to their parents."

"We want to encourage them and show them that there are a lot of options and career growth in this industry," she added.



Jobs created by the IT-BPM industry



Revenues to be earned (in US$ dollars)

ANIMATION, SOFTWARE DEVELOPMENT, HEALTH INFO

To aid these professionals who aspire to work in the IT-BPM industry, enhance their skills, and build their network, ICTO is spearheading and supporting several events, competitions and trainings in several parts of the country.

Among these are *Animahenasyon*, an annual animation festival competition that serves as venue for Filipino animators to showcase their ideas; Start-up Weekend Visayas, wherein local technopreneurs get the chance to pitch their ideas to industry investors; and the upcoming Imagine Cup in April 2014, an annual student competition of software applications addressing national problems in health, education, e-government, and others.

Dir. Abejo is also optimistic about the potential of the Philippines to become one of the world leaders in healthcare information management services. Healthcare information management careers have expanded into various disciplines that open opportunities for nursing graduates and allied medical professionals.

In recent years, the country has produced a sufficient number of students and graduates of nursing to fill up the need in this segment. In the IT-BPM industry, they can find work as medical transcriptionists, medical secretaries, medical coders and billers, medical assistants, medical representatives, medical butlers, and clinical research associates.

Dir. Abejo also remarked that the IT-BPM industry has helped many of its agents to have a sense of accomplishment. She explained that Filipino workers are also global workers. By sharing their skills and services here, they are not only able to help themselves by earning, they also contribute to the Philippine and world economies.

With these positive development auguring well for the industry's future, ICTO and its industry partners are targeting to generate $25 billion revenues and 1.3 million direct jobs for the industry by 2016. Dir. Abejo said that she is confident that the industry will achieve its goal, especially with the abundance of talent in the country and the dedication of Filipinos.

ALLAN MAURO V. MARFAL

ICT-enabled
Getting things done faster thru seamless government e-services

Who says the queues in government service offices are long and slow? This may be true right now, but it won't be for long. As the country gets all its wires harmonized and put into place, we will all enjoy quick and stress-free government services enabled by ICT. This is the picture that ***Framelia V. Anonas*** unveils based on DOST's Outcome 6 that focuses on ICT-based transformation of government services.

By FRAMELIA V. ANONAS
S&T Media Service, *DOST-STII*

Imagine a scene where entrepreneurs can register businesses online and pay official fees electronically through ATM accounts, credit cards or mobile wallets. Saves time and effort, plus it lessens the chances of corruption.

Or imagine a far-flung barangay where folks get professional advice from a medical expert stationed in the heart of Metro Manila, broadcasting his diagnosis via the Internet to local health workers attending to a patient. Saves lives, time, and money, plus the added knowledge shared by the expert to community health workers.

Are these scenes coming up in the distant future or are they impossible at all?

According to the e-Government Master Plan of 2013-2016 (EO 47), these scenarios are expected as early as 2013 and will escalate in 2014 and beyond.

Thus, we are now seeing a seamless, interconnected government taking shape so that we citizens can transact with government offices faster and with less stress in the near future.

According to President Benigno Aquino III, "Through the e-Government Master Plan, we lay the groundwork for an effective and transparent e-government information systems for 2014 to 2016, providing agencies a framework that will strengthen and integrate existing information systems that are vital to the delivery of services and information."

Technology will then play a vital role as catalyst to make the government more efficient.

"I have always believed that technology can play a crucial role in linking our people with their government, and that is it through technology that we can improve our services, promote dialogue and responsiveness, and ultimately raise the level of discourse in our country by efficiently informing our citizenry about the policies and initiatives of government," President Aquino emphasized.

What then are the exciting improvements that we expect from the government to be delivered via technology and will make our lives easier and better?

INTEGRATED GOVERNMENT PHILIPPINES (iGovPhil) PROJECT

The P470 million iGovPhil will be the government's platform to achieve a higher level of e-governance to rationalize government operations and improve the delivery of goods and services to the people. E-governance basically means using Information and Communications Technology (ICT) as a tool in making government services more efficient and effective.

The iGovPhil has various products and services, including the following:

Fiber to the Office - A fiber optic network will connect government agencies to the data center so that government agencies will have access to the Internet and the iGovPhil network at bandwidths and speeds.

Government Data Center – The data center will be fully equipped with necessary network equipment, data storage facility, cooling system, security system, power system, monitoring system, fire protection system and network connectivity.

GovCloud - The Government Cloud will enable government agencies to use secure government hosted cloud applications for their various server side computing requirements. Just like using public clouds such as Google, users of the GovCloud have files and applications on the web. Local storage and client side computing resources are done away with as files are accessed and email is launched just through the web browser.

GovMail – This is a secure e-mail service to government agencies using unique agency names with the gov.ph suffix hosted in a central server for added security. It will give government offices and personnel a credible online identity, especially when communicating with the public. Aside from email, GovMail will allow users to collaborate online by sharing tasks, scheduling meetings using a central calendar, and working on shared files. GovMail, as a government facility, ensures that all information in the mail will be secure.

Voice Over Internet Protocol (VOIP) **–** This will enable government agencies to make voice calls like ordinary telephone calls through the Internet, eliminating costly long distance, mobile and international charges.
PhPay - Through this Internet-based electronic payment facility and gateway, individuals and businesses can remit payments electronically to government agencies.

Other ICT-enabled government services to be developed under the iGovPhil Project include the Digitization Program, Session Initiation Protocol Registry, Video Conferencing, National Archives and Records Management Information System, Agency Records Inventory System, Data Registry, Digitization, Forms Generator, Agency Service Registry, Public Key Infrastructure, Single Sign-On, Government Web Hosting Service, and Project Management.

MEDIUM-TERM INFORMATION AND COMMUNICATION TECHNOLOGY HARMONIZATION INITIATIVE (MITHI)

A collaboration among the Departments of Budget and Management, and Science and Technology; National Economic Development Authority; and National Computer Center, MITHI will harmonize ICT-related resources, programs and projects in all agencies and on all levels of the bureaucracy.

For 2014, MITHI will develop interoperable systems, such as broadband connectivity for 210 agencies and real-time sharing of health information; roll-out selected systems (national payroll system, GovCloud, harmonized inmate management system, community health tracking system, etc), create online inventory of all ICT resources of government that can be accessed in real time, and implement a centralized procurement of PCs and ICT hardware.

PHILIPPINE COMMUNITY eCENTER (CeC) PROGRAM

This program aims to establish a Community eCenter in every municipality, tapping even school laboratories and internet cafes into community eCenters. Until 2015, the DOST-Information and Communications Technology Office will re-engineer the current 1,500 community e-Centers to cover 42,000 barangays.

CONNECTIVITY

Currently, the government is working on the efficient and secure data connectivity between government agencies, data centers and the public Internet. This year, we expect 30 percent coverage of the whole country in terms of connectivity to improve the delivery of government services to underserved communities.

To beef up connectivity, the government is currently adopting and deploying TV white space, an emerging cost-effective technology that uses un-allocated television frequency spectrum to provide data connectivity. TV white space can be used in telemedicine, educational content delivery, rural last mile connectivity and environmental sensor networks.

Boosting connectivity also means hastening the establishment of community e-Centers in barangays all over the country to provide e-government services, information dissemination, informal ICT training, e Commerce, micro outsourcing, etc.

The connectivity infrastructure will likewise facilitate the TeleMedicine Program, internet requirements of schools, online training program of the Technical Education and Skills Development Authority, IT requirements of the Department of Social Welfare and Development, and communication link of sensors in remote areas for disaster risk reduction, among others.

WIRED AND LINKED

Should all of these programs run together harmoniously, the above scenarios are clearly possible. We already have a pool of experts to do the job, and we are pumping up our hardware and software resources to get the Philippines ahead in ICT-enabled government services. With enough resolute in the national level, we can catapult the Philippines to the top 50 global ranking of e-Government by 2016. Let's all get wired on this!

FRAMELIA V. ANONAS

Get physical!
Improving Pinoys' healthcare

By MARIA LUISA S. LUMIOAN & FRAMELIA V. ANONAS
S&T Media Service, *DOST-STII*

A robust economy depends largely on healthy citizens. This is why the sixth of DOST's outcomes focuses on improving quality healthcare and quality of life of Filipinos. ***Maria Luisa S. Lumioan*** *and* ***Framelia V. Anonas*** in this article reveal the innovative approaches of the Department in ensuring that Flipinos in this generation and the next enjoy a good quality of life by keeping them healthy and preventing the spread of illnesses.

Malnutrition, lack of access to safe water, disease outbreaks--these are just some of the top health concerns confronting our country which the Department of Science and Technology (DOST) tries to address as it embarks on various projects towards achieving improved quality healthcare and quality of life through science, technology and innovation.

To achieve Outcome 6, DOST put in place three strategies:

PROVIDE AFFORDABLE AND EFFECTIVE TECHNOLOGIES TO HELP ADDRESS PUBLIC HEALTH PROBLEMS

Ovicidal-Larvicidal trap (OL Trap). Researchers at the Industrial Technology Development Institute (ITDI) developed a simple, easy to use, and affordable product aimed to reduce mosquito population--the OviLarvicidal (OL) Trap.

The OL trap kit consists of a black container, a lawanit paddle where mosquitoes lay their eggs, and a pack of pellets used to make a solution that attracts and kills the eggs and larvae of mosquitoes, thus reducing the population of the next generation mosquitoes. One million OL Traps were installed in 45,000 public schools nationwide in support of the Dengue Control Program of the Department of Health and in collaboration with the Departments of Education and Interior and Local Government. The traps are now commercially available in Mercury Drug outlets.

The DOST through the Philippine Council for Health Research and Development also set up the dengue vector surveillance website that enables public health practitioners and local authorities to check out high-risk areas for dengue outbreaks. The website is updated weekly through school-based monitors who check on the OL traps weekly and report to DOST the number of traps that contain mosquito eggs and larvae via text messaging. The reports are then automatically encoded in the website.

GIS-enabled surveillance system. This system was developed to monitor infectious diseases such as dengue, leptospirosis, and influenza. The system serves as an early warning tool for possible outbreak.

Genome-based diagnostic kits. These kits are used for the early detection of high morbidity and high mortality diseases. Early detection of disease such as diabetes and cancer results in early intervention and reduced treatment costs.

DEVELOP TECHNOLOGIES THAT BROADEN THE ACCESS AND DELIVERY OF APPROPRIATE MEDICAL CARE TO UNDERSERVED COMMUNITIES

RxBox. This is a medical device that measures, stores and sends vital information of the patient (heart rate, electrocardiogram or ECG, blood pressure, pulse rate and blood oxygenation). It can transmit medical information via wired and wireless networks to a remote medical specialist who reads and interprets the data to assist the medical professional actually attending to the patient. It also has a built-in camera to capture and send images of the patient being examined. The RxBox was developed to serve as medical record system for physicians' decision making.

e-TABLET. The eHealth Technology Assisted Boards for LGU Efficiency and Transparency

is used in gathering and processing of health-related information and make them available not only to public health workers but also to local authorities. Armed with right information, mayors can make decisions such as allocating resources and manpower to respond to a certain medical situation in their locality. At the same time, the e-TABLET would make it easier for the DOH to gather health data which are important in the formulation of correct health policies and programs.

PROVIDE TECHNOLOGIES TO HELP ADDRESS THE BASIC HEALTH NEEDS OF FILIPINOS

Access to potable drinking water. DOST has set up the production facilities for ceramic water filters with private partners in all regions. Said filters are proven cost-effective technology to provide the Filipino families with safe drinking water. They are easy to install and made from red clay with nano (very, very small or minute) antimicrobial agent that can eliminate water-borne microorganisms.

To speed up the rollout of the technology, ITDI produced 10,000 pieces of candle-type ceramic water filters. "We sought the cooperation of the LGUs, NGOs, and pottery owners who are now our partners in implementing this project," ITDI Director Nuna Almanzor said.

The water filters developed by ITDI are also very useful in times of calamities, when water supply lines are sometimes compromised or cut.

Fighting malnutrition among children. The DOST has also established production facilities for complementary baby food in partnership with LGUs and private sector all regions. The DOST-developed baby food is a proven cost-effective formula to prevent malnutrition among children aged 6 to 24 months.

The baby foods come in various flavors, such as rice-mongo instant blend, rice-mongo curls, and rice-mongo-sesame ready-to-cook blend.

The thrust now is to commercialize the developed products and share the technology to all regions in the country, particularly in areas where malnutrition is high.

Technology within reach

In all of the above mentioned initiatives, DOST and its partner research institutions have ensured that resulting technologies are kept simple, easy to use, and affordable while continuing to create technological solutions that will lead to better, healthier lives for Filipinos.

FRAMELIA V. ANONAS &
MARIA LUISA S. LUMIOAN

Building a pool of experts is critical in raising the country's S&T competence, competitiveness, and productivity. This is why DOST has been raising the bar when it comes to developing S&T human resource. ***Judith L. Sablan*** in this article lays down how DOST explores many other ways of attracting especially the youth into embarking on a science career.

S&T force build-up

Propelling the country to world competitiveness

By MARIA JUDITH L. SABLAN
S&T Media Service , *DOST-STII*

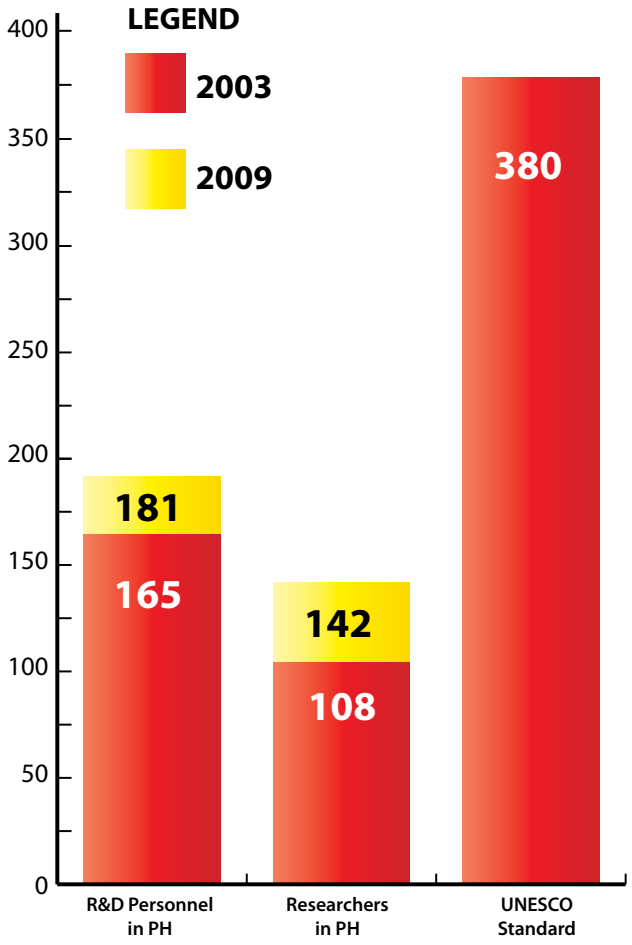
Mohaima "May" Alauddin, a daughter of a farmer who lives in the Municipality of Tipo-Tipo, Basilan, a place known as war-stricken and underdeveloped, dreams of becoming a doctor someday. Her dream is not far-fetched when last year she qualified for the scholarship provided by the Department of Science and Technology-Science Education Institute (DOST-SEI). May passed the Republic Act 7687 Scholarship exam and become Basilan's first DOST scholar. She's now taking up Bachelor of Science in Biology at the Mindanao State University-Iligan Institute of Technology (MSU-IIT) in Lanao del Norte. "I don't want to stay poor for the rest of my life," May said.

Dr. Salvador Eugenio Caoili, on the other hand, completed his Bachelor of Science in Molecular Biology from UP as a DOST scholar and graduated summa cum laude. He is one of the recipients of the Outstanding Young Scientists (OYS) last year because of his significant contribution in the field of Molecular Biology and Biotechnology. He is currently an associate professor at the College of Medicine University of the Philippines Manila.

Alauddin and Caoili are just two of the thousands who were able to advance their education due to DOST scholarship. Scholarship is part of DOST's program to build and produce highly skilled and globally competitive S&T human resources who will drive the country to national progress. Yearly, a number of scholarships are offered at various stages of education, from high school to doctorate degree. Last year alone, a total of 12,200 students availed of DOST scholarships --- 10,031 undergraduate students; 1,744 master's students; and 425 doctorate students. This total number excludes high school scholars enrolled at the Philippine Science High School.

PHILIPPINE SCIENCE HIGH SCHOOL

The PSHS, affectionately called Pisay, is a specialized science secondary education offering scholarship to talented Filipino youth. PSHS is one of DOST's service institutes whose mandate is to provide scholarship for secondary course with special emphasis on science and engineering subjects to prepare students for a career in science and technology. The students are expected to eventually contribute to the betterment of the Philippine society through their engagement in research and development and leadership. Aside from the main campus in Diliman, Quezon City, which was established in 1964 through Republic Act 3661, there are 12 other campuses throughout the Philippines. DOST strongly envisions PSHS to be the leading science high school in ASEAN



by 2015. As such, DOST will build more PSHS campuses to have one campus in every region in the country. By 2016, PSHS campuses will have been established in Regions IV-A, IV-B, XII, and the Autonomous Region of Muslim Mindanao or ARMM. This will entail a budget amounting to PhP5.03 billion.

PSHS students continuously exemplify achievements in various international competitions and research circles that brought honor and recognition to the Philippines. As part of developing S&T culture among the youth, DOST will increase the number of PSHS scholars from the current 4,133 to about 9,000 in 2016, plus an enhanced six-year curriculum will fully meet global standards.

UNDERGRADUATE SCHOLARSHIP

Students about to graduate from high school can take the qualifying examination for scholarship either under the DOST RA 7687 Undergraduate S&T Scholarship Program or the DOST-SEI Merit Scholarship to pursue their college studies. Talented and deserving high school graduates are financially supported to pursue specific degrees in S&T along identified priority areas and in industrial technology. Providing scholarship is building the capability required in the areas of research, development, innovation, and utilization by accelerating S&T human resource growth potential in the country.

DOST is currently working out to widen availability of and access to both S&T undergraduate and graduate scholarships. Both programs will be expanded to welcome 17,852 scholars in 2016 from the current 11.310. Further, DOST will fully democratize the undergraduate scholarship program from the current 1,330 municipalities served to 1,655 in 2016 so that every town or municipality in the Philippines will have at least one DOST scholar by 2016.

DOST scholarships are also available for graduate students like master's and doctorate. Aspirants can apply under the DOST Accelerated S&T Human Resource Development Program (ASTHRDP). Benefits include actual tuition fee, book allowance, transportation allowance, monthly stipend, and thesis or dissertation grant amounting to PhP 30,000 for master's and PhP 60,000 for doctorate students.

Former SEI Director Filma G. Brawner stated, "I believe that through the different scholarship programs of DOST-SEI, we are slowly inching towards meeting the ideal number of scientists and engineers per million population as well as in reaching our vision of a scientifically-equipped society."

World Bank and the World Economic Forum both consider a country's S&T human resource as an indicator in evaluating the national development and Global Competitiveness Index (GCI), respectively. As such, it is essential to achieve and maintain the required number of human resource.

DOST not only offers scholarship to build the S&T human resource of the Philippines. It also implements various S&T programs in partnership with other agencies such as the Department of Education, Local Government Units, Commission on Higher Education, State Universities and Colleges like University of the Philippines and other higher education institutions as well as Information Technology-Business Process Manufacturing (IT-BPM) Firms.

One program is the development of cost effective ICT-enabled skills enhancement modules and skills assessment tools in support of educational teaching. Math module for Grade 1 was developed last year while math modules for Grade 2 to 6 will be developed subsequently the following years until 2016. Other modules developed covered areas like Critical thinking/Abstract Reasoning, Computer Literacy, Service Orientation, and Skill assessment tool. Development

CONTINUED ON P39

MARIA JUDITH L. SABLAN

Being in the Pacific Ring of Fire brings a constant challenge to our leaders and the nation in general on how to prevent and manage disasters to save lives and property. ***Rodolfo P. de Guzman*** and ***Framelia V. Anonas*** give us a look into DOST's strategies in generating weather and hazards information as tools for preparedness which is the greatest shield against any natural hazard.

Are you ready?

Preparing for hazard and climate change

By RODOLFO P. DE GUZMAN & FRAMELIA V. ANONAS
S&T Media Service, *DOST-STII*

"May bagyo ba?" "Wala ano, tirik na tirik ang araw eh, bagyo ka dyan?"

"Ano ba sabi sa radyo? Wala daw pasok at signal number 2 na!"

The weather can be such a complicated thing. Before more advanced technologies came into our shores, the exact time of rain or how much rain will be dumped was quite a guessing game.

But with advancement in science and technology, weather prediction or forecasting has become easier and more accurate. Together with the emergence of sophisticated telecommunications gizmos like Android phones and tablets and easier access to wireless technology, knowing what the weather will be today or four days hence is just within a finger's reach!

To harness technology in saving lives in the face of erratic weather, natural hazards, and climate change, DOST has put into place its eighth outcome: Science-based information on weather, climate change and geological hazards to ensure the country's survival and future in an era of extreme and rapidly changing climate.

To achieve this, DOST came up with two strategies:

TIMELY WARNINGS AND INFORMATION ON WEATHER AND CLIMATE CHANGE SCENARIOS

Project NOAH. The Nationwide Operational Assessment of Hazards uses state of the art technologies, best practices and tools, to generate and process weather and climate Information and make these available and usable to people. Project NOAH is DOST's answer to President Benigno Aquino III's directive to create a more responsive disaster management program using advanced scientific research and cutting-edge technologies to make people prepared during calamities. It is Project NOAH's ultimate goal to lessen the negative impact of weather-related hazards like loss of lives and destruction to properties.

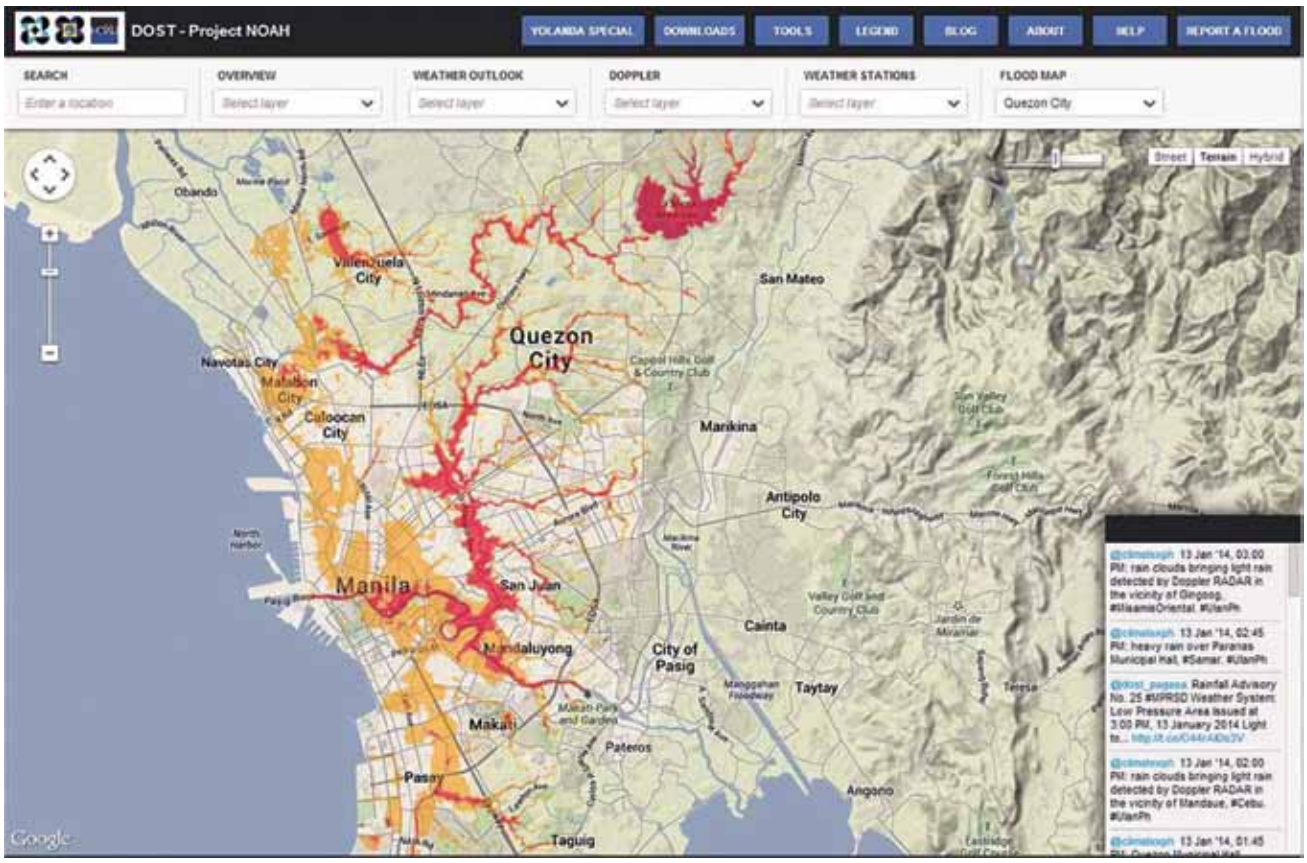
"Project NOAH would serve as the Philippines' ark against deluge. We would put an end to the ordeal that people have been accustomed to in rainy weather. *Hindi na pwedeang 'bahala na,' sawa na tayo sa kaba*. (It is no longer acceptable to leave things to work out for themselves, we are tired of feeling anxious)," said President Aquino." With accurate and enough information, we would gear Filipinos toward sufficient readiness."

Project NOAH acts as the main vehicle to mitigate disasters and it has several components under it focused on specific hazards and interventions as follows:

1. Hydromet Sensors Development
2. DREAM-LiDAR 3-D Flood Mapping
3. Flood Net-Flood Modeling
4. Hazards Information Media
   a. Strategic Communication Intervention
   b. Disaster Management using WebGIS
5. Enhancing Geo-hazards Mapping through LiDAR
6. Doppler System Development
7. Landslide Sensors Development
8. Storm Surge Inundation Mapping
9. Weather Information-Integration for System Enhancement (WISE)

The NOAH website (www.noah.dost.gov.ph) holds a myriad of weather data like the probability of rain, amount of rainfall, a four-day weather forecast, storm track, temperature, humidity, air pressure, wind speed, and wind direction. There are also data on rain gauges and water level sensors to alert communities on rising water level in rivers and to prepare for possible flooding.

Using WebGIS developed by scientists and computer programmers, one can monitor incoming tropical cyclone and actually see the storm



Project NOAH's 100-year flood map of Metro Manila

track and its path with data generated byDoppler radars of the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), one of DOST's warning agencies.

Also included in the website are historical data on flood occurrences from the five-year return period to 100 years. This gives people comprehensive information of flooding based on previous events thus enabling them to better prepare.

HOMESTRETCH TO 2015

By 2015, the DOST, through Project NOAH and other resources, would have mapped 209 minor river systems, and come up with enhanced seven-day weather forecast with data assimilation using WRF (weather research and forecast) model and Project WISE (Weather Information-Integration for System Enhancement), enhanced landslide susceptibility assessment, unified climate change modeling scenarios, vulnerability maps based on climate change scenarios (six months to 30 years), storm surge forecasts, water resource assessment, enhanced hydrology datasets for 18 major river basins covering 529 cities and municipalities, and enhanced carbon stock assessment using remote sensing/LIDAR.

These efforts will be aided by the IBM Blue Gene computer to run weather modeling software. Moreover, DOST will also produce climate change impact assessment on : 1) Coastal and marine; 2) Agriculture; 3) Health; 4) Forestry/biodiversity; 5) Water resources; 6) Living condition for urban planning; 7) Disaster risk reduction.

TIMELY AND ACCURATE WARNINGS AND INFORMATION ON VOLCANIC ERUPTION, EARTHQUAKE, TSUNAMI AND OTHER GEOLOGIC HAZARDS AND DISASTER RISKS

Earthquakes can never be predicted scientifically. However, DOST aims to enhance the country's capability in terms of preparedness and management.

Thus, by 2015, DOST shall have installed intensity meters nationwide, conducted REDAS (Rapid Earthquake Damage Assessment System) trainings so that 80 percent of the provinces shall have been trained, and established tsunami early warning systems.

By 2016, DOST would have enhanced the Philippine seismic network by increasing the number of stations from 69 to 85.

With all of these things in place in the near future, we Filipinos can be assured of a smarter and safer living in our archipelago. Thanks to advancements of S&T and forward-looking experts and leaders.

RODOLFO P. DE GUZMAN &
FRAMELIA V. ANONAS

MAKING OUR COUNTRY'S...*from p23*

captive broodstock , address the major deterrents to sustainable production, and reduce the incidence of diseases.

Projects underway are the development of methods and techniques for the domestication of sugpo broodstock and spawners for the production of healthy fry, development of molecular diagnostics and LAMP based field kit for early and rapid detection of bacterial and viral diseases, and the use of probiotics and immunostimulants and application of biofloc technology.

White spot syndrome virus (wssv) is a leading shrimp disease causing serious economic losses due to massive mortality of the cultured stock. However, efficient and early detection of WSSV can help implement appropriate interventions to prevent heavy infection and avoid mass mortality in shrimp farming operations.

Loop-mediated isothermal amplification (LAMP) is a new molecular technique available in detecting WSSV in shrimp. LAMP is ten times more sensitive compared with PCR and is more convenient such that test results can be obtained within one hour. It does not require complicated and expensive equipment like the PCRs.

Biofloctechnology, on the other hand, was developed to improve environmental control in high density production such as aquaculture system. Biofloc systems are also used to prevent the introduction of disease to a farm from incoming water. Bioflocs provide two critical services—treating wastes from feeding and providing nutrition from floc consumption. Scientific advances in grow-out and hatchery technology are gaining investor confidence for the shrimp farming industry. With over 200,000 hectares of brackish water farms in the country, the shrimp industry has big economic potential as a source of export revenue and as a platform for rural aquaculture development.

AGRICULTURE TOWARDS A SMARTER PHILIPPINES

Mass propagation through tissue-culture, development of disease-resistant varieties, early virus detection tool for marine life, and different management techniques and practices are only a few of the technologies and innovations geared towards improving our agricultural productivity.

According to Alejandro Melchor III, deputy executive director for ICT industry development at the DOST-Information and Communication Technology Office, "Collaborative efforts in science and technology have led to the development of various key information and technologies to improve our agricultural sector." (*With reports from Apple Itchon, PCAARRD S&T Media Service)*

PROPELLING THE COUNTRY...*from p35*

of these modules will require PhP 21 million in 2014 and PhP 18 million in 2015. These modules will be made available for free to all interested Filipinos.

DOST also funded the development of a stand-alone computer program that will improve English proficiency of Filipinos. Called LEAP or Learning English Application for Pinoys, the program is a 200-hour English training software that focuses on two main parts. Part One is on speech, covering both listening and speaking skills while Part Two is on grammar and vocabulary. The program is especially designed to attain the level of proficiency acceptable for employment in local call centers or Business Process Outsourcing that currently place high demand for employees with appropriate skills.

Filipino scientists and researchers abroad who wish to share their expertise and contribute to the country can apply under the Balik-Scientist Program. The Balik Scientist Program, which was first implemented in 1975, will be further expanded. The Balik-Scientist program aims to strengthen the scientific and technological human resources of the country by encouraging overseas filipino scientist, professionals and technicians to return or reside in the Philippines, and share their expertise in order to accelerate the advancement of new and strategically important technologies that are vital to national development and progress.

DOST's initiatives on S&T human resources reach out to various Filipinos such as the Bridging Education in Science and Technology for Indigenous Peoples and Project Grant for Educational Assistance on Technology and Science Teaching Courses in Mindanao, targeted specifically for IPs and Mindanao, respectively. Other S&T human resource programs include the Accelerated S&T Human Resource Development Program, Science and Mathematics Teaching Scholarship, and the Government Initiatives on Fellowships for the Talented in the Sciences for the Disadvantaged.

For those interested in any of the DOST scholarships, you may contact the Science Education Institute through telephone number (+632) 837-2071 local 2382 or visit their website at www.sei.dost.gov.ph.

BRACING UP THE...*from p25*

international experts in various industries to improve local capabilities.

IMPROVED MOBILITY

The DOST is all geared up in improving the local mass transport system as it introduced locally designed and fabricated mass transports such as the Automated Guideway Transit (AGT), road train, and the railway train.

The AGT will be a reasonable alternative to imported mass transit systems. Based on international studies, the AGT system is the most cost-effective and less intrusive mass transport for countries like the Philippines. It is composed of locally available components and rubber tired wheels to lessen the noises it creates during operations. The coach runs on a top speed of 60 kilometers per hour and could accommodate 30 passengers per coach.

Further, last year, Sec. Montejo unveiled DOST's plans in developing the road train, a spinoff technology based on the AGT system sans the elevated guideway. Montejo said that the road train is "not high-tech, but it is innovative in its strategic use of existing applied technologies to introduce (a new) mass transit system, which can resolve (our traffic problem), or at least part of it."

DOST estimates that the innovation can service 650,000 commuters on EDSA on a daily basis and will complement the main thoroughfare's existing traffic system.

SUSTAINABLE MINING AND GREEN MINERALS PROCESSING

Expanding its reach, DOST is now collaborating with several academic institutions in helping improve and provide a better and value adding mining sector and minerals processing using green technologies to ensure a sustainable mining industry.

Through the Mineral Extraction with Responsibility for Sustainability or MINERS program, DOST will rollout several projects to promote the novel process of recovering and extracting minerals without the use of the environmentally hazardous processing agents.

DOST road train

Also, DOST is looking at developing a wastewater processing for mine tailings. These initiatives could contribute in conserving the country's natural resources while sustaining the operation of the mining industry.

DRIVING TOWARDS ASEAN 2015

And as the country awaits the formal integration of the ASEAN region in 2015, the government through the DOST, is now fast-tracking its industrialization catch-up initiatives to be abreast with the rest of the ASEAN neighbors and compete well in the global market scene. The science department is also making a lot of strides in assisting the Micro, Small, and Medium Enterprises which make up 99 percent of the country's economy. With these current developments, Filipinos including Mang Jimmy and his family could have a handful of opportunities to improve their lives in the coming years as the country's economy continues to surge ahead and its industries undergo a major facelift.

Photos from DOST-PCAARD

Coconut can help lower the cost of bakery products

By ALLAN MAURO V. MARFAL
S &T Media Service, *DOST-STII*

IN RECENT years, the continuous rise of the prices of bakery products in the market is reportedly caused by wheat shortage and flour-based products worldwide. Local bakers said that they will not raise the prices of their products if the government finds a substitute that is cheaper and locally available.

To address this need, the Food and Nutrition Research Institute of Department of Science and Technology (DOST-FNRI) looked into the potential of using coconut flour as an ingredient in the formulation of functional food such as bread.

One of the products of coconut is the sapal, or shredded coconut meat left after extracting the coconut milk. The *sapal*, also called coconut residue, is made into coconut flour.

According to FNRI, coconut flour can be used as alternative to wheat flour. As such, it can pitch in to the low supply of wheat and flour products, especially since the technology for producing coconut flour from the residue is simple and only requires locally available equipment.

Coconut flour is a readily available source of dietary fiber that is used in products such as extruded snacks, processed meat, breakfast cereals and baked goods, which the masses or ordinary people want to have on their breakfast tables like the *pandesal*. According to FNRI, coconut flour has a total dietary fiber (TDF) content that is even greater than the popular dietary fiber sources like oat bran and flaxseed. Increased intake of high-fiber food was found to be effective in elimination of waste, sugar and fat from the body. It is suggested for better control of chronic diseases such as diabetes mellitus, cardiovascular disease and cancer.

Aside from the coconut industry and the local bakers, consumers also stand to benefit from the use of coconut flour in the formulation of different food products. As people get more health conscious, the demand for functional food products increases as well. FNRI believes that increasing food products with coconut flour is one way to meet the demands of the consumers.

Meanwhile, several scientific studies have been done here and abroad citing the nutritional and health benefits of other coconut food products.

National Academy of Science and Technology (NAST) Academician Dr. Evelyn Mae Tecson-Mendoza said that coconut water is an excellent rehydration medium and has been used to prevent formation of stones in the urinary tract. It is now becoming a popular export product, marketed as a refreshing health drink.

On the other hand, coconut milk or coconut meat extract, called *gata* in the Philippines, contains proteins, oil and other phytochemicals and is widely used in cooking with vegetables and meat.

On the other hand, Dr. Tecson Mendoza said that coconut oil has antimicrobial activity against bacteria, yeast, fungi, and enveloped viruses. Its major fatty acid and lauric acid have antimicrobial activity and its monoglyceride has even higher activity.

National Biotechnology Week

Issues relating to the coconut both as a product and industry as well as its socio-economic impacts were tackled during the 2013 National Biotechnology Week (NBW) held last November 25-29, 2013 at Aroceros Park in Manila.

Organized by the DOST together with the Departments of Health, Agriculture, and Education, NBW is an annual showcase of the benefits of biotechnology, the science of using living organisms or their parts to improve the characteristics of living things.

Featured projects in this event included the "Improvement of Coconut Varieties through Genomics, Genetics and Breeding for a Competitive and Sustainable Philippine Coconut Industry." Said project aims to improve and boost the productivity of Philippine coconut varieties and increase coconut competitiveness and sustainability in the local and global market through the use of genomics.

A genome is the entirety of an organism's hereditary information encoded either in DNA for people and other living things or in RNA for many types of viruses. Through biotechnology, experts are able to determine traits of coconut and how these can be used to help improve the lives of people in terms of economy, health, industry, and other aspects.

Abaca fiber can help speed up car industry

By ALLAN MAURO V. MARFAL
S &T Media Service, *DOST-STII*

FROM PAPER, cordage, furniture and handicraft industries to other materials, the uses of abaca have scaled-up to the higher end. Now abaca can be used as material for natural fiber-reinforced plastic composite material to replace some parts of cars.

And, wait, there's more. The Department of Science and Technology (DOST)'s Industrial Technology Development Institute (ITDI) enumerated other potential uses of abaca such as material for better roofing material for public utility jeepneys because of its lower heat conductivity. This means that abaca keeps inside temperature cooler, making it suitable for the country's tropical warmth and humidity.

Meanwhile, in a report posted in the website of the Fiber Industry Development Authority or FIDA, car manufacturer Chrysler-Damlier cited the very good ecological balance of abaca combined with its excellent technical properties similar to those of glass fiber, the material recently used in the underbody protection of the car.

Compared with glass fiber, the use of abaca fiber provided about primary energy savings of 60 percent, significantly reducing carbon dioxide emission.

In another study posted on the website of DOST's Philippine Textile Research Institute a few years ago, Dr. Leslie Joy Lanticse-Diaz, chairperson of the Department of Mining, Metallurgical and Materials Engineering of University of the Philippines, Diliman, shared that abaca fiber shows a high tensile strength, which means it can bear up 140,686 pounds per square inch. It can also reach a maximum length of three meters.

Lanticse-Diaz's research also discovered that optimizing weave construction and patterns in abaca as natural fiber reinforcement ensures better control and consistency of composite properties.

According to FIDA, abaca is considered the strongest natural fiber. The Philippines is currently the major producer of abaca, supplying 85 percent of world market needs.

National Biotech Week fetes S&T writers in 2013 Jose G. Burgos Jr. Awards

By ALLAN MAURO V. MARFAL
S&T Media Service, *DOST-STII*

BIOTECH JOURNALISTS AWARDED. Some of the country's top science and technology journalists were honored at the 2013 Jose G. Burgos Jr. Awards for Biotech Journalism last November 28 at Century Park Hotel in Manila. In photo are (from left) Joel Paredes, program director of Biotechnology for Life Media and Advocacy Resource Center; Manuel Canyon of Business Mirror (3rd Place, News Category); Ais Lyn Fabiola G. Manuel of Los Baños Times (Special Citation, Features Category); Jenny F. Manongdo of Manila Bulletin (2nd Place, News Category); Lyn Resurrecion of Business Mirror (Winner, Institutional Category) ; Henrylito Tacio of Sun Star Davao (1st Place, News Category); Dr. Karen Eloisa T. Barroga, chairman of the board of judges and Dra. Edita T. Burgos, president of The Joe Burgos Pen, Inc., organizer of the Jose G. Burgos Jr. Awards for Biotech Journalism. Dra. Burgos is the wife of the late journalist Jose Burgos, after whom the Awards was named. *(Text and photo by: Allan Mauro V. Marfal, S&T Media Service)*

The 2013 National Biotechnology Week (NBW), organized by the Department of Education (DepEd) in partnership with the Department of Science and Technology (DOST) and other government agencies, recently honored the country's top science and technology (S&T) journalists in the 2013 Jose G. Burgos Jr. Awards for Biotech Journalism.

Held last November 28, 2013 at the Century Park Hotel in Manila, the awarding ceremony was topbilled by S&T journalists from Sun Star Davao and Baguio as they took the top honors for their contribution in pushing the frontiers of scientific inquiry through newspaper journalism.

Henrylito D. Tacio of Sun Star Davao won the first prize in the news category for his article "Golden Rice: The answer to malnutrition problem", while Sun Star Baguio's Robert L. Domaguen ranked first in the features category with his article "Who is Afraid of Biotechnology?"

According to Tacio, there are several solutions to the problem of hunger, and the Golden Rice, a product of biotechnology, is one possible answer. "We have to share the good things about biotechnology but at the same time, we should not forget the bad things it brings. That way, people will be more responsible," he added.

Meanwhile, Jenny F. Manogdo of Manila Bulletin got the second prize in the news category for her article, "Genetically modified crops, food safe - FDA." The third prize went to Business Mirror's Manuel Cayon for his article "Philippine scientists upbeat on country's lead in cornering Asian market for biotech crops".

"Patent issues don't cover biotech corn", written by Malaya's Paul Icamina placed second in the features category. "Provide us with GM seeds, corn farmers ask gov't", written by Jennifer Ng, also of Business Mirror, took the third prize.

In the institutional category, Business Mirror placed first, followed by Manila Bulletin and Business Insight.

Meanwhile, Ais Lynn Fabiola G. Manuel of Los Baños Times received the Features Category Special Citation for her article, "BT Eggplants, Anyone?"

The Board of Judges was composed of chairman Dr. Karen Eloisa Barroga, chief science research specialist and head of the development communication division of the Philippine Rice Research Institute; Lourdes Fernandez, Interaksyon 5 editor-in-chief; Angelo Palmones, AVP for news and current affairs of Manila Broadcasting Company; Abraham Manalo, policy and planning specialist; and Jenny Panopio, special project coordinator.

The 2013 Jose G. Burgos Jr. Awards was part of the National Biotechnology Week which ran from Nov. 25-29, 2013. Formerly known as the Gawad Galing for Biotech Journalism, it was renamed Jose G. Burgos Jr. Awards for Biotechnology Journalism in honor of the late Jose "Joe" Burgos Jr. who conceptualized the awards which is now on its ninth year.

It was organized by The Joe Burgos Pen, Inc. in partnership with the International Service for the Acquisition of Agribiotech Applications, the Biotechnology Coalition of the Philippines , the Biotechnology for Life Media and Advocacy Resource Center, the Southeast Asian Regional Center for Graduate Study and Research in Agriculture-Biotechnology Information Center and the J. Burgos Media Services Inc.

Aside from DOST and DepEd, other government partners for the National Biotechnology Week include the Department of Agriculture, Department of Health, Department of Environment and Natural Resources, and the Commission on Higher Education.

Cine Bioteknolohiya shows biotech uses in everyday life

By ESPIE ANGELICA A. DE LEON
S&T Media Service, DOST-STII

SCIENCE ADVOCATES have tapped the universal medium of film to communicate the advantages of biotechnology as the new short film competition Cine Bioteknolohiya 2013 handed out its first awards during the National Biotechnology Week (NBW).

Dr. Virginia N. Enriquez of the Philippine Council for Industry, Energy and Emerging Technology Research and Development of the Department of Science and Technology (DOST-PCIEERD) and one of the contest judges, believes film is a powerful strategy for spreading the good news about biotechnology. "If you have visuals, these create a different kind of impact on the audience. In a way, it integrates information into people's everyday sense of things, making them realize that technology or science is not far from the human experience," Dr. Enriquez explained.

The winners of the first Cine Bioteknolohiya, a first of its kind in the Philippines, were announced in a simple ceremony at Century Park Hotel Manila last November 28, 2013, the fourth day of NBW which was organized by the Department of Education in cooperation with DOST and other government agencies.

The grand prize was won by Melvin Pasaporte of the University of the Philippines Mindanao with his entry titled "Biotechnology in Human Lives and Minds, Through the Years," a 10-minute video that walks the viewer through the history of biotechnology – from ancient times to the modern era.

Bagging second place was "Daylight," an account of a person with diabetes and how biotechnology plays a role in his life. In third place was freelance filmmaker Marvin Gabas' "Butil ng Kaalaman," a compendium of hard facts and trivia about biotechnology, as narrated in laid-back fashion by the filmmaker himself.

Meanwhile, another entry by students from the University of the Philippines Mindanao, titled "Where in the World is Biotechnology?," grabbed the People's Choice Award by earning the most number of "Likes" on Facebook. The film traces a typical conversation between two young people at school and how each of them stumbled upon the practical uses of biotechnology in the course of their conversation.

"It's very interesting in the fact that it had innovated on how biotechnology can be communicated to various audiences. In that sense, this is a very good project," added Dr. Enriquez, chief of PCIEERD's research information and technology transfer division.

She recalled that while the grand prize winner gave an overview of biotechnology, the other entries dealt with specific topics such as golden rice and insulin. "But of course, that only shows that there is a broad area of applications for biotechnology," the DOST-PCIEERD official concluded.

Aside from Dr. Enriquez, the 2013 Cine Bioteknolohiya board of judges also included Dir. Reynaldo V. Ebora, biotechnology director of the University of the Philippines Los Baños; Dr. Mariechel J. Navarro of the International Service for the Acquisition of Agribiotech Applications (ISAAA) Global Knowledge Center on Crop Biotechnology; Dir. Rhodora R. Aldemita, senior programs officer of ISAAA; Dr. Vermando M. Aquino, professor at the University of the Philippines Diliman-National Institute of Molecular Biology and Biotechnology; and Jenny A. Panopio, special project coordinator of the Southeast Asian Regional Center for Graduate Study and Research in Agriculture-Biotechnology Information Center.

"Judging [the short films] was very challenging for us," shared Dr. Enriquez. "The most important thing, probably, when holding the contest, is to be very clear about the objectives and also the target audience," she suggested.

The winners of Cine Bioteknolohiya 2013 were awarded with plaques and cash prizes.

Through S&T, we can now say, "Have a safe, sumptuous breakfast!" ***Violeta B. Conoza*** and ***Christian N. Cortado*** serve us this delightful menu of S&T initiatives for some favorite *Pinoy* breakfast goodies.

Dressing up your breakfast delights with science

By VIOLETA B. CONOZA & CHRISTIAN N. CORTADO
S&T Media Service, *DOST-ITDI*

Don't we all love that sumptuous spread of *"naglalangis na itlog na pula"* along with "tinapa" served with tomato and red onion salsa on our breakfast table, then topped off with hot or cold "taho" from our "suki" who usually makes the rounds early morning with the signature "kalembang" while calling out, "Tahooooooo"?

Breakfast delights indeed, and favorites of all time and age, but are we sure about their safety? Not to worry, though, for the Industrial Technology Development Institute (ITDI) of the Department of Science and Technology is making sure all these favorites are really, really safe to eat! How? By dressing them all up scientifically!

Through a number of studies on everyday foods like salted eggs or *itlog na maalat, taho* (soy bean curd) and smoked fish or *tinapa*, and even banana sauce or ketchup, ITDI food researchers are working to standardize production processes and the use of appropriate additives, among others, to ensure the safety of all these foods. Such foods are commonly served during breakfast, hence, the term breakfast delights. Through these studies, these foods get their dose of scientific dressing they need to make them safe to eat.

Here's how ITDI does it.

Standardizing the process & use of appropriate colorant for salted eggs

"Itlog na maalat", also called "Itlog na pula" is a popular Filipino food commonly served for breakfast. What makes this product unique among other eggs is that the whole surface is coated or dyed with red-violet color that gave it its name which means "red egg" in English.

Salted eggs result from brining duck eggs for 21-24 days and the process can be achieved in two different ways. One is through soaking the duck eggs in a super-saturated brine solution while the other one is through soaking the egg in sterilized clay with 70 percent salt added. After brining, the eggs are cooked for eight hours. After cooking, the processors have the option to either coat the eggs with a dye or not. The purpose of coloring is to distinguish the salted eggs from the ordinary eggs in the market. In addition, the color conceals the dirt/stains that have accumulated on the surface of the eggs when the ducks lay their eggs on the ground.

One food safety issue that must be addressed in the current practice of coloring the salted eggs is toxicity. Local processors are using grana as coloring agent but this dye is not intended for food application and comes cheap in the market. In addition, since the egg's surface or shell is porous, the edible portion of the egg is susceptible to chemical contamination. The minute particles of the dye can penetrate the pores and be ingested when the egg is eaten.

An appropriate colorant is now being developed along with standardizing the procedure of making salted egg to comply with regulations of Good Manufacturing Processes and quality control. The developed colorant formulation is a combination of three parts FDC Red # 3 and one part Blue shade resembling the non-food grade colorant (or grana) currently used by processors. However, the binding of this formulated colorant is not as strong as compared with grana. To address this problem, the coloring and cooking processes must be done at the same time in order for the formulated colorant to bind efficiently to the surface of the egg. A recommended code of practice that must be followed by the processors to maintain the quality and safety of produced salted eggs has already been drafted.

Using appropriate food additives for taho and tokwa & following cGMP

Taho is a soy bean-based food produced by adding a coagulating agent called calcium sulfate to the milk extract of the cooked soy bean. It is one of the most popular Philippine street foods mixed with thick sugar syrup and *sago* pearls. It is a popular snack and even as a breakfast food item for children and adults alike. The product is commonly sold by street peddlers, in grocery stores, and is also served in gourmet restaurants or dessert houses. Taho is a good and affordable source of protein.

Taho processing is a thriving industry in the metropolis. However, some food safety issues had been plaguing the industry and these include unsanitary practices and negligence that result in poor quality and contaminated

products. This was exposed by the local media in the past that somehow compromised the integrity of taho products sold in the market, and created public scare among consumers.

To address this concern, a technical team composed of representatives from ITDI's Food Processing Division, Technological Services Division, and Environmental & Biotechnology Division; DOST NCR; local government units; and sanitary inspectors of Quezon City; conducted a series of plant visits to registered taho manufacturers in Quezon City, Manila, and Paranaque. The team conducted discussions and consultations, and analyzed sample products for their physico-chemical and microbiological properties.

Based on their observations, the team recommended some measures to improve the current practice of taho makers to be able to produce safe and quality taho. Quality control of raw materials and finished products and use of appropriate coagulant must be observed. Processors are also encouraged to observe cGMP rules, such as having a clean production area with concrete cement walls and ceilings, and floors made of tiles. Raw materials such as soy beans and coagulating agent should be properly stored to avoid contamination. Non-food additives should not be used like plaster of Paris. Suitable equipment should be used in processing, preferably made of stainless steel to avoid corrosion. Workers too should wear appropriate clothing or be in proper dress code during production.

Innovative smoking techniques (less smoke) for food products

Smoking is a food processing technique that is used to preserve and impart flavor in certain food products. The impact of the flavor depends on the kind of material that was used in producing the smoke. Different forms and varieties of smoked products are available in the market such as smoked meats and fishes, and even smoked cheese and beverages such as beer, whisky, and others.

However, smoking has disadvantages over other food processing techniques. In the foreign market, some foods are exposed to smoke-flavoring agents longer. The process produces a very dark color which might contain carcinogens that have adsorbed in the surface of the object or food.

Food researchers are now trying to develop an innovative smoking process that will lessen the development of the carcinogen. Factors such as the maximum and minimum time exposure to smoke, materials to be used in producing the smoke, adsorbed volatile components, and presence of carcinogens are being investigated. The study, however, is confined to salt samples since salts are usually used as curing agent in developing various smoked products.

Results from the conducted trials showed that the best exposure time of the salt is about 11-20 hours. With such exposure, the product was much lighter compared with the commercially sold smoked salt in the market. The water activity range was 0.330-0.345, indicating a quite stable product that was not susceptible to microbial and fungal attack. In addition, sawdust was used to impart a stronger smoked flavor in the product. Sawdust is also cheaper, readily available, and easily combustible. While results are encouraging, more studies have to be conducted to detect the volatile components that were adsorbed in the surface of the sample during smoking, among others.

Developing and improving standards for banana ketchup and sauce

Banana ketchup is a favorite condiment among Filipinos. It is often paired with fried viands such as chicken and fish, snack foods such as French fries and potato chips, and as salad dressing.

Existing standard for banana ketchup was improved. In the process, essential composition and quality parameters were identified. Regarding packaging and labeling, the name of the product will now be confined to "Banana Ketchup".

Such revisions were based on physico-chemical analysis of commercial brands in the market. Further, a technical working group composed of representatives from the academe, R&D staff of banana ketchup manufacturers, and FDA has worked on a series of technical revisions and conducted public consultations to improve the product's standard. The draft product standard has already been submitted to the FDA for its final amendment and implementation.

These are just some of the innovations introduced in the processing of local foods. With their untiring efforts, our food technologists/ researchers are working together to really make these "everyday foods" or "breakfast delights" not only delicious but also safe to consume.

VIOLETA B. CONOZA CHRISTIAN N. CORTADO

Coconut water has been proven as a natural source of nutrition, wellness, and hydration. It was used as an intravenous fluid that saved many lives during war and famine. It was then the only natural substance that can be safely injected into the human bloodstream. Let ***Delia Delica-Gotis*** walk you through another innovation of DOST-ITDI in making coconut water more useful to people's health.

Loco over coco through DOST biomass-fired steam kettle

By DELIA DELICA-GOTIS
S&T Media Service, *DOST-ITDI*

Creating ways and means to fully use the nutritional elements naturally present in a fresh produce like the coconut can spell added value to the product. Thus, DOST's Industrial Technology Development Institute (ITDI) food researchers and engineers, after determining the many benefits from coconut water, specifically its nutritional value, joined efforts and wasted no time in developing ways to preserve and prolong its shelf life, and thereby extend its usefulness to the fullest.

To make coconut water more useful than it already is, ITDI's Food Processing Division (FPD) together with the Technological Services Division (TSD) designed and fabricated a biomass-fired steam kettle to cook and concentrate coconut water as an intermediate material for the production of coconut beverage.

Steam kettle to process coco water

The kettle can also be used to process surplus coconut water that previously went to waste because there was no appropriate equipment and limited processing know-how. With this kettle and the developed processing method, coconut water can be processed more efficiently and its shelf life extended and preserved, leaving no room for wastage.

The biomass-fired steam kettle is a simple open-type evaporator pan suitable for concentrating coconut water in small farms. It is very simple to operate, cheap, and can be used in the middle of a coconut plantation even without electricity.

The team conducted field trials and based on the reports, the biomass-fired steam kettle can have a minimum load of 60 kg coconut water per batch, and maximum load of 75 kg.

Coconut water for health

Today, coco water is commonly consumed as sports drink as it contains the five essential electrolytes the body needs to stay hydrated and perform at its best. It has more potassium than banana – 15 times more than most sports

drinks. Coconut water is taken before or during a workout to provide the natural energy needed for optimal performance. And after a strenuous physical activity, it serves as a replenishing and re-hydrating agent for speed recovery. It is now common also to see different beauty products with ingredients extracted from coconut water.

In tropical coastal areas, it has been a practice to drink coconut water fresh from the fruit which is usually left exposed to the air. This condition causes the rapid loss of its organoleptic or the qualities of food or substance, such as taste, odor, color, texture) and nutritional characteristics, and begins to ferment. While in copra processing, the coconut water is normally discarded and thrown away as waste material.

Short shelf life

Ms. Elsa Falco, senior science research specialist of FPD and project team leader, said, "The viability of processing coco water is site specific. There are limiting factors to be considered due to the short shelf life of the raw material."

Falco cited that such factors include appropriate technology, equipment, electricity, distance from farm to the nearest processing plant, and also the lack of government financial support and promotion of the product.

She added that "preservation by concentration is one method of extending the shelf life of coco water that can be used as an intermediate material for the production of coco water beverage."

The concentrated coco water can then be transported in small volume and used as an intermediate material for further processing into other value-added products.

Processing coco water

In processing the coco water, Falco's team used the straight and addition methods. These methods follow a similar process flow starting from harvesting the coconuts to cracking, collecting fresh coco water, filtering, weighing, mixing, cooking (until concentrated), weighing, packing, sealing, labeling and storing.

However, in the addition method, fresh coco water is added to replenish or replace whatever has evaporated during the concentration process. The product then undergoes physico-chemical evaluation (microbial and sensory) to ensure that it is safe to consume, free from coliform, and has acceptable color, odor, and taste.

To disseminate this new development, ITDI conducted trainings in Catanauan and Mulanay, Quezon. The team also did efficiency testing to measure the quality of output. The experts recommend that in order to produce acceptable product, the raw material (coco water) should be collected from mature coconuts, the husk removed within at least two days.

Currently, more field trials are being conducted to get reproducible results and best output.

"And compliance to Good Manufacturing Practices (GMP) is a must to avoid contamination during the processing of concentrated coconut water," Falco emphasized.

DELIA DELICA-GOTIS

ALL TOGETHER NOW!

PH broadcasters sync to PhST for 2014 countdown

DOST Secretary Mario G. Montejo (second from right) unveils the official Philippine Standard Time (PhST) to highlight the signing of Republic Act 10535 or the Philippine Standard Time Act of 2013, together with its Implementing Rules and Regulations, and the observance of National Time Consciousness Week (NTCW) in ceremonies held in Quezon City. The digital clock in picture will be among those used for the upcoming New Year's Eve countdown and the debut of the NTCW, to be bannered by the theme *"Juan Time: Pinoy Ako, On-Time Ako!"* Also in picture from left are PAGASA Acting Administrator Vicente Malano, PCOO Assistant Secretary Jess Q. Yu, DOST Assistant Secretary Raymund E. Liboro, and Rep. Magtanggol T. Gunigundo I of the 2nd District of Bulacan. *(Photo by George Robert Valencia III, S&T Media Service, DOST-STII)*

By ANNA THERESA P. VALMERO
S&T Media Service, *DOST-STII*

Welcome 2014 to the rhythm of one common beat. The country's network giants synchronized their timepieces with the official Philippine Standard Time (PhST) in greeting the New Year.

The synching details were finally ironed out after consultations with officials from the Department of Science and Technology led by Secretary Mario G. Montejo.

"We urge Filipinos to synchronize their watches with PhST in welcoming New Year's Day," said DOST Secretary Mario G. Montejo.

President Benigno Aquino III signed into law Republic Act 10535 or the Philippine Standard Time Act of 2013 requiring all national and local government offices as well as broadcasting organizations to display PhST as provided by the DOST's Philippine Atmosperic, Geophysical, and Astronomical Services Administration or PAGASA, the country's official timekeeper.

The new law, with its recently-published Implementing Rules and Regulations, also provides for the observance of the National Time Consciousness Week, set to make its debut on New Year's Day, January 1, 2014, with the theme "Juan Time: Pinoy Ako, On-Time Ako!"

Juan Time for PhST

"Our Juan Time campaign seeks to reverse the negative connotations of 'Filipino Time' from tardiness to punctuality, discipline, and utmost regard for other people's time. Lateness often leads to missed opportunities. What we want is for Filipinos to arrive on time as the new norm," Montejo added.

For his part, DOST Assistant Secretary Raymund E. Liboro noted that the New Year celebration is the right moment for Filipinos to start following Philippine Standard Time. He added that the leading telecommunications service providers have already been synchronized with PhST.

Telecoms in sync with PhST

"Smart is pleased to be an active partner of the 'Juan Time' Philippine Standard Time Campaign of DOST," said Ramon Isberto, Head for Public Affairs of Smart Communications.

"The theme 'Pinoy Ako, On Time Ako' is very appropriate in the context of keeping our diverse country of more than 7,000 islands in step with the world. Smart is committed to do its part in making sure that its 50 million subscribers will benefit from this Philippine Standard Time campaign," he added.

Ms. Yoly Crisanto, Corporate Communications Head of Globe Telecoms, echoes their support for the observance of the National Time Consciousness Week through the reach of its modernized network and social media."With the implementation of the Philippine Standard Time, we are one with our countrymen in starting 2014 on time and observing thereafter Filipino Time as being always 'On Time,'" she said in a statement.

Time pieces can be synchronized with the PhST via: http://bit.ly/SyncPhST

Meanwhile, more info on the PhST can be accessed at Facebook: https://www.facebook.com/PhilippineStandardTime and at Twitter: @PhST_DOST

ANNA THERESA P. VALMERO

Expert shows how healthcare can be made smarter

By ESPIE ANGELICA A. DE LEON
S&T Media Service, *DOST-STII*

At a children's hospital in the United States, robots are roaming the corridors to bring food trays to patients. Such system relieves hospital workers from the tedious and time consuming chore of pushing food carts inside the hospital every day.

This is one way of making healthcare smarter which involves optimal use of technology to do things better.

The robot scenario was presented by William Klein in a video documentation during the Digital Life Congress and Expo organized by LIFEDATA Systems , Inc. in partnership with the Department of Science and Technology (DOST), among others. Klein is the president and chief executive officer of Don Miller and Associates (DM&A), the largest team of seasoned healthcare food service consultants in North America.

The video showed a kitchen staff member as she places a food tray in a trolley. Buttons are pressed, setting off the robotic trolley in action – it moves, signals the elevator to hold, and roams the halls to deliver a patient's meal that had been meticulously prepared to nourish and heal the patient's body.

The concept of smarter healthcare in this instance focuses on the patient, and promotes nutritional awareness while balancing revenue and cost containment.

"The robot does not stop; it just keeps on going," said Klein, whose career includes 30 years in the food service industry as well as culinary and managerial positions in hospitals and nursing homes.

In his presentation titled "Smarter Healthcare: Food Service Solutions", Klein emphasized that the time spent by a nurse doing the delivery of food trays could have otherwise been spent doing other hospital duties equally beneficial to the patient.

pghmedfoundation.com

Another technology which Klein shared with the audience was a system which tracks food trays within the hospital facility during their whole cycle. He also mentioned the importance of making real time data about patients readily available to hospital personnel.

He emphasized however that to properly leverage technology, hospital authorities and healthcare officials should choose the right software – one which promotes nutritional awareness, and implement the right kind of training on how to use the software.

Aside from complying with nutritional requirements, hospital food should also be visually appealing, Klein added. "Diets should be designed not just nutritionally, but with colors, shapes, and sizes. Of course you don't want your food to be all yellow," he told the audience. A visually appealing meal, he noted, encourages the person to go ahead and eat it.

Food should also be properly apportioned, according to him. "Nobody wants a big meal that cannot be eaten. I'd rather have a patient have a bowl of soup and noodles for his meal," he remarked.

Klein lamented that food services is among the least supported components within the hospital system, yet food is the body's primary need. "Without food, the body cannot heal and move ahead. Patients should be given food they can eat and food they need to eat – when they need it," said Klein, explaining that food should not be cold by the time the patient has to eat it.

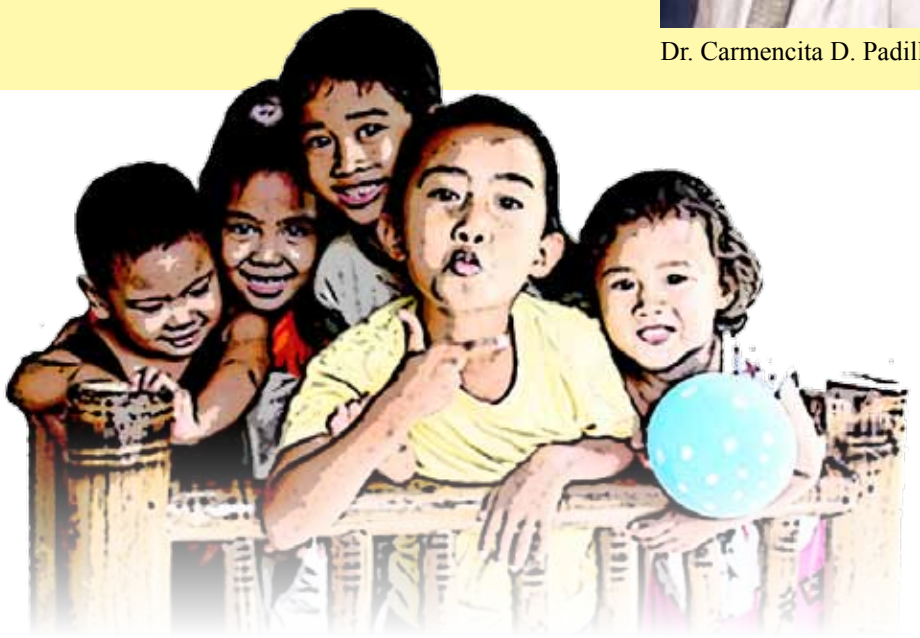
The DM&A president and CEO added that patients should also eat food they can tolerate, citing oncology patients who "have a very small window where they can tolerate food."

Smarter Healthcare was one of the focus issues of the Digital Life Congress and Expo which ran from November 14-16, 2013. Other topics were on Smarter Education and Mobility, Smarter Economy, and Smarter Environment. These topics dovetail with DOST's Smarter Philippines program which aims to harness technology and innovation across industries and sectors en route to a better way of life for Filipinos. Smarter Philippines also prepares the country towards global competitiveness for the upcoming ASEAN integration in 2015.

We can decrease child deaths, says DOST Academician

By MARIA LUISA S. LUMIOAN
S&T Media Service, *DOST-STII*

Dr. Carmencita D. Padilla



The Philippines is on track in terms of decreasing the number of deaths among children, says an academician from the Department of Science and Technology-National Academy of Science and Technology (DOST-NAST) in a recent round table discussion.

According to Dr. Carmencita Padilla, we are close to reducing by two thirds the under-five mortality rate which refers to the number of children out of 1,000 live births who die before the age of five.

The reduction of death among children below five years old is the country's commitment to the Millennium Development Goal 4 (MDG-4) of the United Nations. MDG-4 in particular aims to reduce by two thirds the under-five mortality rates between 1990 and 2015 worldwide. MDGs comprise eight developmental goals on poverty, health, equality, environment and education among others that United Nations member states commit to achieve by 2015.

Intensive health programs of the Department of Health (DOH) have been instrumental with the progress we have achieved for MDG-4, according to Dr. Padilla.

Such health programs include increasing the number of births attended by a skilled health worker such as a doctor, a nurse or a midwife to help reduce complications in childbirth; promoting breastfeeding; and providing free immunization to infants and children against common vaccine-preventable diseases such as childhood tuberculosis, measles, mumps, rubella, polio, hepatitis B and others.

Another program she mentioned is the establishment of the Essential Newborn Care—a protocol in handling newborn babies which include immediate drying of the newborn, early skin to skin contact between the mother and child, proper cord clamping and cutting, and early breastfeeding initiation and rooming in.

Dr. Padilla added that recently, DOH is working towards ensuring that every delivery is done in a healthcare facility as a step to further reduce infant deaths.

Data from 2010 National Economic Development Authority report on MDG, revealed that the under-five mortality rate is down to 33.5 from 80 in 1990. On the other hand, infant mortality rate, which refers to deaths occurring before reaching one year old per 1,000 live births, is at 24.9, from 57 in 1990.

Dr. Padilla is confident that the country could reach the target rates of 26.7 on child mortality, and 19 for infant mortality by 2015, if we can address the underlying issues on why some regions in the country are lagging behind in terms of child mortality, and why have the neo-natal or newborn mortality rates remained static for the past years.

She pushed to strengthen collaboration among DOH, National Statistics and Coordination Board and all other agencies involved in health data collection in order to address issues in health data collection and processing, such as in availability of timely reports, completeness and correctness in death reporting, and irregularities of data among key agencies. This will ensure that health statistics are truly reflective of the current state of the Filipinos, she added.

She also called for improving Information Technology infrastructure that allows ease of access of real time statistics.

Closing data gaps in health is crucial in formulating appropriate health programs. Dr. Padilla disclosed that for instance, the lack of information about the extent and nature of congenital anomalies—one of the top causes of infant deaths for the past 50 years-- hinders the development of programs to address that particular situation.

Phl's first electronics design center. Department of Science and Technology (DOST) Undersecretary Amelia P. Guevarra (left) leads the groundbreaking ceremony for the Electronics Product Development Center (EPDC) at DOST's Metals Industry Research and Development Center (MIRDC). EPDC will offer support facilities in designing, prototyping and testing of printed circuit board swhich are primary components of electronics products. Together with Usec. Guevarra are (from left) Electronics Industry Association of the Philippines, Inc. President Alexander Sy, Advanced Science and Technology Institute Director Denis Villorente, Philippine Council for Industry, Energy, and Emerging Technology Research and Development Executive Director Rowena Cristina Guevara, and DOST Assistant Secretary and MIRDC Officer-In-Charge Robert Dizon. *(Photo by Gerardo Palad, S&T Media Service, DOST-STII)*

PH to move up the value chain with DOST's electronics dev't hub

By JOY M. LAZCANO
S&T Media Service, *DOST-STII*

Soon the Philippines will be able to design its own electronic products with the establishment of the Department of Science and Technology's (DOST) Electronics Product Development Center (EPDC), the country's first facility for said purpose.

The Center recently had its groundbreaking at the Metals Industry Research and Development Center (MIRDC) at the DOST Complex in Bicutan, Taguig City.

EPDC will provide state-of-the-art design, prototyping, and testing facilities for printed circuit boards (PCB), the primary electronics component that mechanically supports and electrically connects electronic components.

With these services, the center is set to strengthen the local electronics and semiconductor industry by enabling local startup companies and the academe to conduct their own initiatives for research and development (R&D), design, and prototyping of electronic components.

DOST and Electronic Industries Association of the Philippines, Inc. (EIAPI) President Alexander Sy are positive that through the Center, the local electronics and semiconductor industry will move up the value chain – from electronics assembly to the higher value services such as electronics design and manufacturing.

Advantages of the EPDC

In addition, design and manufacturing costs are projected to be reduced by half. Currently, EIAPI stressed that companies are spending around US $5,000 to 30,000 (Php 210,000 to Php 1.26 million) in design and prototyping alone.

DOST Assistant Secretary and Officer-In-Charge of MIRDC Robert Dizon (2nd from left) and ASTI Director Denis Villorente sign an agreement between MIRDC and ASTI, both research and development agencies of DOST, to kick-start the creation of the Philippines' first Electronics Product Development Center (EPDC). With Asec. Dizon and Dir. Villorente are MIRDC Deputy Exec. Director Jonathan Puerto (left) and EPDC project leader Engr. Peter Antonio Banzon. *(Photo by Gerardo Palad, S&T Media Service, DOST-STII)*

Moreover, the Center will result in shorter turnaround time for product development cycles as well as decreased risks of failing certification tests.

It will also draw more foreign investments in the electronics industry which is expected to create technology spillovers, a scenario wherein other sectors receive the benefits of new technology.

EPDC, set for operation in July 2014, will offer various electromagnetic compatibility testing services such as electromagnetic interference pre-compliance testing and harmonics and flicker tests. Also, the Center will provide electronic product prototyping for electronic circuit simulation, PCB design simulation, prototype PCB fabrication, prototype PCB assembly, functional/ parametric tests, 3D enclosure design, 3D scanning, enclosure design simulation, and enclosure prototyping using 3D printer.

According to Advanced Science and Technology Institute Director Denis Villorente, "The center was conceptualized to house hardware and software tools, which could be used by companies or schools to design, develop and test hardware and software electronics products."

With this development, many local firms will benefit tremendously as Sy explained that global electronics industry players get the biggest share of profits due to their design capabilities. He also pointed out that the country produces world-class engineers capable of designing electronic components if given the proper support.

Beefing up the industry

Peter Banzon, EPDC project leader, said that to complete the whole picture, DOST will be creating the Integrated Circuit Development Center that will provide facilities for the development of local engineers in designing and prototyping integrated circuits.

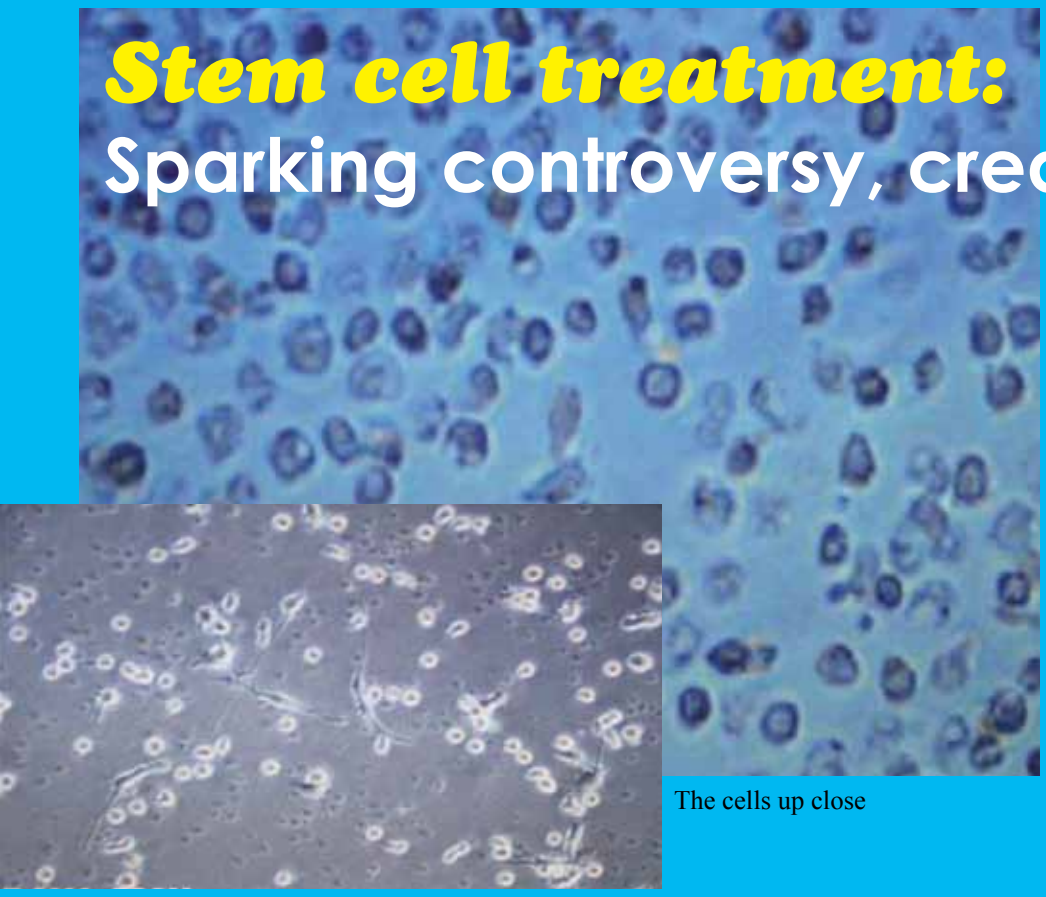
This also augurs well for local companies engaged in original design manufacturing or ODM. Original design manufacturers are companies that design and manufacture a product which is specified and eventually branded by another firm for sale. Many global electronic brands today were previously engaged in the ODM business. Locally, more and more industry players are going into ODM, said Antonio Villaflor, head of STMicroelectronics, in a separate interview.

The Philippine electronics industry is specifically targeting to reach US$50B or Php 2.1 trillion in revenues in 2016.

Based on the 2010 Nomura Research, the Philippines has comparative advantage in electronics subsectors like printers, multifunction peripheral, projectors, scanners, and digital cameras. The same study also identified missing linkages in the electronics supply chain such as photovoltaic cell, LEDs, rechargeable batteries for hybrid electric vehicles, electric vehicles and mobile digital devices, and next-generation energy infrastructure.

This report drove the government to implement strategies that will strengthen the country's manufacturing industries by providing necessary support measures that will address obstacles to the entry and growth of domestic firms. With the coming ASEAN economic integration in 2015, the Philippines is aggressively insulating its industries against unbridled competition.

Stem cell treatment:
Sparking controversy, creating benefits



The cells up close

Several months ago, the country was awash with controversy related to the death of certain politicians who underwent stem cell procedures, but in an unregulated environment, sparking uncertainty over the treatment's safety and efficacy. Doctors, however, say that people have no reason to fear. ***Espie Angelica A. de Leon*** interviews one of them, Dr. Francisco Chung, Jr, and gets the lowdown on a much talked about issue.

By ESPIE ANGELICA A. DE LEON
S&T Media Service, *DOST-STII*

"THE FUTURE of medicine is happening right now…We have to look at it as a technology that is going to put our country in the international arena."

Thus declared Dr. Francisco Chung, Jr., scientific officer of Makati Medical Center's (MMC) Cellular Therapeutics Laboratory, in an interview with S&T Post. The technology he refers to involves stem cell procedures – a controversial topic within and outside the local medical community.

"We have seen how Korea and Japan move forward because of this technology. And then, we also need to consider the skills and talents of Filipinos – they are as good as any other scientist – or better," he added.

Stem cells for managing diseases

Stem cells are cells in their early stage of development. They have the potential to develop into multiple cell types. By dividing and forming into new cells in order to replace organ-specific cells, they act as the body's repair mechanism.

The bone marrow is the most common source of stem cells. The other sources of stem cells are cord blood, peripheral blood, breast milk, cells from the endometrial lining, skin, adipose tissue, heart, and human fat especially the belly.

Several clinical trials using these stem cells have shown promising results indicating the cells' ability to manage hard to heal diseases. Globally, 196 commercial clinical trials involving 60 companies have been conducted in the last 15 years, while public and private investments have exceeded $1 billion. Many of these trials are focused on cardiovascular diseases, central nervous system disorders, immunotherapy, wounds, injuries, and gastrointestinal diseases.

Also, more doctors worldwide are administering autologous stem cell (ASC) treatments, rather than allogeneic stem cell transplants, to their patients. ASCs are harvested

Dr. Francisco Chung, Jr.

from the patient, processed and returned back to the patient's body. Allogeneic stem cells are those sourced from another individual.

During the "Forum on Stem Cell Therapy" organized by the Philippine Association of Career Scientists in partnership with the Scientific Career Council Secretariat and National Academy of Science and Technology, an advisory body of the Department of Science and Technology, Dr. Chung demonstrated the positive effects ASCs. He cited the case of a 58-year-old male patient at MMC who received

Junior Scientist Monique D. Barile (right) and Stem Cell Technologist Miguel M. de Jesus at work

The Clinimacs Magnetic Activated Cell Sorter System which isolates the cells needed for the stem cell treatment

ASCs to treat his psoriasis As of May 11, 2013, the patient's Psoriasis Area and Severity Index (PASI) score, which measures the severity of the condition, was 33.6. After infusion of ASCs in June and July 2013, his PASI score slid to 8.9. This score categorizes his condition as mild.

Positive outcomes

This patient is one of 28 accommodated so far by the Cellular Therapeutics Laboratory ever since it opened in May 2012. Patient conditions range from Parkinson's disease to cancer.

"Out of the 28, more than 50 percent I would say, have positive outcomes," revealed Dr. Chung to S&T Post. "We're not saying that these patients are becoming completely cured. What we're saying is, either we've stabilized the progression of the disease, or they are exhibiting partial response. We're mostly dealing with very difficult cases. So we always inform incoming patients that there are conditions which they cannot expect to be reversed, or which they cannot expect to go back to normal."

He cited Parkinson's disease as an example. "No one can promise you that this is a reversible disorder," Dr. Chung explained. "But just the same, if we know that in X no. of months, you'll get worse and worse, and your medication will not work, so we're doing something to complement what is the standard of care, what is the best available treatment, so we're helping out. So in terms of looking at the numbers, you know the odds of getting better is higher."

Courting controversy

Locally however, this breakthrough technology is hounded by controversy due to reports of unregulated treatment. According to Dr. Chung, adverse outcomes in the current unregulated international environment threaten to undermine the public's trust in the stem cell field.

Around six months ago, reports circulated about the death of three local politicians who underwent stem cell treatments in Germany. There had also been talk of treatments being done by German doctors in the country's five-star hotels using animal stem cells to the tune of P 1 million.

The doctor added that if there are no accredited hospitals in the Philippines, it would be hard to prevent people from finding a cure for their condition even if stem cell therapy is not the right treatment for their condition. This is the reason why some Filipinos have either gone abroad for their treatments or succumbed to unregulated treatment in the country.

Dr. Chung reminded that patients planning to undergo a stem cell procedure should first make sure there is scientific evidence that the procedure will work in their case. They should also find out where this evidence was published and was what learned from the clinical trials which should be registered with the Food and Drug Administration (FDA).

They have had people coming to them, wanting stem cell therapy for conditions for which there still is no scientific backing – specifically, diabetes and renal failure, revealed Monique D. Barile, Junior Scientist at MMC. "We just tell them that currently, scientific studies are not available for their disease, and it's okay with them," she told S&T Post during a tour of the laboratory.

"In the end, there are many challenges ahead of us, but I am optimistic that in as short as a decade, stem cells will seem more common to everyday people as medicines and there will be quite a number of proven safe and effective stem cell treatments on the market," stated Dr. Chung.

Dr. Chung also underscored the need to promote local opportunities. "We always say that the good scientists are out of this country. So now we are trying to reverse the trend," he remarked. "The beauty of it is we have started getting the confidence of other doctors who have witnessed that this technology is very promising. So we need more support from other sectors, and we have to view it as a potential progress in terms of our scientific development."

Dr. Francisco Chung, Jr. with his staff

Photos by HENRY A. DE LEON

Beyond the religious aspect, ***Framelia V. Anonas*** takes us to the practical and economic aspects of Halal, and why the DOST puts Halal on its priority list.

Halal From the dining table to the world market

By FRAMELIA V. ANONAS
S&T Media Service, *DOST-STII*

In the country, halal used to be heard only among the Islam communities. "Halal", an Arabic term, means "permitted" and refers to food or non-food preparation method that conforms to Islamic law.

Time was when our Muslim brothers made sure that their meals are Halal, as they shunned away from anything not halal or "haram."

But Halal is now breaking through from the Islam dining table to the global cash register. In fact, it has expanded from food and non-food into other areas such as logistics, ICT, travel and tour services, banking and finance, and other service-related commerce.

We can no longer afford to ignore the beckoning opportunity in the world market, so said DOST Region XII Director Haja Shayma Zenaida P. Hadji Raof Laidan.

"The world has welcomed the Halal economy," she said.

In fact, many non-Islamic nations as far as the UK and the rest of Europe have been making efforts to gain advantage in the Halal economy. "And the Philippines, though a relatively small non-Islamic country has the potential to participate in the world Halal economy," she exclaimed.

Doors that open to world Halal economy

We do have chances to make a crack into the world economy, and Dr. Laidan, along with the DOST led by Science Secretary Mario Montejo, are pretty sure of that. So are the rest of the Halal stakeholders in the country.

"We have national Halal quality infrastructure and trainable manpower support with a sizeable Muslim population of about 10 million," Dr. Laidan enthused. "We also have Halal raw material resources, numerous firms and companies eager to venture on Halal business."

The DOST has started last 2012 the construction of the Philippine Halal Science Center worth P75 million in Koronadal City. It will be completed by next year and expected to operate immediately.

Currently, DOST operates a Halal laboratory in Cotabato City.

Halal laboratories in the Philippines

"The Center will kickstart our entrance into the Halal industry," Dr. Laidan said.

The Halal Center will serve as the clearing house to assure the integrity of all Halal food produced in the Philippines.

She also clarified that the DOST indeed led the establishment of the Center but will not solely manage it. "A Muslim should head the Center," she disclosed.

The Center will be the breeding ground for DOST-supported researches that lead to the development of new products for Halal. According to Dr. Laidan, priority researches will be on food and food supplements, as well as pharmaceuticals.

The laboratory will also have facilities to check food authenticity and integrity. Moreover, it will also be equipped for DNA analysis.

"All samples will be handled separately to avoid contamination," Dr. Laidan told.

Last year in October, the DOST also inked a Memorandum of Agreement with three Halal

certification bodies endorsed by the National Commission for Muslim Filipinos. In the MOA, the DOST and the certification bodies agreed to work together to work towards the sacred need of assuring the purity and integrity of Halal-produced products, particularly those for human consumption. The partners aim to ensure the wholesomeness and safety of foods that will be readily available and will not violate health and wellness, and religious beliefs of the consuming public.

This is one bold move of the Department to uplift the country's food industry, including the small and medium enterprises. SMEs that produce Halal will be able to have more access to science and technology services as their products will be monitored constantly for quality that will make them competitive in the lucrative Halal market.

Currently, there are 50 Halal certifying bodies in the country. "However, we don't have yet a common set of Halal guidelines," informed Sen. Cynthia Aguilar Villar, author of the National Halal Act. "We need to set a Halal regulatory board."

The NCMF handles the accreditation of Halal certifying institutions as endorsed by proper government bodies such as the DOST Regional Office XII, the agriculture and trade and industry departments, and others.

There are also several financial institutions interested in Halal financing system and there are several countries close by that have solid or sizeable Halal consumers, she added.

These factors contribute to the big potential of the country in making it to the global Halal industry. Recognizing the country's big chances, various government agencies and private institutions have respectively initiated programs and activities to prop up the Halal industry in the country.

From dining table to global economy

Previously, Halal was regarded as purely religious conviction solely for Muslims. But as non-Muslims realize the seal of quality attached to every Halal food, they begin to patronize Halal. They learned to value the Halal seal for its contribution to healthy lifestyle and assurance to food safety and quality.

These facets pushed Halal forward worldwide as an economic opportunity.

Working together to bring the Philippines to the Halal world market. (L-R): Hajj Zahimi Bin Chik, managing director of Al-Qafilah International, Malaysia; Hajjah Jumaatum Azmi, founder and managing director of KasaDia Sdn Bhd, Malaysia; Dr. Laidan; Atty Mehol Sadain, secretary/chief executive officer of the National Commission on Muslim Filipinos; Dr. Hadja Sittie Mariam Ma. Lourdes D. Lim, regional director of the National Economic and Development Authority-XI; and Mr. Redhaun Daniel Oon, leader of Adempiere Open Source ERP, Malaysia. *(Photo by Framelia V. Anonas, S&T Media Service, DOST-STII)*

According to Sen. Villar, there are currently two billion Halal consumers. "And there is a growing demand from non-Muslim consumers," she raved.

Currently, Halal is a US$2.3 trillion industry, she informed.

Meanwhile, the world's Muslim population is expected to increase for the next 30 years. According to Hajjah Jumaatum Azmi, Malaysia-based Kasa DiaSdnBhd founder and managing director, the Muslim population will increase from 1.619 billion in 2013 to 2.2 billion in 2030 to constitute 46.2 percent of the world population.

Halal has likewise gone mainstream. McDonalds in Singapore is now offering Halal products. Other popular fastfood chains such as KFC, Burger King, and Taco Bell are starting to offer Halal. The chains expect a surge in customers as they embark into Halal.

Science and Halal

Halal is also recognized as a scientific phenomenon. In the same way, the Halal industry is also driven by innovations in science and technology. Applying S&T, Laidan said, will maintain the integrity of Halal certification.

S&T-based approaches ensure that both the industry and religious requirements for Halal are met. S&T is crucial in making Halal products free from "haram" (not lawful or permissible) contaminants.

The quality of Halal products should be consistent from the pre-production stage to the dining table. The raw materials needed in manufacturing and preparing Halal foods come from diverse sources, and all of these should be pure and clean per Halal standard.

In the cosmetic industry alone, Halal cosmetic is worth US$13 billion annually out of the total US$334 billion. Science will play a vital role in Halal cosmetic product development as cosmetic users crave for safer and more innovative products.

Further, in the global pharmaceutical industry, halal pharma products will climb up its worth in 2014 to US$1.1 trillion, with an expected annual growth of 4-6 percent.

Halal products have likewise gone beyond Muslim nations into non-Muslim ones like Australia, China, Singapore, United Kingdom, and the rest of the European states.

With the imminent creation of one global standard, one global certification, and one recognized accreditation scheme and wide-scale trade for Halal products and services, it is expected for Halal to become a worldwide socio-economic trend.

This is why the DOST has made Halal as one of its priorities. The challenges in the emerging industry are sure to shake the creativity of the experts in the science community and tickle the foresight of investors and business people.

As the country forays into the Halal world market, we all keep our fingers crossed for economic productivity to our people that will result in inclusive growth.

Call slip for more skillful, better trained engineers

By ALLAN MAURO V. MARFAL
S&T Media Service , *DOST-STII*

THE DEPARTMENT of Science and Technology (DOST) along with several academic institutions are formulating appropriate programs for aspiring engineers to qualify them for well-paying jobs with opportunities for continuous skills enhancement.

This was the key point of the Consultative Meeting on Engineering Education Technology and Engineering Technician Degree Program organized by the National Academy of Science and Technology (NAST), a DOST advisory body, at the Traders Hotel in Pasay City last September. During said event, officials from the government sector and academic institutions discussed various ideas that will strengthen engineering education in the country and clarify issues about engineering technology and engineering technicians program.

Philippine Qualifications Framework

Academician William G. Padolina, president of NAST, believes that despite a lot of engineering courses being offered by different universities and state colleges in the country, not all of them are performing well based on results of the engineering board exams.

"There is a call for the educational sector of the academic institutions to improve engineering curricula that are timely, effective and at par with international standards if we are aiming for better equipped graduates for our workforce," says Padolina.

To address this concern, Technical Education and Skills Development Authority (TESDA) Executive Director General Irene Isaac discussed the Philippine Qualifications Framework (PQF). Signed by President Benigno Aquino III as Executive Order last year, PQF is in line with the K-12 education system adopted starting this school year.

Once PQF is in place, it would allow any high school graduate, especially one who cannot afford to enroll in a bachelor's degree program, to enroll in any certificate program offered principally in technical vocational institutions. For example, a Grade 10 graduate or the equivalent of a high school graduate may continue up to Grade 12 and get a National Certificate I (NC I) or NC II, Isaac explains. After this, the student can proceed to acquire higher education, even a doctorate degree, or apply for a technical job because of the NCII qualification.

Isaac emphasized that the ultimate goal of PQF is to promote competitiveness among professionals, workers and learners in the domestic and global market. By establishing national standards of training and competencies, job quality is assured.

The other speakers in the event were Dr. Reynaldo B. Vea, chairman of NAST Engineering Sciences and Technology Division and Engr. Lyndon Bague.

The consultative meeting was held in relation to the United Nations Educational Scientific and Cultural Organization project on Engineering Technologist/Technician.

(From right) Dr. Reynaldo B. Vea, chairman of NAST Engineering Sciences and Technology Division together with Irene Isaac, executive director of Technical Education and Skills Development Authority and Engr. Lyndon Bague address several questions from participants of the Consultative Meeting on Engineering Education Technology and Engineering Technician Degree Program last September 19, 2013 at Traders Hotel, Pasay City. The said meeting gathered various ideas that will strengthen engineering education in the country as well as clarify issues about engineering technology and engineering technicians program. Some of the highlights of this activity were the discussions on Philippine Qualifications Frameworks as well as the Curriculum of the Bachelors Engineering Technology Program. *(Photo by Gerardo Palad and Text by Allan Mauro Marfal, S & T Media Service, DOST-STII)*

DOST's info institute leads "*Sulong-Tabang*", S&T initiative for Visayas

By FRAMELIA V. ANONAS, BENEDICT P. CAGAANAN & RODOLFO P. DE GUZMAN
S&T Media Service, *DOST-STII*

AS PART of its fund-raising activities for typhoon Yolanda victims, the Science and Technology Information Institute, the information arm of the Department of Science and Technology, is leading the "Sulong-Tabang S&T sa Visayas" T-Shirt campaign.

The shirts, available initially in white color, were purchased as Christmas gifts to loved ones or worn for statement of commitment to helping support typhoon victims in the Visayas. The white shirts cost P200 for small, medium and large sizes; and P220 for XXL and XXXL. For orders, pls like and PM Sulong Tabang Visayas or Science and Technology Information Institute-DOST in Facebook or call STII's Tess Rosqueta at (02) 837-2071 loc 2131.

One hundred percent of the sales income will go straight to DOST's relief program.

Meanwhile, DOST has mobilized its various agencies and institutes to gather donations both in cash and in kind as it launched its relief program and fund drive to provide assistance to the victims of Super Typhoon Yolanda in Eastern and Central Visayas that left about four million people homeless last November 8, 2013.

DOST's assistance came in forms of relief goods and cash donations as well as technical assistance and manpower.

DOST Secretary Mario Montejo appealed to the whole DOST family, as well as its partners, to take part in this program. The relief goods needed are basic necessities that include the following: used clothes; blankets and mosquito nets; towels and sleeping mats; shoes and slippers; ready-to-eat foods like canned sardines, sausages, meat loaf, pork and beans; instant noodles; drinking water; bread; toiletries like soap, toothbrush and toothpaste; baby diapers; sanitary napkins; medicines, alcohol, disinfectants and mosquito repellants; cooking and eating utensils; saw, hammer and knives; flash lights; transistor radios; and batteries.

Likewise old but still usable bicycles were also accepted because of the need for means of transportation in the absence of cheap fuel and unavailability of public transportation.

T-shirts for sale as part of DOST-STII's fund-raising for "Sulong-Tabang" *(Photo by Gerardo G. Palad, S&T Media Service)*

DOST's relief efforts for Yolanda victims

One effort for the Visayas. Department of Science and Technology (DOST) officers and personnel help in transferring relief goods into the Air 21 freight truck bound to Visayas by ship. Aside from basic goods like toiletries, packed and canned foods, drinking water, and medicine, the science department also donated DOST-assisted products through its Small Enterprise Technology Upgrading Program or SETUP as well as ceramic water filters developed by the Industrial Technology Development Institute and healthy snacks and complementary foods by the Food and Nutrition Research Institute. The DOST-wide relief efforts cum fund raising is called Sulong Tabang or S&T sa Visayas. Tabang is a general Visayan term for "help". The S&T sa Visayas aims to raise P2 million to support the 400 families encamped at the DOST's Philippine Science High School campus at Palo, Leyte. *(Photo and text by George Robert Valencia III, S&T Media Service, DOST-STII)*

Potable water for typhoon victims. Ten thousand units of pot-type water filters developed by the Department of Science and Technology - Industrial Technology Development Institute are shipped to the Visayas to help produce potable water for communities affected by typhoon Yolanda. The filters purify untreated water—tap, deep well, pond or spring water—to make it safe for safe drinking. The pots are made of red clay and coated with anti-microbial nanoparticles to eliminate water-borne microorganisms. DOST's cargo partner Air 21 delivered an initial batch of 150 filters on November 23 to DOST VII Regional Office in Cebu City which distributes the filters to DOST provincial offices. *(Photo and text by George Robert Valencia III and DOST-ITDI, S&T Media Service)*

The wrath of Yolanda

This is how Super Typhoon Yolanda devastated DOST's PAGASA station in Tacloban City, Leyte in just a matter of hours. *(Photos by Radio Television Hong Kong via DOST-PAGASA)*


PAGASA before


PAGASA after

Solidum warns metro to check structures' compliance to Building Code

By ESPIE ANGELICA A. DE LEON
S&T Media Service, *DOST-STII*


skyscrapercity.com

HOUSES AND buildings in Metro Manila including churches, need inspection to ensure that they comply with the standard Building Code, told Dr. Renato U. Solidum, director of the Department of Science and Technology's Philippine Institute of Volcanology and Seismology (DOST-PHIVOLCS).

Solidum's warning came in the face of mounting concerns about Metro Manila's readiness should an earthquake with a magnitude similar to the 7.2 temblor which shook Central Visayas last October hit the crowded metropolis.

Since earthquakes cannot be predicted, Metro Manila should be prepared and take all possible measures for greater safety as early as now, said Solidum. One of these measures is a thorough inspection of houses, schools, office, residential and commercial buildings, churches and other edifices to check if these are structurally safe.

"The Philippines is prone to hazards including earthquakes due to its geological location. It is in the Pacific Ring of Fire, and it is prone to volcanic eruptions and earthquakes…," stated Solidum.


PHIVOLCS Dir. Renato S. Solidum

Historically, the tectonic plates of the West Valley Fault, which runs from San Mateo in Rizal all the way to the city of Taguig, were last activated in 1658 resulting in an earthquake. According to the PHIVOLCS director, these plates are expected to move again anytime within 400-600 years after this. If they do move against each other, the resulting tremor may be as strong as the killer quake that claimed more than 200 lives and toppled numerous structures including historic churches in Bohol and Cebu. Among these are the Basilica Minore del Santo Niño in Cebu City; Church of San Pedro Apostol in Loboc, Bohol; Church of Our Lady of the Immaculate Conception in Baclayon, Bohol; and the Church of Our Lady of the Assumption in Dauis, Bohol.

According to data by PHIVOLCS, a 7.2 earthquake in Manila and nearby provinces would result to a death toll of at least 37,000 with 604,000 injured and P2.4 trillion worth of damage to buildings.

According to data by PHIVOLCS, a 7.2 earthquake in Manila and nearby provinces would result to a death toll of at least 37,000 with 604,000 injured and P2.4 trillion worth of damage to buildings. Said data is the result of a three-year risk analysis project by the Philippine and Australian governments. The study was presented during the Launch and Handover of Multi-hazard and Risk Maps for the Greater Metro Manila Area held last Oct. 17 at Crowne Plaza in Ortigas.

The PHIVOLCS director added that the churches in Visayas crumbled during the quake partially because they are made of limestone which easily softens. The 7.2 temblor occurred at 8:12 am on October 15, 2013 with its epicenter located 2 kilometers southeast of Carmen in Bohol.

Tulang Diyot: Defying the odds with community preparedness

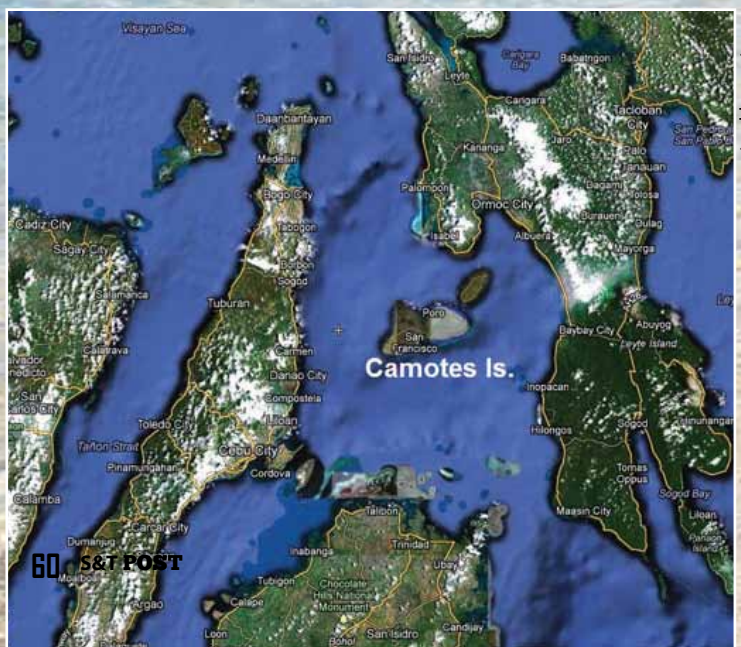
By RODOLFO P. DE GUZMAN
S&T Media Service, *DOST-STII*

TULANG DIYOT, a 1.5 kilometer long by 500 meter-wide island, belongs to the Camotes group of islands between the provinces of Cebu and Leyte. Its pristine waters along the sandy beach make it the perfect hideaway – a respite from the chaos of city life to a paradise untouched by modernity.

However, on November 8, 2013, the island paradise was transformed into a desolate wasteland as Super Typhoon Yolanda (international name: Haiyan) unleashed its fury with winds of up to 340 kph,battering the houses and leveling them to the ground.

From atop a chopper, one can see the destruction brought about by Yolanda but, surprisingly, despite the massive wreckage, the 1,000 or more people of Tulang Diyot remained standing, strong and undeterred by the wrath of nature.

An aerial photo of the island of Tulang Diyot off the tip of the municipality of San Francisco in the Camotes Island, Cebu. ***(Photo courtesy of reliefweb.int)***



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The island had zero casualty.

Was it a stroke of divine providence? Was it a miracle in this age and time of internet computing?

It could probably be partly divine intervention, since the residents are of great faith, but they cheated death simply because the people of Tulang Diyot were prepared.

For one, the entire community is aware of the hazards and risks they have to face during typhoons. Since their home is an island and therefore prone to storms, they learned to adapt and institute a systematic way of dealing with this phenomenon as it becomes part of their lives.

Secondly, the island is blessed with a forward thinking leader in the person of former San Francisco Mayor Alfredo Arquillano. With a no-nonsense approach to disaster management, Arquillano together with the people heeded the warnings of government agencies like PAGASA and early on they all evacuated to higher grounds with no ifs or buts.

A day prior to Yolanda making landfall in Eastern Samar, the residents of Tulang Diyot hauled the basic necessities with them and marched on to the town proper of San Francisco and waited there patiently as they gave way to Yolanda as it crossed the archipelago.

Former San Francisco, Camotes Island Mayor Alfredo Arquillano Jr. (fifth from left) poses for posterity during an event of the United Nations Office for Disaster Risk Reduction. *Photo from www.unisdr.org*

"It just shows that preparedness pays. We have been working for years on early warnings, evacuations. The awareness level of the community was so high that it went well."

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"It is a good decision; it's fair to say it saved everyone's life. There is not one house left standing on the island, everything was wiped out," said Arquillano.

The Tulang Diyot experience brought new meaning to the word resilience. Not only were the people able to survive the catastrophic hammering of Typhoon Yolanda, but they were able to draw their own destiny by embracing the wind of change. Realizing the fact that they are in the path of typhoons, Arquillano, together with the entire community, has been conducting typhoon drills for years now.

"It just shows that preparedness pays. We have been working for years on early warnings, evacuations. The awareness level of the community was so high that it went well," disclosed Arquillano.

In fact, Arquillano was awarded the UN Sasakawa Award for Disaster Risk Reduction in 2011 by the United Nations Office for Disaster Risk Reduction (UNISDR). He won the award for his community by creating the "Purok System" where he implemented an indigenous method of self-organization within the villages therefore allowing for easy communication and quick evacuation when calamities strike.

"We knew we were vulnerable, so we made absolutely sure that everybody knew what to do and where to go," said Arquillano.

This unassuming community leader has also instituted a "capital build up" program wherein the community residents deposit an agreed amount as initial capital to fund post-disaster assistance activities.

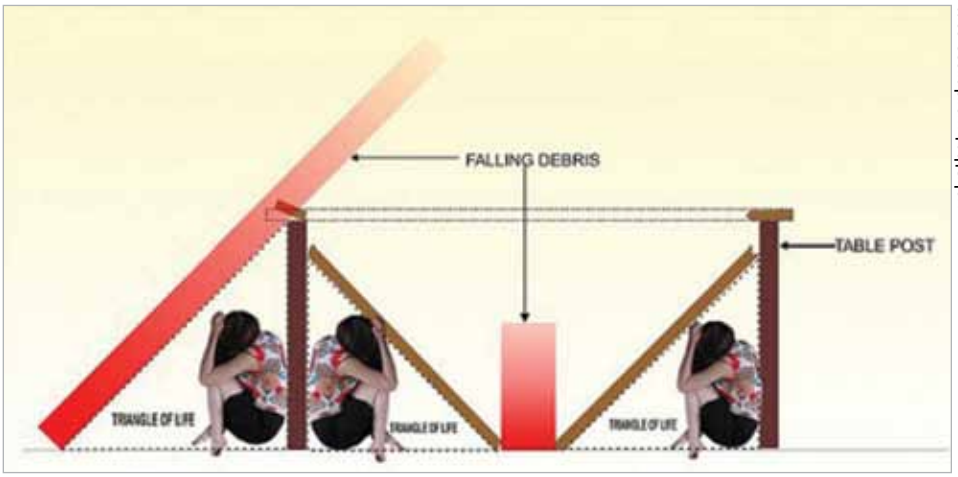
Other communities at risk can now emulate the Tulang Diyot experience and replicate its disaster preparedness initiatives in their own areas. The task is not impossible and the escalating threats of extreme weather conditions can be minimized substantially to preserve lives and properties. In fact, other places had zero casualties reported like the town of Javier in Leyte; Malapascua Island, Cebu; Albay, Bicol; and Virac, Catanduanes. In Maricani Island in Eastern Samar, it was reported that only one perished during the height of Typhoon Yolanda.

Mother nature has its own way, its own rules and during these times the unexpected is already happening. Science is there to interpret and perhaps find solutions to prevent or mitigate disasters but the fact still remains that we have to contend with these situations every year.

But Tulang Diyot and other places with no casualty are good examples of the benefits of being prepared. And the beauty of it all is that, it does not take sophistication for communities to save lives.

DOST-PHIVOLCS chief belies *"Triangle of Life"* earthquake safety theory

By ESPIE ANGELICA A. DE LEON
S&T Media Service, *DOST-STII*



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DURING AN earthquake, the first thing to do is to duck under a sturdy table.

This is called the drop, cover and hold response to an earthquake, and all countries follow this, according to Dr. Renato U. Solidum, director of the Philippine Institute of Volcanology and Seismology (PHIVOLCS), a service institute of the Department of Science and Technology (DOST).

"You hide underneath a sturdy table, and you hold the table while the floor is shaking, and the table will also be moving," Solidum stated In his talk "Earthquake Hazards and Risks in Metro Manila and Vicinity: PHIVOLCS-DOST Initiatives" during the 2nd DOST-NCR Stakeholders' Summit on Disaster Risk Reduction and Management, held last December 5 at the DOST Executive Lounge.

Such response is more effective, said Solidum, compared with the so-called "Triangle of Life" theory of reacting to strong earthquakes. The theory states that instead of ducking for cover under a table, the person should lie beside it. If the ceiling collapses, it will hit the table, lean against it, thus forming a triangle and sparing the life of the person lying beside,

"That (Triangle of Life) is not correct because it assumes a static context of an earthquake. Remember, the table is moving so if you just lie down on the floor, you're exposing yourself to falling objects that might even get you killed because you don't have any cover to protect your head and any part of your body," explained Solidum.

The PHIVOLCS director also mentioned another variation of the "Triangle of Life" theory which involves the refrigerator. Advocates believe that since the refrigerator is made of metal, it will not be crushed as much as a wooden table would.

Solidum also discounted this theory. "The refrigerator is usually high, hence it can topple down. It may even kill or injure you if you lie beside it. So it's not appropriate to follow the Triangle of Life," he reasoned out.

Solidum's talk at the DOST-NCR Stakeholders' Summit came a day after parts of Southern Philippines were struck by a 5.7 magnitude quake. Last October 15, a 7.2 killer quake that shook Central Visayas resulted in the death of many and the destruction of structures including historical churches and the world famous Chocolate Hills in Bohol. The deadliest to hit the country in the last 23 years, the temblor was said to have unleashed the strength of 32 Hiroshima bombs.

Solidum disclosed that a tremor of similar magnitude, or even a magnitude of 6.5, from the West Valley Fault can cause severe damage to Metro Manila and nearby places. The West Valley Fault runs from San Mateo, Rizal to Taguig City. A magnitude 8 along the Manila Trench, he said, can cause a tsunami. The Manila Trench is an oceanic trench in the Pacific Ocean, located west of Luzon and Mindoro.

However, he reminded the audience that it is the collapsing building, not the fault shaking, which causes people to die during a powerful tremor, and cited the August 1968 earthquake which pummeled the country. With its epicenter at Casiguran in Quezon, the Intensity 8 temblor significantly affected Manila, causing the six-story Ruby Tower in Binondo to collapse which caused the death of more than 200 persons.

"If the ground is soft, if the buildings are not engineered well, these can collapse and even cause fire," Solidum said and emphasized the need for preparedness – individually, as well as at home and at the workplace. Buildings should be in accordance with the National Building Code, he stressed.

Philippine Institute of Volcanology and Seismology Director Dr. Renato U. Solidum speaks about the duck, cover, hold policy as a correct and universally accepted way of response during an earthquake. His talk was held during the 2nd Department of Science and Technology (DOST)-NCR Stakeholders' Summit on Disaster Risk Reduction and Management on December 5 at the DOST Executive Lounge in Bicutan, Taguig City. During his talk, Solidum said that the Triangle of Life theory is not an appropriate method to keep one safe during a tremor. *(Photo by Ceajay N. Valerio, S&T Media Service, DOST-STII)*

DOST-DREAM Project extended to cover whole PH in 3D flood maps

By SUZETTE J. DALUMPINES
S&T Media Service, DOST-STII

THE DEPARTMENT of Science and Technology (DOST) - Project NOAH's component called Disaster Risk and Exposure Assessment for Mitigation or DREAM Program will be extended in order to scan the whole country and produce three-dimensional (3D) flood hazard maps. Dr. Rowena Guevarra, executive director of the project's funding agency, announced the extension during the recent DREAM Report to Stakeholders Meeting at the National Engineering Center-UP Diliman.

A pioneering and big-ticket program component of DOST's Project NOAH (Nationwide Operational Assessment of Hazards), DREAM is being implemented by engineers from the UP Diliman and funded by the DOST-Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD).

The DREAM Project, extended from 2014 to 2016, is expected come up with a comprehensive and integrated flood early warning system (IFEWS) covering the entire country by the end of the program's second leg in 2016.

"May part 2 po ang DREAM. Yun yung sinasabi ni Asec. Raymund Liboro na sa 2014 hanggang 2016, tatapusin po natin yung two-thirds ng Philippines kasi one-third lang yung assignment nila Engr. Enrico Paringit sa DREAM 1," said Dr. Guevarra. (DREAM has a Part 2. That is what Asec. Raymund Liboro was referring to when he said that by 2014-2016, we will complete two-thirds of the Philippines because only one-third was covered by Engr. Paringit in DREAM 1.)

Barely two years after its inception in December 2011, DREAM has scanned 17 of the targeted 18 critical river basins in the country through LiDAR (Light Detection and Ranging), a state-of-the-art technology that can generate high-resolution, up-to-date, and three-dimensional (3D) flood hazard maps.

The DREAM team has already produced LiDAR-based flood models for Mandulog in Iligan City, Pampanga, Davao Oriental, Marikina, Cagayan de Oro, and Compostela Valley. The rest of flood models are to be completed by June 2014, the project's original end date.

According to its program leader Engr. Enrico Paringit, DREAM currently has around 70 staff members, a number that still has to be augmented for the expansion.

To aid in the shortage of manpower, Dr. Guevarra said 30 to 50 state universities and colleges in the country offering geodetic engineering and computer science courses will be tapped to help implement the second leg of the program.

"Akala ng tao, pag may eroplano, pwede na. Kailangan po ng tao na magpa-process ng data. Pinakaimportante ang human resources dahil kung walang magpa-process ng data, wala rin," she said. (People think that having airplanes alone solves the problem. We need people who will process the data. Human resources are the most important part of this project because without these people, this program won't work).

DREAM currently has only two aircrafts carrying LiDAR instruments, the Pegasus and the Aquarius. In its second leg, DREAM aims to double the number of equipment being used to be more efficient in data gathering, said. Dr. Guevarra.

"Mado-doble na ang bilang ng mga eroplanong ginagamit natin. (The number of airplanes we're using will be doubled). Work [for the program's second phase] will start this last quarter of 2013."

SUZETTE I. DALUMPINES

More rain gauges in flood-prone CAMANAVA

By RODOLFO P. DE GUZMAN
S&T Media Service, *DOST-STII*

TO ADDRESS the perennial flooding in the CAMANAVA (Caloocan, Malabon, Navotas, Valenzuela) area, the Department of Science and Technology (DOST) installed additional automated rain gauges (ARGs) in the past months through its National Capital Region (NCR) office. The installation is part of the initiative for emergency distribution of hydrometeorological devices in hard hit areas in the country.

Rain gauge is a weather instrument used by meteorologists and hydrologists to measure the amount of rain in an area over a certain period. The rain gauges were installed in Mapulang Lupa, Pleasant View Subdivision in Barangay Bagbaguin and at the Smart cell site 2 at Gen. T. de Leon. Two more ARGs were put up in Dampalit Elementary School in Malabon and at the Smart cell site 3 in Caloocan City.

CAMANAVA, having a lower elevation compared with other cities and municipalities in Metro Manila, is prone to constant flooding. In fact, the occurrence of high tide also contributes to flooding even without weather disturbances.

Baguio folks learn about Project NOAH's landslide mapping project

By RODOLFO P. DE GUZMAN
S&T Media Service, *DOST-STII*

THE DEPARTMENT of Science and Technology (DOST) through Project NOAH briefed Baguio folks on Project NOAH's landslide mapping project via an information, education and communication (IEC) seminar for the Cordillera Administrative Region (CAR) recently at the Crown Legacy Hotel in Baguio City. Project NOAH's IEC intends to raise people's awareness on the impending hazards brought about by natural calamities like floods and landslides.

"Since the Cordillera region is mostly composed of mountains, there is a need to study the area in detail and collect data that can be analyzed to create landslide maps," said Aika Alemania, Senior SRS for ProjectNOAH'sLandslide Mapping component.

As a learning tool for the participants, Alemania also presented documentations of Typhoon Pablo in 2009 that triggered mud flow and debris flow in Barangay Andap, New Bataan and Compostela Valley.

"We are presently doing mapping of existing landslides, mapping of landslide susceptible areas using LiDAR (light detection and ranging) technology and mapping of alluvial fans," said Alemania. "Alluvial fans are fan-shaped land formations brought about by landslide."

"There are no alluvial fans in CAR except in Camp 1. It will be the province of Pangasinan that could be affected in the event of a landslide," added Alemania.

The landslide mapping project started only in May 2013 and will end by April 2014, Alemania said.

She stressed the need to constantly monitor and study the terrain and soil composition of the different areas in the country that are prone to landslides to gather pertinent data for the creation of landslide maps.

Other resource speakers included experts from various warning agencies, namely: Joida Prieto, Senior SRS for Data Processing for UP DREAM LiDAR, a NOAH component that produces flood hazard maps; Jericho Jan Andres of Advanced Science and Technology Institute (ASTI) for hydromet sensors development; Mary Joy Gonzales of WebGIS for NOAH website and mobile apps; and Danilo Flores, Weather Specialist II of PAGASA Hydromet Division.

Participants to the event included officials of local government units from Abra, Kalinga, Apayao, Benguet and Ifugao; provincial disaster managers; academicians from UP Baguio, Saint Louis University, University of Cordillera, and Baguio Central University; non-government organizations, provincial police and military institutions and the local media practitioners.

Other guests present during the event were Dr. Julius Caesar V. Sicat, regional director of DOST-CAR who gave his opening remarks and Director Alex Uy, chairperson of the Office of Civil Defense-CAR and RDRRMC-CAR, who in turn gave the closing remarks.

Project NOAH or the Nationwide Operational Assessment of Hazards, is the disaster management program of the DOST. It was created and launched in July 6, 2012 as a response to the directive of President Benigno Aquino III to implement a responsive disaster mitigation and risk reduction program using science and state-of-the-art technologies in the aftermath of Typhoon Sendong that devastated Cagayan de Oro and nearby communities.

Project NOAH primarily conducts information campaigns in areas near the 18 major river basins all over the country to provide information as to risks attributed to natural hazards. Also under the program, CAR was identified as one of the vulnerable areas in terms of landslides due to its mountainous topography.

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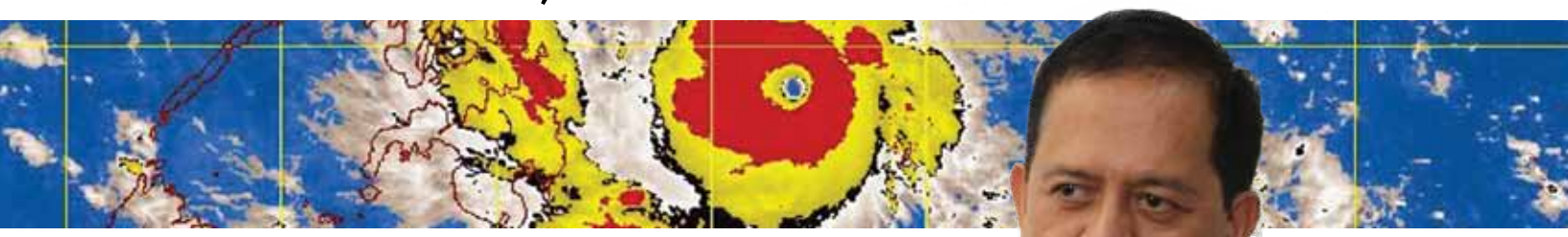
How I survived Yolanda

– Mario Peñaranda, PAGASA Tacloban OIC



Mario Peñaranda, Officer-in-Charge at PAGASA-Tacloban, recalls the nightmare he and his staff went through on the job while monitoring Yolanda's wrath right on the super typhoon's path.

"I am just so lucky I survived."

By ESPIE ANGELICA A. DE LEON
S&T Media Service, *DOST-STII*

It may have been the longest walk he ever took. At 11 in the morning of November 8, 2013, PAGASA Tacloban's Officer-in-Charge Mario Peñaranda started on his way home from the PAGASA station. Hungry and with minor injuries, he joined a throng of people who walked the flooded, glass-littered streets of Tacloban. A diabetic, he walked slowly so as not to sustain further injury from the shards of glass lying around. His shoes were gone so he looked for slippers and found two which did not match.

Hospitals and business establishments were not operating. Some stores were even looted, with people of different social classes hoarding medicines from drugstores without knowing what exactly are the medicines for. Warehouses were ransacked as well, allowing people to run around carrying sacks of rice and boxes of beverages.

With his companion and co-worker Romeo "Romy" Elvina already growing weak, Peñaranda asked for food, even candy, from total strangers. His plea fell on deaf ears. Finally, a woman gave them juice, bread and chocolate while Peñaranda fished a bottle of softdrinks from the debris on the street.

And in the midst of such chaos, silent bodies lay on the street sides, in front of silent houses and commercial establishments which, on ordinary days, thrived with life and energy. He just thought about himself and continued on his way, eager to see his wife. His cellphone had gotten wet, hence, he cannot communicate with his wife.

He finally reached home at six in the evening, after negotiating a route which, on ordinary days, would only take him 20 minutes to drive through.

November 8, 2013 was no ordinary day. Early in the morning, the strongest typhoon to hit the Philippines made a landfall, leaving a path of destruction and despair which Peñaranda now had to traverse. He was one of the survivors of typhoon Yolanda, along with his colleagues Romy Elvina and Nilo Polinas. A fourth colleague, Salvacion Avestruz, was swept away by the wave which rushed inside their office building. Her body has never been found.

5:30 am, November 8, 2013

"Mar, mag-ingat kayo dyan (Take care of yourselves over there, Mar)," PAGASA Acting Administrator Dr. Vicente Malano told Peñaranda on the phone at 5:30 a.m. as he, Elvina, Polinas, and Avestruz manned the station while gusty winds blew outside.

The four were taking pictures of the goings-on outside until Avestruz's camera batteries went low and she had to go to her room. Instantly, Yolanda unleashed her power, breaking glasses and jalousie windows, causing the roof to heave and the wind to blow more forcefully. To prevent the strong wind from breaking in, they closed the door more tightly.

After a few minutes however, clear water seeped in. After a little while, brown water entered and Peñaranda knew this was water from the sea, pushed inland by this phenomenon called a "storm surge." Water also started coming in from the back as well.

Immediately, he broke one of the jalousies, made his way into their office building's extension at the back, and held on to a post. He actually was planning to make it to the roof, with waves already rushing in.

And then he saw Avestruz coming out of her room and called out to her. But it was too late. The water quickly caught up with her and swept her out of sight. "Wala na akong magawa at hindi rin ako marunong lumangoy (I cannot do anything and I cannot swim"), he told S&T Post.

By this time, the water level inside the PAGASA station was already three meters high. With several debris swirling around him, he held on more tightly to the post, until the water

actually lifted him higher and he was able to make it for the roof. Polinas came into the room and Peñaranda pulled him. Together, they held on to the trusses. Suddenly, another wave rushed toward them, toppling him off his perch. He waited for another rush of water to bring him up again to the trusses. When they were safely on top again, they helped Elvina.

"Naramdaman ko na mukhang eto na ang katapusan ko (I thought my come had come)," he said. "Nagbiro pa ako sa kasama ko, sabi ko, 'Ano pare, nagsisi ka na ba sa mga kasalanan mo? (I even teased my companion and said 'Do you now feel remorse over your sins?),'" he recalled with a smile.

Their tired feet already soaked in water, they kicked away debris floating around, including their office refrigerator. Meanwhile, sounds of breaking glass and jalousies punctuated the fierce pounding of the rain and the mighty rush of the wind. Visibility was zero.

Peñaranda estimated that they were at the roof for three hours. Until slowly, the water started to subside. By 10:30 am, they were finally able to climb down. (Photos showing devastation of PAGASA-Tacloban at page 58)

At around 11:00, they started walking home. They also tried to look for Avestruz, to no avail. "Very close ako diyan. Ka-biruan ko yan. 5:30 [noong araw na iyon] nga nagbibiruan pa kami eh. Kaya hindi ko din binitawan ang pamilya. Tinulungan ko yan. Magaling yon. Madaling maka pick-up ("I was very close to her. We joked around a lot. At 5:30 that morning, we were still joking with each other. That's why I continue to help her family. She's very good. She can easily understand things"), Peñaranda said of his colleague and good friend. Avestruz has two daughters and a son.

Photos by HENRY A. DE LEON

PAGASA Tacloban Officer-in-Charge Mario Peñaranda said he will never quit his job despite Yolanda.

Peñaranda, who is also a lay minister in their parish, is just too grateful he survived one of the world's worst calamities. "Nagpapasalamat ako sa buong PAGASA, pati na rin sa DOST family kasi hindi kami pinabayaan (I want to thank PAGASA and the whole DOST family because they did not neglect us"), he told S&T Post.

He hopes that after the experience, PAGASA in Tacloban will have ropes, helmets, lifejackets, and if possible, a speedboat, in order for them to be more prepared when another super typhoon strikes. The experience may have been his worst as a weatherman, but just the same, he said that he will continue being a weatherman for PAGASA. "Hindi na ako bibitaw sa trabahong ito. Napamahal na sa akin ito (I will never quit from this job. I've already learned to love it)," he revealed.

Hope and prayers for Salvacion Avestruz and family

Salvacion Avestruz

SALVACION AVESTRUZ, 42, Weather Observer II at the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) in Tacloban, is still among the missing from Yolanda's onslaught as of press time.

On the day Yolanda struck Leyte, Avestruz and her colleagues, PAGASA Tacloban Station Chief Mario Peñaranda and observers Romeo Elvina and Nilo Polinas were on duty at the PAGASA weather station in Tacloban City's airport terminal. PAGASA protocol dictates that "personnel on duty should not leave or abandon their posts at all cost if a locality is under threat from a tropical cyclone."

But the sheer power of the typhoon seriously damaged the PAGASA station, thus crippling its operation. Yolanda also left the three men with minor injuries and swept away their female companion, rendering her among the missing. Avestruz was last heard from at 5 am that day when she sent out data from the station. After this, the storm surge which rose to as high as seven meters, charged forward and the weather station was completely destroyed.

According to Peñaranda's account, Avestruz tried to save the office's microbarograph (an instrument for recording minute changes in atmospheric pressure) as a monster wave was about to surge forward and engulf the station. And then she disappeared, swept away by the raging storm surge.

Search and rescue operations were conducted, but unfortunately, Salvacion Avestruz was never found. Christmas came and went but Avestruz remains a statistic under the "MISSING" category.

The Department of Science and Technology (DOST) community commiserates with the Avestruz family. Of course, in our hearts, we are still hoping that Salvacion is somewhere, alive. After all, miracles do happen and we are praying for one. Whether that miracle will come or not, may her family find refuge, strength and acceptance in God's words and grace.

"DIFUNCTIONAL SHOE" INVENTORS:

The perfect fit for victory

The Difunctional Shoe is a protective footwear for students, equipped with a locked-in jacket made of sheepskin, which covers almost the entire leg part and thus provides ample protection against rains and floods. The previous prototype featured a jacket made of polyphenol which is now replaced by the more durable sheepskin. *(Photos by Henry A. de Leon, S&T Media Service, DOST-STII)*

By ESPIE ANGELICA A. DE LEON
S&T Media Service, *DOST-STII*

SUMMER VACATIONS would see typical teenagers out on the beach, spending time in the mall, or going out of town. For three high school juniors from the Batasan Hills National High School however, Summer 2013 was spent in school. Every summer day, Kathleen Ann Valadon, Kathrina Leigh Sepagan, and Christine Joy Collado, went to school to research about their project and work on it – the Difunctional Shoe.

According to Merriam Webster Online, difunctional means "of, relating to, or being a compound with two highly reactive sites in each molecule."The Difunctional Shoe is simply a footwear for schoolgirls made of synthetic leather. But, It is equipped with a water-resistant polyphenol jacket that will protect the feet and the leg from the rains and floods. It has two soles made of rubber and in between is the jacket locked in by a zipper. When used, the jacket can almost cover the entire leg part, thus providing ample protection. After using the jacket, one just has to fold it again and insert it back inside.

Together with their adviser Ms. Babie Noreen P. Clemente of the school's Engineering and Science Education Program, the three worked hard to come up with the best product.

In the end, their efforts paid off. The Difunctional Shoe won the grand prize in the SIBOL Creative Research-High School Category of the 2013 Regional Invention Contest and Exhibits (RICE) for the National Capital Region held last August at the Technological Institute of the Philippines in Quezon City. So now the girls are on their way to represent the region in the 2014 National Invention Contest and Exhibits (NICE) set for July 2014, pitting the crème de la crème of the country's budding and professional inventors.

Things had not always been easy for them though.

The invention process

"From research, I wanted them to shift to invention... para maiba naman yung ginagawa nila, hindi yung puro nalang laboratory (so that they will have something to work on, instead of doing the same laboratory work)," Ma'am Babie shared. She also told them that an invention always deals with a problem.

"We did brainstorming. We thought of the problems here in the Philippines, like the earthquakes. Then we came up with floods as our topic," said Kathleen.

Initially, they wanted to do develop a product that will allow people to avoid leptospirosis. One such idea was a backpack that can be used as an inflatable bag during floods. Then they thought about how rainwater seeps into their shoes and socks during the rainy season so that by the time they arrive in school or at home, their feet are all soaked up.

So finally, they agreed on creating a kind of footwear that will protect students from the strong rains and floods. The planning stage for the project actually started during the third quarter of their sophomore year. Last summer, they started researching about the possible durable materials they can use, the shoe design and the concepts involved, how to make the outsole work, how to properly fold and unfold the jacket, how to make the jacket work in general, and other things.

Finally, they chose polyphenol as material for the protective jacket. "It is not expensive and it's proven to be waterproof," Kathrina explained.

Thus the development stage for the Difunctional Shoe commenced, lasting their entire summer.

Kathleen related how they initially kept changing their minds about where to put the zipper. At one point, they placed it in the sole, but it didn't work out. They also didn't have enough knowledge about sewing, much less about sewing and tying shoe parts together. So when it was time for field testing, they realized that their attempts at sewing didn't work out either. Water entered the shoe. Their first prototype was even made of cardboard wrapped in cloth then covered in plastic – the same plastic material used for covering schoolbooks and notebooks.

Their entry for RICE-NCR is the second prototype which they developed with the help of someone from Pateros who guided them in the sewing process. All in all, developing it cost between P 600 to P1,000.

Inspiration

Of course, these wouldn't have been possible without the guidance and encouragement of their adviser, Ma'am Babie.

Said Christine, "We were inspired because Ma'am was also busy during the summer and we appreciated the fact that the three of us would meet, and Ma'am Babie would have a seminar, but she would divide her time so she can still see us and help us. "

The experience so inspired Christine, she said, that she wants to plan about other products she can invent in the future.

For Kathrina, it was truly a trying time. "There was also a time when I almost gave up and quit our group because of financial problems," she recounted. "But Ma'am encouraged me to stay. She told me the benefits we would reap if we win the competition and the experience of joining these competitions."

Determination, destiny, and the need for greater support

It was the first time for Batasan Hills National High School to join the biennial contest – and they won the grand prize!

Seemingly, the grand prize was meant for them since, as Ma'am Babie recalled, they learned about RICE only the day before the deadline, through Honnelley Estrellas- Balo, Ma'am Babie's colleague who is also active in research and invention. It was Ma'am Honnelley who gave them the information and forms needed for the competition.

Their school principal Dr. Diego M. Amid was also instrumental in the group's participation in RICE. "We deeply appreciate our principal for allowing us to join the competition. He is very choosy in sending us to competitions but he believes in DOST so much that he did not even have a second thought of allowing us to join," said Ms. Babie.

Thus, the three rushed to gather the requirements. "They really worked out all the requirements – the forms, waiver, other papers, etc….,"Ma'am Babie said of the girls. In the end, they were able to submit everything and they gained a slot in the contest cum exhibit.

It had been a rollercoaster ride for the girls since then. During the contest proper, they were all excited at first, especially whenever people came to their booth. But later, excitement turned into feelings of inferiority as they observed the other entries which were more technology oriented in nature. Hence, they were gunning for only the 4th or 5th position. However, when they were announced as the grand prize winners in their category, they were caught by surprise. "We were so happy, we forgot to go onstage," one of them said.

Though it was the school's maiden participation in the RICE, their students had won previous contests, even abroad such as Thailand, Vietnam, and Malaysia, among others. Sadly, there was hardly any development after those victories, lamented Ma'am Babie. "There is not enough support to develop these inventions fully and make the community use them. Sayang because magaganda tsaka magagamit sana ng society (It's a pity because these are great inventions and the society can utilize them."), she commented.

(From left) Christine Joy B. Collado, Kathrina Leigh M. Sepagan, and Kathleen Ann V. Valad-on and their adviser Babie Clemente of Batasan Hills National High School and their winning entry to the 2013 Regional Invention Contest and Exhibits-National Capital Region, the "Difunctional Shoe." Their triumph earned them a ticket to the 2014 National Invention Contest and Exhibits slated for July 2014. *(Photo by Henry A. de Leon, S&T Media Service, DOST-STII)*

Lessons

From the experience of inventing a usable product, joining a contest, manning a booth, meeting different people, and eventually winning the contest, the girls matured.

"In developing something, we should never lose hope. If you lose hope over something you are working on, you are also giving up hope on the knowledge that you will gain," said Kathleen.

Christine mentions patience as another lesson she learned. "When we were manning the booth, we encountered different kinds of people who asked us different kinds of questions. Some of them kept coming back and asking the same questions over and over," she recounted. "If you have the patience however, you have the willingness to keep on explaining."

For Kathrina, determination is another lesson. "If you think you can't do it, you really cannot do it. You should always be positive," she emphasized.

Of course, faith in God played a very important role as well. In the face of obstacles, they prayed and eventually succeeded.

Preparing for NICE and other plans

As of now, the group is improving their invention further en route to the grand national championships in July 2014. One of the changes lie in the material of the jacket. Now the group is using sheepskin instead of polyphenol. Sheepskin is more durable and water does not easily penetrate it, said Ma'am Babie.

"We want to develop the product but we need DOST's support," she stated.

They are also planning to patent it and sell it in the market though there are already interested buyers from Caloocan. In fact, the girls haven't used their prize money as they are saving it for product patenting.

Also in the pipeline is the development of Difunctional Shoes for boys as well as for adults, especially professionals who also have to contend with the rainy weather on their way to and from their workplaces.

Their efforts have certainly paid off but their journey isn't over. Though NICE is still several months away, win or lose, Kathleen, Christine, Kathrina and Ma'am Babie are already champions in their own right for having made all those sacrifices and weathered the trials that came their way.

Indeed, if the Difunctional Shoe is the perfect fit for the rainy season, the trio of Kathleen Ann Valad-on, Kathrina Leigh Sepagan, and Christine Joy Collado plus their adviser Ms. Babie Noreen P. Clemente, are the perfect fit for the mold of the victorious.

Eco-friendly products shine in DOST's Central Visayas invention tilt

By MARIA LUISA S. LUMIOAN
S&T Media Service, *DOST-STII*

DURING A clean-up drive spearheaded by his company, inventor-entrepreneur Pedro H. Delantar, Jr. got a spark of inspiration from the collected heaps of dried twigs, leaves, dead plants and other wastes that were supposed to be burned.

Seeing the agro-forest wastes as sustainable resource, he developed a process to turn them into elegant pieces of furniture, wall arts, claddings, decors, and acoustic panels among others. His work earned the nod of the judges in the Central Visayas Regional Invention Contests and Exhibits, organized by the Department of Science and Technology (DOST).

To make such functional products, dubbed as molded coarse particle product, agro-forest wastes are first turned into smaller particles such as flakes, chips, fragments, pellets, mulch and strands, then mixed and bonded together with glue and pressed lightly into a desired mold. The product is further reinforced with durable and biodegradable paper-based cast that serves as the product's backing layer. The said paper-based reinforcement is also sourced from waste paper such as old cartons, newspapers and magazines, making the end-product truly eco-friendly.

"The variety of applications of the particle produced, as well as the materials used, surface, and texture, add to the eco-friendly feel, and uniqueness of the product," Delantar noted. He also revealed that it took them two years of experimentation before they came up with the final product.

He has successfully marketed his creation which he branded as Naturescast, through his company Nature's Legacy, a rising global manufacturer of home furnishings and garden accessories based in the Municipality of Compostela in Cebu.

His entry will compete with other regional finalists all over the country for the Tuklas Award or Invention Category of the National Invention Contests and Exhibits (NICE) which will be held next year.

Organized by the DOST-Technology Application and Promotion Institute to give a chance to Filipino inventors and researchers to showcase their work, NICE is a biennial competition open for both public and private sector inventors and researchers who are qualifiers within respective region.

Inspired by nature, touched by science. Pedro H. Delantar, Jr. sees nature's trash as sustainable resource and turns them into functional pieces that will brighten any home. (Photos courtesy of Pedro H. Delantar, Jr.)

Atty. Ma.Theresa Sweet Malones, owner of Ililo Kawayan Marketing shares how her company attained significant success after tapping the assistance of Department of Science and Technology through its Small Enterprise Technology Upgrading Program (SETUP). Through SETUP, IKMAR was able to avail a dryer and briquette machine that helped the company reduce waste by converting the bamboo shavings into bamboo charcoal briquettes. Also in photo are two SETUP beneficiaries from Region 6: Mr. Baltazar Gumana of Pavia LGU (left) and Mr. Rhett G. Ibabao of Fibake Food Corporation. *(Text and photo by Allan Mauro V. Marfal, S&T Media Service)*

Iloilo entreps grow through DOST's SETUP

By ALLAN MAURO V. MARFAL
S&T Media Service, *DOST-STII*

ILOILO, a province now economically on the rise, has always been known for numerous factors: its bestselling La Paz Batchoy, old and historical churches such as those in Miag-ao and Molo, the Dinagyang festival, and the typical sweet and affectionate intonation of the Ilonggos.

There is more to Iloilo however. For one, the province can also make waves in bamboo and metal industries. This was made evident during the 2013 Visayas Science and Technology (S&T) Fair held recently in Iloilo City when beneficiaries of the Small and Medium Enterprises Technology Upgrading Program (SETUP) of the Department of Science and Technology (DOST) shared their stories during "MSMEs Talk", one of the Visayas S&T Fair activities.

The beneficiaries belong to Iloilo's micro, small and medium league of business enterprises which have helped catapult the province into its present economic status.

IKMAR: Strong and fast growing like the bamboo

Iloilo Kawayan Marketing (IKMAR) kicked off its bamboo production in 2006 with a once pea-sized production area churning out a variety of bamboo products.

"We started manufacturing chopsticks, barbecue sticks, and toothpicks. As time passed by, we noticed how saw dust generated from the factory piled up and were eventually thrown away," recalled IKMAR owner Atty. Ma. Theresa "Sweet" Malones-Sanchez.

Saw dust is the waste material generated from bamboo sticks. The company then thought that saw dust could be made beneficial by converting it into briquettes.

Soon, IKMAR decided it was time to enhance and upgrade the company's production process. It considered availing SETUP assistance through DOST VI which was realized in 2008 with the help of Iloilo Provincial S&T Director Engr. Sheila Oberio.

Aside from conducting technology trainings and consultancy services for IKMAR, SETUP also answered the company's request for a dryer and briquette machine. The machine was the answer to the previous problem on saw dust by converting the bamboo shavings into bamboo charcoal briquettes.

According to Sanchez, what's good about the bamboo briquettes is that they adhere to the advocacy of pro-trees. Instead of cutting trees to make bamboo charcoal briquette, IKMAR uses saw dust. The bamboo charcoal briquettes also proved to be effective substitute for cooking fuel with a higher heating rate compared to other woods.

Sanchez added that through SETUP, IKMAR is now more stabilized with the acquisition of cutting-edge technologies that respond to the company's growing market. In fact, IKMAR products are now garnering tremendous gains from popular fast food chains and restaurants such as Jollibee and Mang Inasal.

MAGS Pipe Bending and Steel Works: Harnessing the weight of technology

On the other hand, the metal industry in Iloilo is also in a position of attaining significant growth. One reason for this is MAGS Pipe Bending and Steel Works.

Located in a small busy street along Iloilo City's wet market in Rizal Estanzuela, MAGS Pipe Bending and Steel Works produces custom-made products for processed food, hotel and restaurant services, medical services, furniture and furnishings, and automotive accessories.

"I started on working with basic metal works, furniture and automotive accessories. Now I can't believe I am already producing for hospitals, hotels, restaurants and car shops in Western Visayas," said MAGS owner Marlon G. Gascon.

In 2007, the company availed some equipment for its electroplating process to extend its application to large-scale businesses and industries through SETUP-Innovation System Support Fund program. It resulted in less production costs and more production capacity as well as market share.

The company is now experiencing steady growth while providing employment to many people. "I am grateful to DOST for sharing me the knowledge on electroplating process. The technology was an important breakthrough of my 15 years in the metalworking industry," said Gascon.

The Visayas S&T Fair, which ran from Oct. 16-18, 2013, featured technical sessions on new approaches for science-based learning tools, strengthened disaster management, nanotechnology applications, ICT industry, environment and health care. *(With reports from BalitangRapidost VI and DOST VI regional office)*

Engr. Rene Burt N. Llanto:
Public Service Became Him

By ROSLYN D. TAMBAGO
S&T Media Service, *DOST VII*

THE DOST family grieves for the demise of one of its dynamic leaders, Engr. Rene Burt Llanto, regional director of DOST-VII.

As most parts of the country remembered the dearly departed on November 1, 2013, a dedicated, passionate and visionary public servant passed away and joined those who are in the Great Beyond.

Such was the perfect farewell of DOST VII Regional Director Rene Burt N. Llanto. He was 54.

Foray into government service

Llanto's public career began in 1984, following his short stint as an academic instructor and co-project manager of a scientific non-government organization (NGO), when he took the position of Planning Officer II at National Science and Technology Administration (NSTA) – Region VII. For him, joining the government was not obviously all about pay. He saw it as a window of opportunity to serve others on a bigger scale.

Service came naturally with him as his experiences as community youth organizer, decorated campus leader and civic group volunteer in his younger years would tell. However when it was his time to wear a big hat in a more demanding environment, it was not without greater challenges. He rose from the ranks and became the top executive of DOST VII in 1999. But then again, challenges were what fueled this man of service throughout his lifetime.

Heading a lean public organization of about 30 regular staff with a mandate of advancing science, technology and innovation (STI) in one the country's biggest economic regions could be a tall order for any executive. How Llanto turned the tables was a mark of greatness.

Forging ties

Talking about innovation, Llanto did not have to look elsewhere to start proving its worth. Forging partnerships with over 100

Engr. Burt N. Llanto is flanked by DOST Secretary Mario G. Montejo and Undersecretary for Regional Operation Carol M. Yorobe in one of the agency's activities.

local and international organizations from the academe, business sector, civil society, government, and NGO to aid the agency's operation was a step he took on innovative governance. That step has gone a long way in addressing the inherent government inefficiency of inadequate resources in all forms in which DOST is not an exception.

Many people would attest that these networks were borne not out of suit-and-tie ceremonies but over soda, well, food--lots of it, and small talks. Llanto's humor and friendliness easily won the nod of many organization leaders of different skin color to his unconventional ideas. Sightings of American, Sweden, German, French, Korean, Dutch, Indian or Japanese nationals coming in and out of Llanto's office every now and then denote a typical day at work. But what brought the latter into signing an agreement document for certain collaborative projects were his passion, integrity, credibility and commitment to make things happen.

The number of edifices hosting the agency's strategic partners and projects that were built under his watch testifies Llanto's visionary perspective. Sustainability was the order of the day in every venture he set out. He put all his mind, heart and might to do just that.

Humoring a serious mission

Whenever he was asked how he's doing: "I'm okay, just busy thinking about solutions to our country's problems," he would say with a serious look on his face. For him, apparently, such one-liner was meant to crack you up, but by now, one must realize that it should be taken literally.

With a master's degree in interdisciplinary natural resources development and management engineering already under his belt, his propensity for research and coming up with innovative and practical solutions to relevant issues at hand gave rise to pioneering and significant STI initiatives in the region. These undertakings covered a variety of areas that include food safety, energy audit, value chain, enterprise development and management, standards and testing, S&T-based community and institutional development, geographic information system, metals engineering, storm water management, information and communication technologies, among others.

The substance and relevance of such initiatives failed to escape the eyes of equally forward-looking executives in both the horizontal and vertical range of management of the DOST system and of several notable organizations. Before long, most of these projects were trailblazing in other regions. The many novel projects spawned by the late director across the country bespeak his deep understanding of industry and social needs, not to mention, his astute leadership.

Llanto succeeded in influencing not only the management people from any type of institution but practically every person he meets in the street. His pedagogic nature matched with creative facilitating skill led him to formulate and deliver dozens of training courses ranging from children science camping to reengineering and remote sensing. In between routine meetings and planning sessions, you would find him giving his staff lectures ranging from photography or event organizing to material balance calculation. Earlier on, he also taught engineering and management subjects in local universities on a part-time basis. To many, he was a great mentor. If he could talk nineteen to the dozens, he could also write prolifically. He published and presented 24 scholarly papers here and abroad.

Service beyond sickness

In 2008, he was diagnosed with acute renal failure. Since then, he had to make at least two hospital visits weekly for a hemodialysis procedure that normally lasts for four hours. His illness, though, had not deterred him from reporting to work everyday, sometimes holding staff meetings in his dialysis room, or travelling within the country or overseas for important official functions. On a lighter note, meeting with clients, to him, was a noble excuse to skip a medical doctor's appointment.

In the necrological services held in Llanto's honor, scores of people revealed countless of his unwritten achievements that, in one way or another, made a difference on their lives. Owing to the legacies he left behind, for them, he was simply larger than life.

Indeed, great accomplishments embellished this man who lived and breathed public service. And death was just one in his long list of victorious feats.

ROSELYN D. TAMBAGO

DOST Sec. Montejo conferred honorary degree by PUP

By JOY M. LAZCANO
S&T Media Service, *DOST-STII*

The Polytechnic University of the Philippines confers the doctorate in Public Administration *honoris causa* to Department of Science and Technology Secretary Mario G. Montejo (3rd from left) for his worthwhile contribution in the field of engineering. The PUP likewise acknowledges Sec. Montejo's advocacies for science, technology, and innovation as an indispensable means for national development. With Sec. Montejo are PUP President Emmanuel C. De Guzman, PhD (leftmost); Mrs. Maria Rosario Montejo, wife of Sec. Montejo; and Hon. Rene A. Tanasas, president of the Federation of Alumni Association in PUP, Inc. *(Photo by Henry De Leon, S&T Media Service, DOST-STII)*

Department of Science and Technology Secretary Mario G. Montejo was conferred a doctorate in Public Administration *honoris causa* by the Polytechnic University of the Philippines (PUP) last December 6 during the state university's 2013 Mid-Year Commencement Rites at the PUP Gymnasium in Sta. Mesa, Manila.

PUP president Emmanuel C. De Guzman led the conferment ceremony to Sec. Montejo who was the speaker in said commencement exercises.

In his own alma mater at the University of the Philippines, Montejo was one of the top 100 Outstanding Alumni Engineers of the Century awarded by the UP College of Engineering in 2011.

Prior to his appointment as the Science Department head, he was president of Northwest Steel which manufactures steel poles, ship-to-shore gantry cranes, and mega tent structures.

Montejo was also president of the Tree Top Adventure (TTA) Philippines, Inc., a company based in Subic that specializes in developing eco-tourism theme parks. TTA also operates various rides and attractions at Camp John Hay, including the canopy ride, the Superman Ride, the Silver Surfer and the Interactive Free Fall.

He was also behind the design of the Water Fun amusement park, the first to feature slides and waves among others. Moreover, he designed the first Filipino-designed and fabricated robotic carpark in Frontera Verde in Pasig City, the first locally made GSM-based water level sensor and rain gauge used for flood monitoring and forecasting, and the first locally fabricated equipment for making gabions which are used extensively for slope protection by the National Irrigation Administration.

Montejo also received the Gold Medal Award for Creative Research from the Filipino Inventors Society in 1989.

As secretary of DOST, Montejo was instrumental in the implementation and roll-out of the Nationwide Operational Assessment of Hazards (Project NOAH), the Ovicidal-Larvicidal Trap system (OL Trap), and the Automated Guideway Transit, the first locally-designed and manufactured train system.

He believes that the use of science and technology is always a sound business model for the development of the individual and society and that local technology works.

DOST research council names new head

By JOSELITO A. CARTECIANO
S&T Media Service, *DOST NRCP*

Dr. Carina Galvez Lao

THE GOVERNING Board of the Department of Science and Technology - National Research Council of the Philippines named Dr. Carina Galvez Lao as its new executive director.

Dr. Lao is not new in the DOST System. Before being chosen as the Council's new Executive Director, Dr. Lao worked at the DOST Philippine Atmospheric, Geophysical and Atmospheric Services Administration (PAGASA) for 39 years (1974-2013). She was Assistant Weather Services Chief before joining NRCP.

She recently had been to China, Indonesia, Korea, Taiwan, and the USA to join in various workshops, fora, and symposia on multi-hazard mitigation, typhoon behavior, strengthening meteorological services among others.

Her countless awards and recognitions prove her dedication towards work and unselfish social service undertakings. In the 80th NRCP General Membership Assembly held in March 2013 at the Manila Hotel, the DOST NRCP named her as one of the twelve basic research achievers for2012.

She was recognized for her expertise in the field of meteorology and researches in PAGASA specifically on tropical cyclone tracks as well as mobilizing grassroots support to researches on atmospheric science, geophysics, and meteorological instruments development. Her efforts were considered pivotal in building the scientific and technical skills of researchers on the field of earth and space sciences and deemed to have elevated the bar of excellence of Philippine meteorological researches and studies.

Dr. Lao is a Regular Member of the NRCP Division XII: Earth and Space Sciences since 1995. She became a Member of the NRCP Governing Board (GB) when she was elected as the Division XII Chairperson in 2004 and held various GB ranks, namely as Member of the Personnel and Finance Committee 2004 - 2005; Assistant Corporate Secretary 2005 – 2008; and Corporate Secretary 2008 – 2009.

Dr. Lao hails from Balagtas, Bulacan. She obtained both her masters and doctorate degrees in Meteorology from the University of the Philippines Diliman. She was married to the late Mr. Rafael P. Lao. Her daughter, Carolyn Rose, is now working on her doctorate degree in De La Salle University Manila.

JOSELITO A. CARTECIANO

DOST's textile research institute has new director

By JOY CAMILLE A. BALDO
S&T Media Service, *DOST-PTRI*

THE DEPARTMENT of Science and Tecyhnology-Philippine Textile Research Institute (DOST-PTRI), the country's lead agency on textile research and innovation, welcomed Ms. Celia Elumba as its new director during the Institute's year-end general assembly last 09 December. Also present during the turnover ceremony was PTRI Officer-In-Charge from July to November Dr. Rowena Cristina L. Guevara, current executive director of the Philippine Council for Industry, Energy, and Emerging Technology Research and Development (PCIEERD), and Dr. Carlos C. Tomboc, former PTRI director for 13 years. She earlier took her oath of office last 04 December at the DOST Central Office administered by DOST Secretary Mario G. Montejo and witnessed by the members of the PTRI Executive Committee.

PTRI's new Director Celia B. Elumba takes her oath before DOST Secretary Mario G. Montejo at DOST Central Office last 02 December 2013.

Part of the turnover program was the ceremonial knotting of the abaca fiber where Dir. Elumba joined her end of the abaca fiber to that of Dr. Tomboc as a symbol of a continued dedication towards serving the industry and the country.

For this symbolic act, Dir. Elumba remarked, "I am impressed by the continuity of things... The true mark of progress is if you can continue with what you had in the past, build upon it, and have a stronger future. And so I thank Dr. Tomboc for having established (and) developed such a strong commitment from all of you."

She also expressed her gratitude to Dir. Guevara for "having already set the pace and tone."

Alongside Guevara, Tomboc turned over to Elumba a handloom as a symbol of passing on the leadership of the PTRI. "Like a handloom, may you translate yarns of ideas into colorful woven possibilities. By weaving, may you interlace your vision and leadership with the values, resources and aspirations of the Institute," said Tomboc as he handed the handloom to Dir. Elumba.

Elumba brings in decades of extensive experience in the field of apparel and textile industry having worked in companies such as Swire & Maclaine Ltd., R.H, Macy & Co., Liz Claiborne International Ltd., and Igedo Fashions, Inc. Prior to joining the Institute she served as Program Manager of the Garments and Textile Industry Development Office of the Department of Trade and Industry where she also worked closely with PTRI in supporting the needs of our local textile and garment industry. Currently, she is in the faculty of the Institute for Integrality and she also held advocacy work for professional and non-government organizations such as the Foreign Buyers Association of the Philippines, Alay Buhay Community Development Foundation, Inc. and the Alliance for the Family, Inc.

Ceremonial knotting of the fiber. Dir. Elumba joins her end of the abaca fiber with previous PTRI Director Carlos Tomboc's as a symbol of the dedication of the Director of the Institute in serving the industry by generating livelihood, protecting the environment, promoting women empowerment, and championing S&T-based intervention for more competitive industries; in engaging with pivotal innovations; and developing cutting-edge technologies for the local textile and allied industries.

In her message to the PTRI staff, she reminded the "three very important Ps", first of which is the people. "Projects and all research for that matter are made for the benefit of people by people and essentially we must always look at the things we do as having faces behind them," she explained.

Second is an orientation to process as a way to de-personalize and to stay focused on getting the job done. Lastly, and one of the more important things, is the purpose. "Now put together your people, your process, and your purpose and there's nothing that we cannot do. As long as we are aspiring for the greater good and that greater good is the betterment of our own people, of our own country, of our own Philippines," she concluded.

"I feel extremely blessed to be in this position with such a committed group of people and I am very excited to see what we can do together," stated Dir Elumba, the very first woman director of DOST-PTRI.

JOY CAMILLE A. BALDO

Former Romblon prof, DOST's Most Outstanding Provincial S&T Director

By ESPIE ANGELICA A. DE LEON
S&T Media Service, *DOST-STII*

A FORMER professor of statistics and agricultural engineering at the Romblon State University was adjudged as the best provincial science and technology (S&T) director of the entire Department of Science and Technology (DOST) system during the 2012 Outstanding Provincial S&T Director awarding ceremony at the DOST Executive Lounge in Bicutan, Taguig City last December 12, 2013.

Dr. Bilshan Servañez of Region IV-B Romblon, who has been in government service for 22 years, bested three other finalists to garner the esteemed award. Engr. Mario dela Peña of Region VII Siquijor grabbed first place, while Felina C. Malabanan of Region IV-A Batangas and Angelita Parungao of Region III Bulacan, took runner-up positions in the annual awarding rites.

"This is important for me," says Dr. Servañez of the recognition. "This is actually an affirmation of the decision that I made."

Twenty-two years ago, he made the shift from the academe to industry, choosing to work at the DOST office in Romblon. "I took up engineering and wanted to become a scientist," he narrates. Thus, he jumped ship and moved to the Department for the chance to apply to actual use the things he learned in engineering school. From that time on, Dr. Bilshan Servañez never looked back.

"We are a province with a backwater economy so we only have small industries there. The only huge industry we have is the marble industry," he shares, "but what we lack in size, we make up in number."

According to him, the Romblon office is presently handling about 62 SETUP projects in Romblon. Citing the distant location of the market in their area and the problems involved such as transportation costs, Dr. Servañez stated that as a solution, DOST cultivates the local market for these SETUP products which they produce at top level quality.

However, he added that some of the products do end up in the bigger market, such as peanut butter which they sell to a locator in Shoe Mart. "The next time you eat pancakes or waffles with peanut butter, think Romblon," he says.

Most Outstanding DOST Provincial S&T Director. Dr. Bilshan Servañez, provincial science and technology director of the DOST-Region IV-B Romblon, with him in photo are Sec. Mario G. Montejo and Dr. Ma. Josefina P. Abilay, regional director of DOST Regional Office IV-B MIMAROPA. *(Photo by Ceajay Valerio, S&T Media Service, DOST-STII)*

Department of Science and Technology (DOST) Secretary Mario G. Montejo (center) with DOST's top four provincial science and technology directors (PSTD): (from left) Felina C. Malabanan of Region IV-A Batangas (runner-up), Dr. Bilshan Servañez of Region IV-B Romblon (grand prize), Angelita Parungao of Region III Bulacan (runner-up), and Engr. Mario dela Peña of Region VII Siquijor (first place). *(Photo by Ceajay Valerio, S&T Media Service, DOST-STII)*

"We also bring our marble to the province. We have several contributions to the marble industry - cutting machine, turning machines, polishing machines, lathe machines – we deploy all these to the marble sector," Dr. Servanez proudly states.

He also mentioned their linkages, explaining that he submits proposals to other agencies as well, such as the Department of Labor and Employment.

All these factors, Dr. Servañez believes, are what make them tick, thus making his big win as Most Outstanding Provincial S&T Director of the year possible.

DOST's top four provincial S&T directors received citations and cash prizes.

DOST Exec accredited as engineering specialist

By MARIA LUISA S. LUMIOAN
S&T Media Service, *DOST-STII*

Engr. Arnaldo C. Reyes, chief administrative officer of the Administrative and Legal Service of the Department of Science and Technology is conferred the title of Specialist in Environmental and Energy Engineering by the Philippine Institute of Civil Engineers (PICE). With him are (L-R) Engr. Efren H. Sioson, PICE Inter-Specialty Group chair and Engr. Romeo S. Momo, PICE National President. *(Photo courtesy of PICE)*

ENGR. ARNALDO C. Reyes, chief administrative officer of the Administrative and Legal Services of Department of Science and Technology Central Office, (DOST-ALS) has been conferred the title of Specialist in Environmental and Energy Engineering by the Philippine Institute of Civil Engineers (PICE).

He was formally awarded last November 7, 2013 at the SMX Convention Center, Davao City during the 39th PICE National Convention of Civil Engineers.

Engr. Reyes has 30 years of service in the DOST and an experienced Civil and Sanitary Engineer with expertise on Public Management, Construction & Project Management, Environment & Energy and Science & Technological Researchers.

Engr. Reyes is an expert trainer on the Government Procurement Reform Act (R.A. 9184) and Constructors Performance Evaluation System (CPES). Currently, he heads the DOST Constructors Performance Evaluation System-Implementing Unit (CPES-IU) and represents DOST to the Government Procurement Policy Board Inter Agency Technical Working Group (GPPB-IATWG). He is also a member of the DOST Infrastructure Monitoring Task Force.

Engr. Reyes earned his BS Degree at the Mapua Institute of Technology, units in MS Civil Engineering Major in Structural Engineering at the Pamantasan ng Lungsod ng Maynila and Master's Degree in Public Management at the Development Academy of the Philippines. In 2006, he was conferred the title of Specialist in Construction Management and Engineering by PICE.

Also a professor in various universities namely De La Salle University Dasmariñas, University of Perpetual Help Las Piñas, FEATI University and Mapua Institute of Technology Graduate School of Civil Engineering, Engr. Reyes plays an active role in molding students in research and development as a thesis and research adviser.

PICE is the professional organization of Filipino civil engineers accredited by the Professional Regulation Commission. The title of Specialist is conferred to lifetime members of PICE that have extensive experience in the area of specialization and passed other criteria determined by the organization.

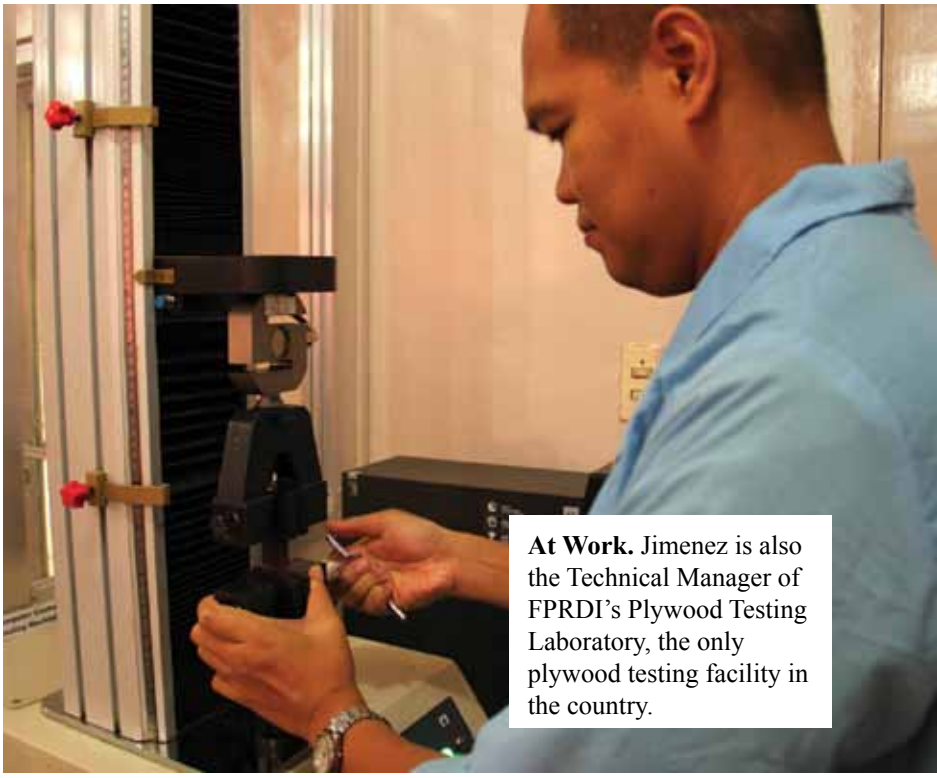
Jimenez named FORESPI's Outstanding Young Scientist

By APPLE JEAN C. MARTIN
S&T Media Service, *DOST-FPRDI*

ENGR. JUANITO P. Jimenez Jr., Senior Science Research Specialist at the Department of Science and Technology - Forest Products Research and Development Institute (DOST-FPRDI), recently received the 2013 Outstanding Young Scientist for Research in Forest and Natural Resources Utilization from the Forests and Natural Resources Research Society of the Philippines, Inc. (FORESPI). The award was given during FORESPI's 10th Anniversary Celebration and General Assembly last 23 October 2013 at the Ecosystems Research and Development Bureau Auditorium.

Jimenez was cited for his work on thermal modification that is an "alternative method to the application of hazardous chemical preservatives in prolonging the service life of *malapapaya* and *kauayan-tinik* while at the same time improving their dimensional stability, which is a requisite to making laminated or glued products intended for furniture, handicrafts and builder's woodworks such as moldings and floorings".

He was also recognized for his contributions in the field of forest products processing and utilization thru his works on kiln drying, furniture and plywood testing, and engineered composites.



At Work. Jimenez is also the Technical Manager of FPRDI's Plywood Testing Laboratory, the only plywood testing facility in the country.

Jimenez (center) receives his plaque from (L-R) FORESPI's Dr. Marina A. Alipon, Chair of Awards Committee; Dr. Jennifer P. Tamayo, President, and Dr. Portia G. Lapitan and Dr. Romulo T. Aggangan, Ex-Officio Members

Incidentally, Jimenez placed third in FORESPI's Best Paper Competition for his paper on "Thermal Modification of Kauayan-tinik *(Bambusa blumeana Schultes f.)*. Bagging the first and second spots respectively were For. Albert A. Piñon for his paper "Phenotypic and Genetic Characterization of Half-sib Progenies of Three Eucalyptus *(Eucalyptus deglupta x E. pellita)* Hybrids in Northern Mindanao, Philippines" and FPRDI's Engr. Wency H. Carmelo for "Development of a Low-Cost Handicraft Dryer".

Based in Los Baños, Laguna, FORESPI is an organization of environment and natural resources educators, researchers and extension specialists seeking to forge closer linkages among key players in the forestry, environment, and natural resources management.

APPLE JEAN MARTIN

UPLB prof-scientist gets 2013 DOST award on molecular research

By JOSELITO A. CARTECIANO
S&T Media Service, *DOST-NRCP*

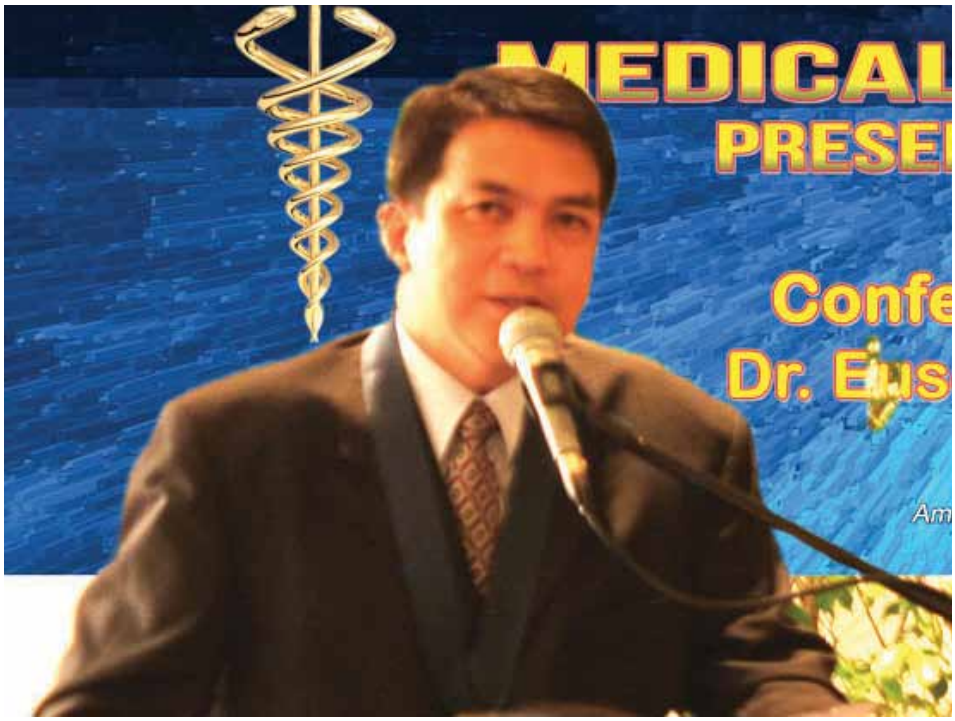
IN CELEBRATION of its 80th Foundation Anniversary on December 8, 2013, the DOST National Research Council of the Philippines (DOST-NRCP) named Dr. Christian Joseph R. Cumagun, a Professor 6 and Scientist II from the University of the Philippines, Los Baños, Laguna, as the 2013 Dr. Eusebio Y. Garcia Awardee for his exceptional researches in molecular biology and plant pathology.

Aside from the characterization of the Philippine Trichoderma strains, a type of fungus found in soil and used as bio-control agent versus plant diseases, Dr. Cumagun's other studies include one that led to the mapping and identification of important wheat genes that control the pathogenicity, aggressiveness, and mycotoxin production of Fusarium graminearum, a species of fungi that causes Fusarium head blight disease which attacks and destroys wheat crop. This study may help plant breeders in producing wheat varieties with high resistance against the destructive fungi.

Dr. Cumagun also discovered that the third wheat gene, known as Rwt3 may be harnessed against Magnaportheoryzae, another type of fungus that causes blast disease that ravages cereal crops. With the identification of this gene, wheat cultivars with high resistantance against blast disease may be developed. This is considered as a very efficient, convenient, and environment-friendly way of controlling said cereal-damaging fungus.

Dr. Cumagun is the 11th recipient of DOST NRCP Dr. Eusebio Y. Garcia Award since its institution in 1989. He will received the Medallion of Excellence and a PhP25,000.00 check in the awarding ceremony held last December 5, 2013 at the Traders Hotel, Pasay City.

National Scientist Lourdes J. Cruz, NRCP president. with the members of the NRCP Governing Board and Dr. Isidro C. Sia, chair of the NRCP Medical Sciences Division, led the momentous activity.



Dr. Christian Joseph R. Cumagun

THE DR. EUSEBIO Y. GARCIA AWARD

Revived this year for the DOST-NRCP's 80th founding anniversary, the Dr. Eusebio Y. Garcia Award is open to all Filipino scientists (members or non-members of DOST-NRCP) who reside in the Philippines and conduct research on molecular biology and molecular pathology. The criteria for the award include originality, potential application, scholarliness, uniqueness, and with great impact to the said fields.

Dr. Eusebio Y. Garcia was a world-renowned scientist. He finished his Doctor of Medicine and Certificate in Public Hygiene in 1932 and 1933 respectively at the University of the Philippines. He became a guest scientist at Tulane University School of Tropical Medicine in Louisiana, and research fellow of the Rockefeller Foundation Malaria Research Laboratory in Talahassee, Florida.

He became an international scholar by election to the international scholastic fraternity of Phi Kappa Phi. He was a Professor at UP College of Medicine and Manila Central University until he retired. He published about 250 research works in both local and foreign scientific journals.

One of his published works was cited "The First Asian Winner of the International A. Cressy Morrison Prize for Natural Science", the highest award of the New York Academy of Sciences in 1947. Another paper won a gold medal and diploma of merit for the invention of "salvaara" in the first annual convention of Filipino inventors in 1965.

In 1985, Dr. Garcia noticed the dearth of local research on molecular biology and molecular pathology, which according to him, "is critical to the development of strategies in combating emerging diseases and bacteria." He then donated Php100,000 as initial funds for the award program to encourage more Filipino researchers to do more studies on the said fields. When it was implemented in 1989, NRCP named the award after him.

NRCP President, Division Chairpersons, and RDMD Chief pose for the camera with 2013 Eusebio Y. Garcia Awardee, Dr. Christian Joseph R. Cumagun, and his wife. *(Photo by Mr. Rafael Julian G. Panerio)*

PREVIOUS 10 AWARDEES

1989: Dr. Saturnina C. Halos for pioneering work in molecular biology on cloning of cellulose genes, restriction mapping of plasmids, and the development of simplified method of examining gene products.

1996: Dr. Asuncion K. Raymundo, for outstanding research in molecular genetics and molecular biology, which include genetic engineering, development of herbicide resistant transgenic crops, detection and analysis of genetic polymorphism in Xanthomonasorysae pv. Oryzicola using REP-PCR, modification of non-radioactive method for membrane-base nucleic acid detection; and protoplast formation, regeneration and fusion in Bacillus polymexa, resulting in the development of a method used in genetic analysis and mapping of the biosynthetic genes of polymyxin.

1998: Dr. Filipinas F. Natividad, for her outstanding research on the molecular biology of various protozoans including ciliates and parasitic as well as opportunistic amoebae; dynamic leadership in establishing and managing the modern biomedical research facility at SLMC; and for establishing effective international linkages that resulted to expansion of research orientation and upgrading of molecular biology research in the country.

2000: Dr. Ameurfina D. Santos, for developing efficacious antibodies for medical therapy and diagnosis, and for generation and characterization of single-gene-encoded single-chain-tetravalent anti-tumor antibody.

2001: Dr. Narceo Bajet, for discovering the genome of the bean golden mosaic virus — the first discovered plant virus containing a single-stranded DNA; isolation and closing of sub-genome RNA of tungro spherical virus, and determination of the variability of rice tungro bacilli form virus. The award also considered his continuous research on single-stranded DNA infecting Philippine crops that include banana bunchy-top and steak, and Gemini viruses of tomato and squash among others.

2002: Dr. Gisela P. Concepcion, for outstanding and creative research work in the use of indigenous Quinone metabolites from Xestospangia sp. and Zyzzya sp. sponges, correlating its tumor cytotoxicity and DNA topoisomerase II inhibitory activity; isolation and screening of potential anti-malarial marine natural products (Crambescidins), and antimicrobial metabolites of marine microorganisms associated with marine organism.

2003: Dr. Bernadette D.L. Libranda-Ramirez, for her significant contribution as research team leader that produced new knowledge and understanding of the molecular epidemiology of hepatitis G virus infection in the Philippines.

2004: Dr. Luz P. Acosta, for her pioneering work in the development of a sensitive immunoassay method for the diagnosis of schistosomiasis which would have tremendous impact on schistosomiasis control in the country. She was also cited for her commitment to schistosomiasis research and to public health especially among Filipinos afflicted with schistosomiasis.

2005: Dr. Cynthia T. Hedreyda for her outstanding researches on molecular and biotechnology involving the search for unique gene markers and development of DNA-bases protocols crucial in the identification, classification, and detection of target genes in bacteria of genetically modified genes of corn and soybean – useful to food, agricultural, and fisheries industries.

2006: Dr. Rita P. Laude and Mr. Marni E. Cuenco, for their pioneering research which resulted in three major highlights, namely: gene discovery, isoform discovery, and establishment of an ontogenetic pattern of expression in coconut, which were utilized as bases for the establishment of the Molecular-based Coconut Standard for the improvement of the current coconut technologies and standardization of virgin coconut oil production in the country.

Forester Arsenio B. Ella during field work and hands-on demonstration of collecting resin.

DOST-FPRDI scientist hailed outstanding Filipino for 2013

By MARY CHARLOTTE O. FRESCO
S&T Media Service, *DOST-NAST*

FORESTER ARSENIO B. Ella, a scientist conferred under the Scientific Career System and based at the DOST-Forest Products Research and Development Institute (DOST-FPRDI) was chosen as one of the three Outstanding Filipinos (TOFIL) for 2013, a prestigious award co-established by JCI Senate Philippines and Insular Life Assurance Co. Ltd.

Forester Ella was awarded under the Environmental Conservation and Sustainable Development category.

A respected wood taxonomist, Forester Ella's research focuses on the study and promotion of proper tapping of trees such as almaciga and pili to optimize resin production without damaging the tree. The resin of the almaciga tree is a high-priced export commodity which is used in the making of varnishes, lacquer, soap, paint, printing inks, linoleum, water proofing materials, among others.

Much of Forester Ella's scientific works are geared towards promoting livelihood programs among indigenous communities through lectures and hands-on training on proper tapping of trees. One of his notable researches is the promotion of improved tapping of almaciga tree for sustained yield that is concluded to prolong the life span of almaciga tree, increase the quality of the tree's resin production, increase the income of the tappers and help in the conservation program of the government since using almaciga for timber and lumber production is banned.

Forester Ella is a conferred scientist with a rank of Scientist III in the Scientific Career System, a reward and recognition program of the DOST and Civil Service Commission for highly productive scientific personnel in the government service.

Alongside Forester Ella, the other two awardees are Dr. Alfredo Mahar Francisco A. Lagmay from UP Diliman and DPWH Secretary Rogelio L. Singson, who joined the roster of 120 other Filipinos who have been previously recognized as Outstanding Filipinos since 1988.

The Outstanding Filipino (TOFIL) Awards is a joint project of the Insular Life and the JCI Senate Philippines to honor the country's men and women who have made significant contributions to the advancement in his/her field of expertise, public welfare and national development. The TOFIL Awarding Ceremony was held on January 29, 2014.

Forester Ella, (left) together with Dr. Erlinda Mari, Scientist I, with indigenous community members in Zambales in one of their outreach activities.

CHARLOTTE O. FRESCO

DOST sun dryers ensure quicker and cleaner drying of fish products in Cagayan

By GRACE R. LARA
S&T Media Service, *DOST-II*

THERE WILL now be less sun drying of fish products along the roads of Caroan, Gonzaga as the second set of multi-commodity Solar Tunnel Dryer (MCSTD) in the province of Cagayan was installed and inaugurated recently.

Sun drying is one of the most common and traditional methods of food preservation in the Philippines. Although the cost of the process is fairly cheap, sun drying becomes problematic during the rainy season. Also, sun dried products are more prone to microbial contamination due to exposure to wind and dust.

PHilMech bats for the solar tunnel dryer as an appropriate alternative to sun drying and commercial mechanical dryer. A modified type of dryer fabricated by researchers from the Hohenheim University in Germany, the solar tunnel dryer is convenient to use, cheaper, and entails lower operation costs compared with commercial dryers available in the market.

The dryer too is easily installed and maintained, and offers simultaneous, efficient, and hygienic drying of commodities. Food dried using the solar tunnel dryer has longer preservation time because the dryer kills microorganisms .

In January this year, DOST installed the first solar tunnel device in Cagayan at Minanga, Gonzaga.

Led by Gonzaga Mayor Carlito F. Pentecostes and Department of Science and Technology (DOST) Regional Director Urdujah A. Tejada, the inauguration of the second set of dryers was participated in by DOST Provincial Director for Cagayan Teresita A. Tabaog, Cagayan State University-Gonzaga CEO Ferdinand C. Oli, Philippine Center for Postharvest Development and Mechanization (PHILMECH) Enterprise Development Division Chief Dr. Helen F. Martinez and Rural Improvement Club President Mrs. Emelia Realica.

Mayor Pentecostes stressed the significance of the dryer in maintaining clean and hygienic products in the market. He mentioned that drying along the roadside will now be strictly prohibited. This is in accordance to the aim of the province to bring back to market the trademark "Gonzaga's Best". He has also mentioned that the use of the dryer will greatly benefit the people of Caroanas it will help them dry their fish products quickly and cleanly.

GRACE R. LARA

CDO hosts world-class lab training for chemists

By ADMER REY C. DABLIO &
TERESITA S. BALUYOS
S&T Media Service, *DOST-X*

AS CHEMISTS and scientists from different laboratories in the Philippines gear up for the ASEAN science community by 2015, the Department of Science and Technology Regional Office No. X organized a world-class training-workshop for this sector. EUROLAB Denmark Secretary Lorens Peter Sibbesen, also the chair of EURACHEM working group for method validation, was the resource person.

The training-workshop, held in Cagayan de Oro City on November 18-19 and 21-22, had 60 participants. It focused on Measurement Uncertainty of Analytical Results and Internal Quality Control in the Analytical Laboratory. In his message, DOST-10 Regional Director Alfonso Alamban said that the activity intends to improve the capacities of testing and analytical laboratories in the Philippines.

"Our country wants to be ready for ASEAN science community come 2015. We want to see a more competent science and technology services and in tackling issues on compliance to worldwide product standard and product safety," Alamban stressed.

Meanwhile, Sibbesen shared that he has conducted hundreds of training workshops all over the world and he has noted that the one conducted in Cagayan de Oro City was the most organized. He was also amazed at the Filipino culture and hospitality. It was his first time to visit the Philippines.

The training-workshop was led by DOST-X Regional Standards and Testing Laboratories in cooperation with the Northern Mindanao Laboratory Consortium Foundation, Inc. and the Chemistry Department of Xavier University-Ateneo de Cagayan.

ADMER REY C. DABLIO

TERESITA S. BALUYOS

DOST-MIMAROPA assisted MSMEs beef up biz acumen in workshop

By CARINNA T. SALDAÑA
S&T Media Service, *DOST-MIMAROPA*

DOST-MIMAROPA ASSISTED MSMEs beefed up their business know-how in a two-day seminar-workshop organized by said office in partnership with the Developing Resource for Entrepreneurial Advancement and Mobilization, Incorporated (DREAM, Inc.). The program, dubbed "Technopreneurship Training Workshop for DOST-MIMAROPA-assisted MSMEs" at the DOST Executive Lounge on October 21 to 22 had renowned radio personality and entrepreneurship guru Dr. Carl E. Balita as trainor.

The workshop was designed to equip 19 selected DOST-MIMAROPA MSMEs with a more sound entrepreneurial mindset, and provided tools and processes for strategic thinking and applied entrepreneurship. The workshop highlighted the importance of creativity and innovativeness in developing and expanding business ideas, branding, marketing, management, and leadership. It also provided for basic financial literacy and financial management competencies, as well as operations management essential for both start-up and expansion or diversification.

Technopreneurship Training Workshop participants are joined by DOST-MIMAROPA Regional Director Dr. Ma. Josefina P. Abilay (*seated 2nd from right*) and motivational speaker Dr. Carl E. Balita (*seated center*), DREAM, Inc. chairperson and DZMM Radyo Negosyo host, in this souvenir shot.

Day One focused on "Strategic Entrepreneurial Thinking", where the topics presented by Dr. Balita included "Discovering the entrepreneur in you", "Entrepreneurial mind-setting", and "STOP!: Spotting and Turning Opportunities into Profit". Dr. Balita emphasized in his lecture that "technopreneurship" means "the use of technology as a key element in the transformation of goods and services." He underscored too that technology is not an add-on, but an add-in.

The participants expressed how much the training inspired and motivated them into becoming better technopreneurs during the culmination of the two-day training-workshop.

Day Two centered on "Business Plan for Success" where participants learned about marketing and financial operations management. The session ended with a field trip to Lamoiyan Corporation, makers of Hapee toothpaste, located just a few kilometers away from DOST. The company's president himself, Mr. Cecilio Pedro, toured the participants around the manufacturing area which was being operated mostly by persons with disabilities particularly the deaf and mute. The tour showed the participants not just the corporate social responsibility that Lamoiyan advocates but also, more importantly, how taking advantage of the latest technologies gives their products the competitive edge in the market.

CARINNA T. SALDAÑA

Department of Science and Technology Secretary Mario Montejo is all ears as rehab czar Ping Lacson examines the Tacloban City map showing the damages wrought by Super Typhoon Yolanda. In this meeting, held recently at the University of the Philippines-National Engineering Center, Engr. Louie Favila presented her team's damage assessment on Tacloban City based on the map generated through the project called Disaster Risk and Exposure Assessment for Mitigation-Light Detection and Ranging or DREAM-LiDAR. Said project, a component of DOST's- Project NOAH or the Nationwide Operational Assessment of Hazards, develops flood hazard maps using LiDAR technology, with priority on the 18 major river basins in the country. **(Photo by Henry A. de Leon/Text by Framelia V. Anonas, S&T Media Service)**

Visayas S&T Fair Press Conference. Department of Science and Technology (DOST) Assistant Secretary for Strategic Plans and Programs Engr. Robert O. Dizon (third from left) announces to the Iloilo-based media that DOST will establish in each region of the country at least one Food Innovation Center that will provide new equipment and extensive trainings on food processing, among others. This was held during the press conference of the recently-held 2013 Visayas Science and Technology Fair at SM Iloilo City. Also in photo are (from left) Jeffrey Perez of Philippine Institute of Volcanology and Seismology , DOST VI Regional Director Rowen Gelonga, Technology Application and Promotion Institute Director Engr. Edgar I. Garcia and DOST VIII Regional Director Edgar Esperancilla. **(Photo and text by Allan Mauro V. Marfal, S &T Media)**

Mindanao Cluster S&T Fair. DOST officials lead the opening of the exhibit of the DOST Mindanao Cluster Fair held at Almont Inland Resort in Butuan City, Agusan del Norte. The exhibit, which ran from November 6-10, featured DOST projects as well as products from enterprises assisted by DOST through the Small Enterprise Technology Upgrading Program (SETUP). In photo are DOST-CARAGA Officer-In-Charge Dominga D. Mallonga (third from left), with (L-R:) Technology Application Promotion Institute Director Engr. Edgar I. Garcia, DOST X Director Alfonso P. Alamban, Forest Products Research and Development Institute Director Romulo T. Aggangan, Industrial Technology Development Institute Director Nuna E. Almanzor, DOST IX Director Brenda N. Manzano, and DOST ARMM Secretary Myra M. Alih **(Photo by Henry A. De Leon, S&T Media Service).**

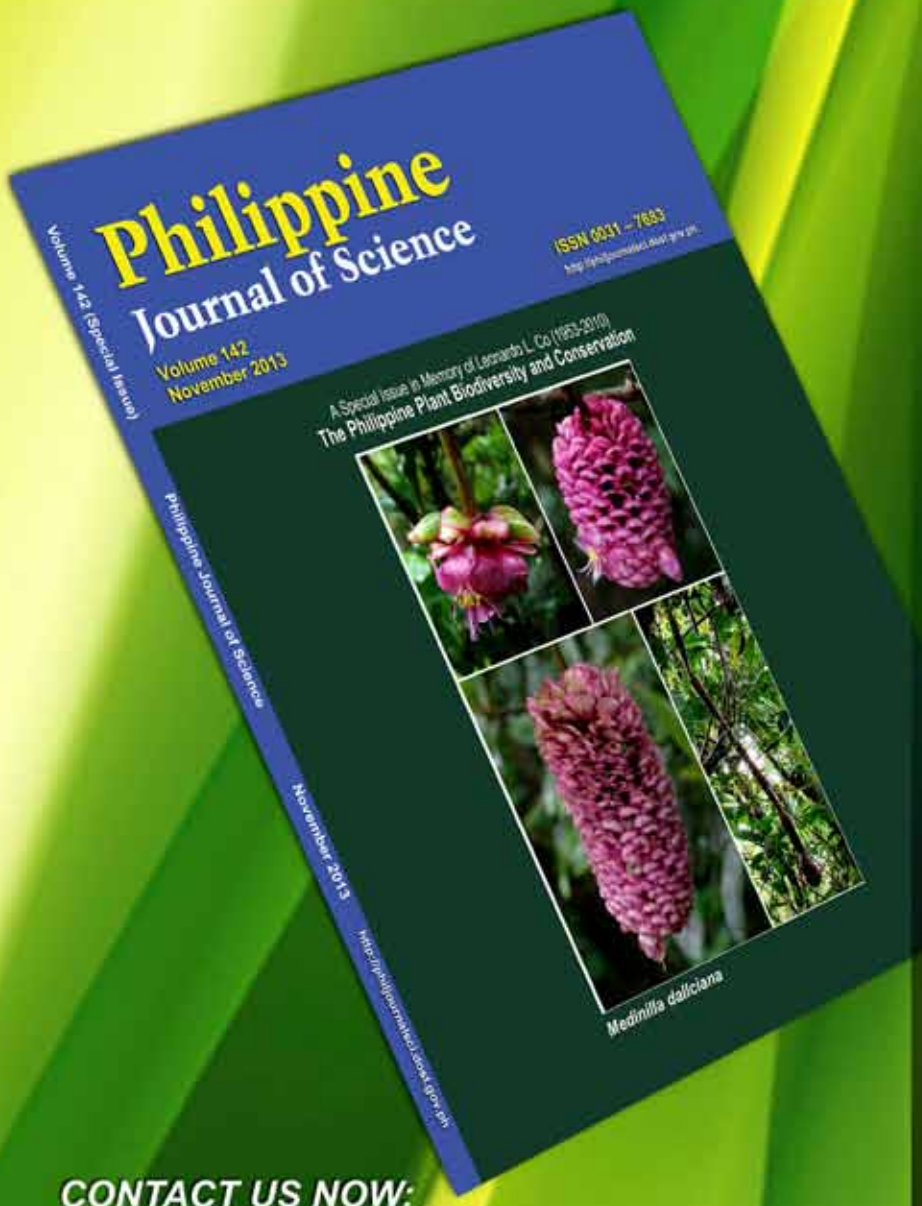
Getting to know more about flood early warning system. Danilo Flores, weather forecaster from PAGASA-Hydromet Division ((left) answers a participant's query on the community-based early flood warning system during the Project NOAH Information, Education and Communication (IEC) seminar for Region I held recently at the Oasis Country Resort in San Fernando City, La Union. Others in photo (from left) Raquel Felix, Landslide Mapping-WebGIS; Leo Godfrey Jao, WebGIS-Project NOAH; Oscar Lizardo, Chief SRS of WebGIS-Project NOAH and Engr. Sulamita Catalan (standing) of DOST Region I. **(Photo by Teddy Amante/Text by Rodolfo P. de Guzman, S&T Media Service, DOST-STII)**

ERRATA

Writer of the article "Big: From carabao to chicharon to success" (S&T Post Third Quarter 2013) is **Dr. Teresita A. Tabaog** of DOST-II

Joy Camille A. Baldo is from DOST-PTRI, not DOST-FPRDI ("Dr. Carlos C. Tomboc: He wears his advocacy"; S&T Post Third Quarter 2013)

Plant Biodiversity
IN THE PHILIPPINES



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