DEPARTMENT OF SCIENCE AND TECHNOLOGY

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S&T POST

GLOBAL brands for ASEAN2015

from poor farmer's son into skilled engineer

ever heard of seiche?

organominerals technology helps deodorize boracay's wastewater

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Going Global for ASEAN 2015

The DOST's quest to make science and technology more relevant to people and weave them into our individual lives may seem to be never ending. Difficult as it may be, the Department since 2010 has implemented a number of programs and projects designed to create significant impact on the lives of the Filipino people.

Initially, there was the High Impact Technology Solutions or HITS program that covered areas in agriculture, health and transport among others. Also launched was the Makibayan (Makina at Teknolohiya para sa Bayan) initiative to help micro, small and medium enterprises boost their productions. Particularly, Makibayan was poised to support the food processing sector but broadened its focus to other industries through the development of local and appropriate technologies to keep costs low yet not sacrificing quality.

Then other health-related programs followed, such as Tuklas Lunas that identified and developed life-saving drugs from natural sources provided by the country's biodiversity. To fight malnutrition among small children, DOST launched PINOY (Package for the Improvement of Nutrition of Young Children) complementary foods program that developed low-cost and high-energy complementary foods.

With the emergence of the "8 DOST Outcomes", or the areas which DOST has prioritized for 2013 and beyond, the programs have become more focused and intensified. In this issue, we feature some of these programs that have either created their own brands or are on their way of being recognized as DOST brands.

The S&T Post staff has identified these as some of the Department's brands than can proudly compete in the ASEAN 2015 economic integration. We, of course, clarify that there are still other DOST brands that are proudly global, and these have been featured prominently in previous issues.

The agriculture sector (Outcome 1) has identified several commodities that can proudly compete in the ASEAN neighborhood. SETUP, meanwhile, has proven again and again how it has helped micro, small, and medium enterprises (Outcome 2) rise above the competition in the market, and CEST is also slowly making a niche in helping enterprising folks in the countryside.

One Lab and ADMATEL (Advanced Device and Materials Testing Laboratory) are poised to provide services that will help develop the industry (Outcome 3). Information and Communications Technology (ICT) is tapped to boost the business process outsourcing sector (Outcome 4) and will make the countryside more productive through the Next Wave Cities, while making vast improvement in government services (Outcome 5) through the iGovPhil initiative.

For health (Outcome 6), the RxBox can be flaunted as world class for its important use in the medical sector. Along with S&T scholarships, the digital library called STARBOOKS, which recently received an international recognition, is intended to boost the education sector (Outcome 7) by making S&T information materials accessible and available to students in marginalized areas.

Two of the newest initiatives are the support to the trillion-dollar Halal industry (for Outcome 3) and the launch of Diwata, the country's first microsatellite to help in the disaster preparedness program (Outcome 8).

These DOST brands featured in this issue are just some of the things that make us proud as government S&T workers. All of these brands have a common denominator: They are all developed in the country by Filipino experts who act locally but think globally.

Today, we are poised for ASEAN 2015. Tomorrow, the world.

Aristotle P. Carandang, PhD

S&T POST

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Science and Technology Information Institute-DOST (Library)
DOST STARBOOKS
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Philippines:
A Science
Nation
Innovating for
Global
Competitiveness








O, Kaya ng Pinoy!

nstw 2015

GENERAL PROGRAM OF ACTIVITIES

Time	Program	Lead Agency	Venue
24 JULY (FRIDAY)			
9:00 - 10:00 AM	Opening Ceremonies		Main Stage
1:00 - 2:00 PM	Launch of Free Wifi Internet Access in Public Places	ICTO	Main Stage
1:00 - 5:00 PM	Dengue Project	PCHRD	Forum Hall 1
1:00 - 4:00 PM	Nano Technology: Small but Terrible	PCIEERD/ ITDI	Forum Hall 2
3:00 - 5:00 PM	Government Network: Faster Delivery of Services to Citizens	ICTO	Main Stage
6:00 - 9:00 PM	Stakeholder's Night		Main Stage
25 JULY (SATURDAY)			
9:00 - 12:00 AM	TELAng Dekalidad, Pinoy ang Tatak	PTRI	Forum Hall 1
9:00 - 12:00 NN	SETUP Forum	NCR	Main Stage
9:00 - 12:00 NN	Stakeholders' Convention for STARBOOKS	STII	Forum Hall 2
1:00 - 4:00 PM	Forum on Food Innovation	NCR	Main Stage
1:00 - 5:00 PM	Technology Forum	PCHRD	Forum Hall 1
1:00 - 6:00 PM	Science Journalism Writeshop for Communications Students and College Campus Writers	STII	Forum Hall 2
26 JULY (SUNDAY)			
7:00 - 8:00 AM	Health & Wellness	PCHRD	Main Stage
9:00 - 12:00 NN	e-Health Summit	PCHRD	Main Stage
9:00 - 11:00 AM	Living with Faults: Be Aware, Be Prepared	PHIVOLCS	Forum Hall 1
9:00 - 12:00 NN	Awarding of Poster Making & Essay Writing	PCAARRD	Forum Hall 2
1:00 - 2:00 PM	Coconut Scale Insect Management Strategies	PCAARRD	Main Stage
1:00 - 5:00 PM	Digital Literacy with Digibayanihan	ICTO	Forum Hall 2
27 JULY (MONDAY)			
9:00 - 12:00 NN	Forum on Packaging Innovation	NCR	Forum Hall 1
9:00 - 5:00 PM	Pisay, maka-SCIENCE dito Robotic and Science Interactive Exhibits	PSHS	Main Stage
9:00 - 5:00 PM	International Forum (JSPS)	PCHRD	Forum Hall 2
1:00 - 4:00 PM	Forum on Community Empowerment thru Science & Technology	NCR	Forum Hall 1
	Clash of Class		Manila Ocean Park, Roxas Blvd, Manila
28 JULY (TUESDAY)			
9:00 - 12:00AM	E-Health Summit	PCHRD	Main Stage
	That Thing Called Kawayan	FPRDI	Forum Hall 2
1:00 - 5:00 PM	Rural Impact Sourcing: Promoting High Value Online Jobs in the Countryside	ICTO	Main Stage
	Be Road Smart: The Philippines' Intelligent Transport System and New PUV Standards	PCIEERD	Forum Hall 1
	Tech Meets Business		AIM, Makati City
	In Touch with Excellence		TBA

DEPARTMENT OF SCIENCE AND TECHNOLOGY

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OUR COVER

Developing local technologies through local talents has been DOST's thrust since its establishment. The Department has shown for the last five years that, indeed, local technology works. And beyond that, our local technologies and brands can also be positioned globally and eyed to make a niche in the international market.

DOST NEWS

ENTERPRISE

WHO'S WHO?

HEALTH

MAIN FEATURES

House confers citations for DOST's outstanding services

By ALAN C. TAULE
S&T Media Service, *DOST-STII*

THE DEPARTMENT of Science and Technology recently notched three congressional recognitions for outstanding acts and services. The three citations, carried by three approved House Resolutions, were conveyed to Secretary Mario G. Montejo by House Speaker Feliciano Belmonte in a simple ceremony at the House of Representatives.

House Resolution No. 194 commends the DOST for winning the Geospatial World Excellence in Policy Implementation Award for 2014 for its Disaster Risk and Exposure Assessment for Mitigation (DREAM) Program. DOST's DREAM Program was awarded by the Geospatial World Forum, a magazine published by the Geospatial Media and Communications Pvt. Ltd. Sec. Montejo received the award in May last year with program leader Dr. Enrico Paringit in Geneva, Switzerland.

According to the House resolution, "The Geospatial World Excellence Award is a clear demonstration that the international community acknowledges our local capability-building efforts to attain self-sufficiency in natural hazard and disaster preparedness and risk management."

Meanwhile, House Resolution No. 196 commends DOST – Philippine Atmospheric, Geophysical and Astronomical Services Administration employees based in in Tacloban City, Leyte for loyalty to their oath of office and dedication to duty during the onslaught of Typhoon Yolanda on November 8, 2013.

Despite the super typhoon's imminent threat, the Tacloban-based PAGASA employees continued to work at the station, providing weather updates and observations to the media and the public. Injured during duty were Chief Meteorological Officer Mario Peñaranda and weather observers Romeo Elvina and Nilo Polinas. Meanwhile, weather observer Salvacion Avestruz is still missing as of press time and believed to be one of the typhoon's casualties.

Further, House Resolution No. 201 congratulates Sec. Montejo for being named the 2014 Most Distinguished Alumnus by the University of the Philippines Alumni Association (UPAA).

The award cited Sec. Montejo as a "gifted and multi-awarded engineer and inventor who has a long list of technological innovations" including the following:

- local fabrication of equipment for making water well screens;
- fabrication of steel poles for making gabions being used by MERALCO, the National Power Corporation, and the National Electrification Administration
- design of the first motorized zip line in the world; and
- first locally developed robotic carpark located in Frontera Verde, Tiendesitas, Pasig City.

The UPAA likewise recognized Sec. Montejo's leadership of the DOST, citing his accomplishments in reshaping the Department's policies and programs for national development. Montejo's programs ran in partnership with colleges and universities and other organizations to develop appropriate technologies, improve industry competitiveness, and enhance the delivery of social services.

Witnessing the presentation of the approved House Resolutions were the House Committee on Science and Technology led by Representative Victor J. Yu, DOST Assistant Secretary Raymund E. Liboro, PAGASA Deputy Administrator Dr. Landrico Dalida Jr., and DOST and PAGASA employees.

STARBOOKS gets international citation

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

Asec. Liboro (second from right) and STII-IRAD Chief Rosie A. Almocera receive the STARBOOKS ALA award from the organizers (Photos courtesy of Dr. Yasmin Jahala D. Liboro)

STARBOOKS, THE first digital science library developed by Department of Science and Technology-Science and Technology Information Institute (DOST-STII), will receive the American Library Association (ALA) Presidential Citation for Innovative International Library Projects.

The Science & Technology Academic and Research-Based Openly Operated Kiosk Station or STARBOOKS will receive the award on June 29, 2015 at the International Librarians Reception to be held at San Francisco Public Library, San Francisco, California, USA. ALA is the oldest and largest library association in the world, providing association information and advocacy resources for members, librarians, and library users.

According to the official announcement from the ALA, STARBOOKS was recognized for "making science and technology materials available to the general public in remote areas that have few information resources, no libraries and little or no Internet connectivity."

Envisioned to bridge the gap in access to science and technology information especially in geographically isolated areas, STARBOOKS made its debut in 2011. Each STARBOOKS unit called "pod" contains thousands of materials in text, video and audio formats—featuring topics on food and nutrition, health and medicine, energy, environment, and livelihood technologies among others.

In 2013, STARBOOKS beefed up its content with the integration of Britannica offline made possible through STII's partnership with Thistle International Inc., the official distributor of Britannica.

Many schools and LGUs have seen the wisdom of STARBOOKS: not only will it bring wealth of information for their students/constituents, but also it is easier to maintain, financially speaking. A kiosk costs one computer (hardware) which is the LGU's or school's counterpart, and all the contents are free, including the upgrade or added materials.

Currently, STARBOOKS units are installed in all the regions in the country, with a total of 635 sites and counting.

STARBOOKS first got international attention when Assistant Secretary Raymund E. Liboro presented it during Government Libraries Section parallel session of the 2014 International Federation of Libraries/ Associations World Library and Information Congress.

Impressed by STARBOOKS' innovativeness, Joan Weeks, Librarian at Library of Congress, one of the delegates to the event nominated the project for ALA Presidential Citation.

STARBOOKS, along with three other recipients was selected by a team of IRRT members in consultation with ALA President Courtney L. Young.

According to a press statement released by ALA, Athena Michael, chair of the selection committee, says that "these projects, nominated by members of the international library community, reflect innovative approaches to creating and delivering sustainable library services."

Users on STARBOOKS

While the ALA citation is an affirmation of the project's worthiness, the testimonies from users best show STARBOOKS' importance.

Rosemarie S. Bohol of Mabinay Science High School, Negros Oriental says that STARBOOKS is a great help to Mabinayanons since all secondary schools in their municipality do not have existing library. "STARBOOKS facilitate easy access to breakthroughs and updated science and technology information," she added.

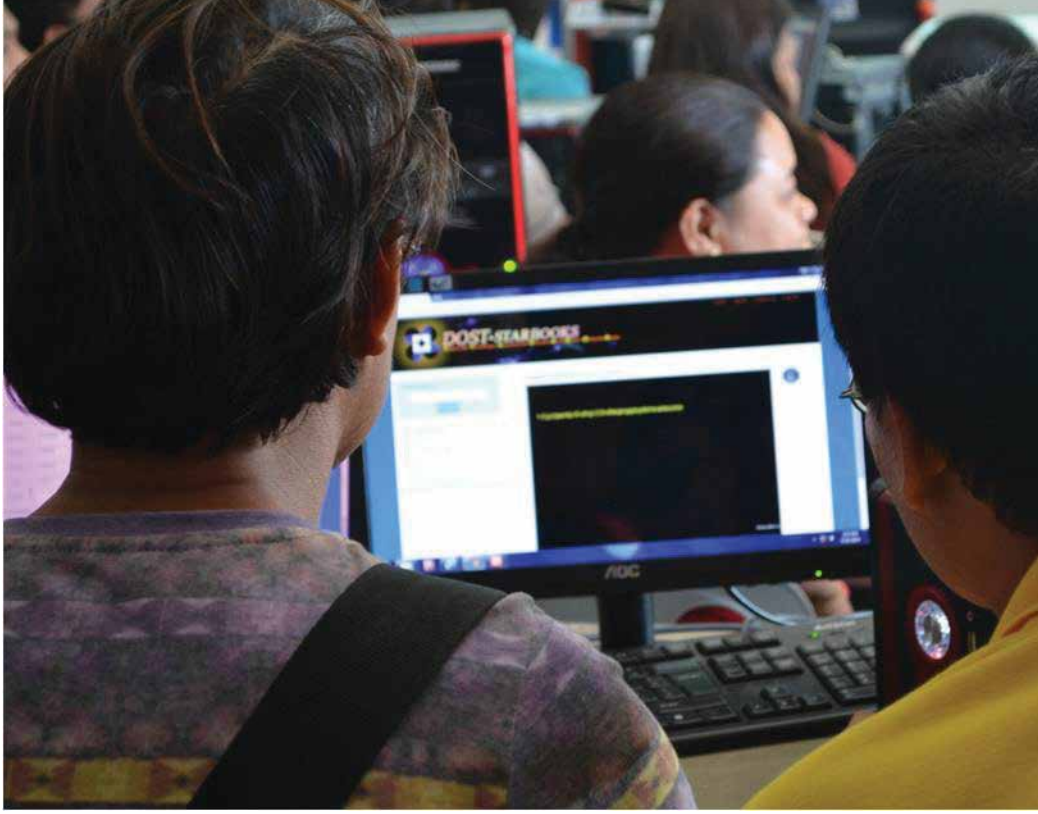
Jetson Villareal of Atimonan, Quezon commented, "This (STARBOOKS) is a great way to enjoy researching because of easy and reliable search engine that makes people love to read and study more."

As of December 2014, STARBOOKS has served more than 175,944 students; 6,040 faculty members; and 362 communities/ schools.

These numbers are expected to increase as STII will soon partner with the Department of Education for the deployment of STARBOOKS in public schools all over the country.

STARBOOKS goes to Caraga, wows Eastern Visayas librarians

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



STARBOOKS ENCOUNTER | Librarians and IT staff from schools in Eastern Visayas learn how to use STARBOOKS and generate reports for monitoring purposes. Developed by the Department of Science and Technology – Science and Technology Information Institute (DOST-STII), the Science and Technology Academic and Research-Based Openly Operated Kiosk Station or STARBOOKS is the country's first digital science and technology (S&T) library. It has thousands of S&T research materials, news and features, and videos that are accessed offline, facilitating research and search for livelihood opportunities in areas still unreached by the Internet. (S&T Media Service)

"ANG GANDA pala! (It is so nice!)" a librarian exclaimed as the contents of STARBOOKS splashed onscreen, and participants on a hands-on demonstration browsed over the rich contents.

STARBOOKS, or Science and Technology Academic and Research-Based Openly Operated Kiosk Station, is the country's first digital science and technology (S&T) library. It can be accessed offline, making it ideal for students and researchers in areas still unreached by the Internet and have no access to the latest S&T materials.

Browsing its contents is quite easy. Everything is categorized into S&T areas. Should users want more precise search of materials, the search bar is always helpful. Indeed, STARBOOKS made searching for S&T information much faster and easier compared with the card catalogs in traditional libraries. It is even better than Google because the contents are specific and localized and, best of all searched offline.

Developed by the Department of Science and Technology's Science and Technology Information Institute (DOST-STII), STARBOOKS contains full text journal and research materials, news and feature articles, videos, and publications on S&T and livelihood. It also has Encyclopaedia Britannica in its collection, its contents categorized into elementary, high school, and college levels.

"It's like bringing the whole DOST-STII library collection in every STARBOOKS unit," said DOST-STII Officer-In-Charge Raymund E. Liboro.

Aside from availing of rich S&T information, STARBOOKS users also open themselves to livelihood opportunities through how-to videos produced by DOST's Technology Resource Center.

Meanwhile, participants in the hands-on demo were some 30 Eastern Visayas-based librarians and IT staff who were trained on how to use the STARBOOKS both as regular user and monitoring person.

Trainors Robelyn Cruz and Lloyd Mandapat of the DOST-STII STARBOOKS team likewise trained DOST's regional staff on configuring STARBOOKS contents pre-installed in disks.

DOST-STII turned over 53 of these disks to DOST-VIII Regional Director Edgar Esperancilla for deployment in schools that are still getting their computers ready to become digital libraries. Region-based DOST staff led by FlorentinoQuiñones, DOST-VIII science research specialist and STARBOOKS coordinator, will configure the STARBOOKS contents in respective sites.

STARBOOKS will be massively deployed in the regions affected by typhoon Yolanda (International code: Haiyan) to help schools and public libraries recover from their losses and build back even better libraries.

"I hope STARBOOKS will reach more areas in Region 8," said Dir. Esperancilla. The region is among the first to avail of STARBOOKS since the project was launched in 2011.

With the wider coverage of STARBOOKS in the regions, more students, teachers, and researchers can finally have free access to thousands of DOST-STII's S&T materials, and

enrich their research and investigatory projects. And to school children and researchers in the Yolanda corridor, they are on their way to nicely building back better library experience.

CARAGA launch

Meanwhile, Assistant Secretary Raymund E. Liboro led the launching of STARBOOKS in the Eastern Mindanao during the pit stop at the Robinson's Mall in Butuan City, Caraga as part of the Science Nation Tour. STARBOOKS units were installed in 11 sites namely Agusan National High School and ACLC in Butuan City; Mainit National High School in Mainit, Surigao del Norte; Jabonga Central Elementary School, Jabonga, Agusan del Norte; Burgos National High School, Burgos, Siargao, Surigao del Norte; Tag-abaca National High School and Loreto National High School in Basilisa and Loreto, Dinagat Islands respectively; Jacinto P. Elpa National High School and Lingig National High School in Tandag City and Lingig Surigao del Sur; Esperanza National High School and Bayugan National Comprehensive High School in Esperanza and Bayugan City, Agusan del Sur.

Also present during the launch are key officials of DOST led by DOST Undersecretary for Regional Operations Carol M. Yorobe, Assistant Secretary Raymund E. Liboro, and DOST Caraga Regional Office Dominga D. Mallonga.

Further, school officials of several national high schools of Loreto, Tag-abaca, Burgos, Jacinto P. Elpa, Agusan, and Mainit were present during the signing of the Memorandum of Understanding.

Deployment in Western Visayas

High school and college students in ten campuses of Capiz State University (CAPSU) in Roxas City, Capiz in Region VI can now perform science research work more conveniently with the formal turnover of 35 STARBOOKS units by the Department of Science and Technology-Science and Technology Information Institute (DOST-STII) at the CAPSU Main Campus in Roxas City recently.

The ten CAPSU campuses now equipped with STARBOOKS units are the main campus in Roxas City, Burias, Dumarao, Sigma, Pilar, Pontevedra, Mambusao, Dayao, Sapian, and Tapaz campuses.

Expressing the need to support S&T projects in all endeavours of society during the turnover rites, DOST Region VI Director Engr. Rowen Gelonga revealed the latest findings of the Global Competitiveness Index wherein the Philippines ranked 52nd out of 144 countries. In 2010, the country posted a ranking of 85th.

"Despite the significant leap forward, we still have a lot of catching up to do," Dir. Gelonga stated.

S&T is seen as a major driver of productivity and prosperity for a country to move forward and be more competitive.

According to Dir. Gelonga, DOST is trying to help the Department of Education and the Commission on Higher Education in efforts to boost education and human resource development in the field of S&T via STARBOOKS.

"STARBOOKS is not just an IT component," emphasized Dir. Gelonga. "In the long term, we expect CAPSU to be able to contribute to our knowledge holdings in STARBOOKS." He explained that instead of being a mere user, CAPSU will also get to contribute its own cache of knowledge to the vast database already available in STARBOOKS.

"This can help our students and also our LGUs, particularly those in the field of S&T. We hope to make the best out of what we have today," said Capiz State University President III Dr. Editha L. Magallanes in her welcome remarks.

Aside from the STARBOOKS turnover, a total of 50 hard disk drives were also turned over to Region VI for deployment to select schools. This is part of the partnership between DOST Region VI and STII that seeks to deploy a total of 155 hard disks among Yolanda-hit areas in Regions VI, VII, and VIII. CAPSU is among 10 other schools in Capiz identified by the Provincial Science and Technology Center as beneficiaries in the region.

Aside from Dir. Gelonga and Dr.Magallanes, signatories for the Memorandum of Understanding for both STARBOOKS and HDD deployment were STII OIC Raymund E. Liboro (represented by STARBOOKS Admin Coordinator Robelyn Cruz), Department of Education-Capiz Schools Division Superintendent Dr. Miguel Mac Aposin, and DOST-Capiz Provincial S&T Director Engr. Gerbe B. Dellava.

The signing was followed by a STARBOOKS orientation and training session for the attendees composed of campus administrators and library personnel from the ten CAPSU campuses.

For more information about STARBOOKS, email dost.starbooks@gmail.com or starbooks@stii.dost.gov.ph.

HERE COMES THE SUN

DOST offices go green

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

GREENING DOST |The Department of Science and Technology (DOST) inks a 15-year partnership agreement with the Philippine National Oil Company Renewables Corporation (PNOC RC) for the installation of 100kw solar photovoltaic facility at the DOST Central Office and the Science Heritage Building, both at the DOST Compound in Bicutan, Taguig City. Signing the memorandum of agreement are DOST Secretary Mario G. Montejo (second from right), PNOC RC President Carlos Jaime P. Gatmaitan (second from left), DOST-PCIEERD Deputy Executive Director Raul C. Sabularse (right) and PNOC RC, Vice President for Corporate Services Atty. Gladys N. Nalda. (Photo by Gerardo G. Palad/S&T Media Service, DOST-STII)

SOLAR PANELS now give power to office buildings of the Department of Science and Technology (DOST), a move to put forward DOST's commitment to promote renewable, clean, and green energy resources.

Partnering with DOST in this latest development is the Philippine National Oil Company Renewables Corporation (PNOC-RC)which encourages all government offices, agencies and departments in Metro Manila to adopt solar power as an alternative source of energy and to use green technology to protect the environment

"We welcome this partnership with the PNOC Renewables Corporation because we can really do something with renewable energy so that we are less dependent on traditional sources and this is a conquering step towards relying on other sources of energy," said DOST Secretary Mario G. Montejo.

PNOC RC handled the installation of a 100kw Solar Photovoltaic Facility at the rooftop of the DOST Central Office Building, the Science Heritage Building, and other designated buildings within the DOST Compound in Taguig City.

According to the PNOC RC, DOST is the second government institution to adopt solar power energy, next to the Philippine Heart Center. The installations will run for 15 years, the length of the cooperation period which will end with DOST fully owning the panels.

"With this program we aspire to assist the energy needs of our country and with the partnership with DOST we can leverage our projects since DOST is deep in research and development in our aim to promote inclusive growth," said PNOC RC President and CEO Carlos Jose P. Gatmaitan.

According to Montejo, this partnership will help address the needs of Filipinos especially the poorest of the poor who will enjoy the benefits of this program such as lessening the cost of electricity. It will also help in protecting our environment because of green technology.

"I really love this program and I appreciate the benefits it brings," said Montejo. "This partnership will be a showcase and we intend to duplicate it in our other offices and even in our Pisay campuses."

Present during the MOA signing were Sec.Montejo, PNOC President and CEO Carlos Jose P. Gatmaitan, Deputy Executive Director of the Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD) Engr. Raul C. Sabularse, and PNOC RC Vice President for Corporate Services Atty. Gladys N. Nalda.

INTERNATIONAL SCIENCE FAIR

Student innovations focus on disaster preparedness

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

HIGH SCHOOL students from science schools in seven countries got the chance to be mentored by Filipino experts during the just concluded 2nd Philippine International Science Fair.

Organized by the Department of Science and Technology-Philippine Science High School System (DOST-PSHS) in partnership with First Pacific Leadership Academy, the biennial fair aims to promote a culture of science among the youth.

Now on its second year, the fair tackled issues concerning the environment and climate change with the theme "Innovate to Mitigate."

Students from Indonesia, Japan, Korea, Malaysia, Singapore, Sweden and Philippines had the opportunity to closely interact with Filipino specialists who gave them valuable feedback and advice on their mini-projects during the prototyping sessions. For this activity, the participants were divided into teams with each team developing product prototypes, design, or project proposal of innovations that will mitigate or prevent disasters. Three scenarios were given, namely Lake Management: Saving Taal Lake, Urban Living: Making Metro Manila a Safer Place to Stay, and Sustaining Permaculture Farming.

According to Ceciree Villanueva of Cavite Nat'l Science HS, Dr. Carlos Primo David of the UP Diliman Geology and Environmental Science advised their team to focus on the root of the problem, on ways to stop people from throwing garbage into the creek.

Their team's project, which they dubbed "Project Sphyder (Specialized Physical Debris Remover)" was chosen as "Best Project" under Scenario 2. During a study tour in Marikina, Villanueva and her groupmates Demi Antonette Jacomilla of PSHS Central Mindanao, Chiara Borgueta of PSHS Eastern Visayas, Justine Romero of PSHS Bicol, and Rohith Srinivas of Raffles Institution in Singapore, learned that during heavy rain, garbage clogs the water under the bridge along Marikina River in Brgy. Tumana. SPHYDER, they said, is a filter-like technology especially designed to remove the garbage faster, more efficiently and cost-effectively and eventually clean up the water.

Student delegates from the Philippines and their mentors (above) proudly wave small Philippine flags during the opening ceremony of the 2nd PISF.

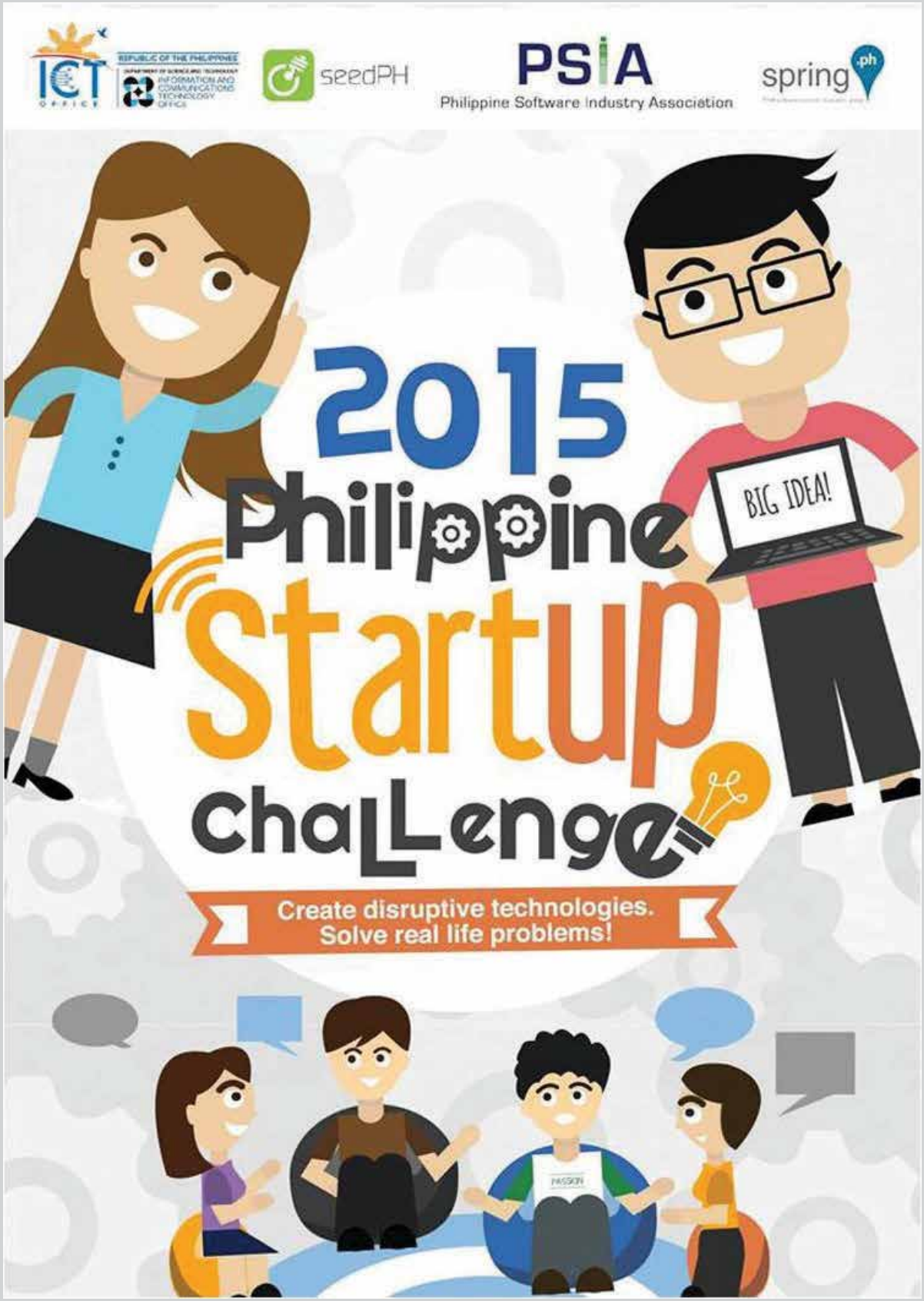
The winners of the poster making contest and the Best Project awards. (Photos by Gerardo G. Palad, S&T Media Service, DOST-STII)

Dr. David and another expert, UP Diliman Environmental Science and Meteorology Associate Prof. Dr. Tolentino Moya, also taught them that biological and chemical debris also pollute bodies of water aside from physical debris such as garbage.

Another activity, called Meet the Experts also gave the young participants a chance to listen to Filipino experts who shared their career experiences and knowledge. They were Dr. Perry S. Ong, professor and head of the Biodiversity Research Laboratory in UP Diliman's Institute of Biology and Dennis G. de la Torre, Research Fellow at the Center for Local and Regional Governance in UP Diliman's National College of Public Administration and consultant on the Special Committee on Climate Change in the House of Representatives.

Other scientists who shared their expertise during the science fair were UP Diliman Biology Prof. Dr. Zubaida U. Basiao, UP Diliman Biology Assoc. Prof. Dr. Luis Ma. Garcia, and Philippine Rice Research Institute Supervising Science Research Specialists Rizal G. Corales and Dr. Ricardo F. Orge.

A design thinking workshop, study tours, teachers' forum, and poster making contest were also held during the four-day science fair.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Challenge
BIG IDEA!
Create disruptive technologies.
Solve real life problems!
PASSION

DOST, industry partners launch 2015 Philippine Startup Challenge

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

THE DEPARTMENT of Science and Technology-Information and Communications Technology (DOST-ICT) Office, in partnership with Philippine Software Industry Association, Ideaspace, Huwaei, and Vibal Foundation launched the 2015 Philippine Startup Challenge (PSC) last May 20, 2015 at ICT Office Building in Diliman, Quezon City.

Now on its 2nd year, PSC is a student startup competition promoting technology entrepreneurship or "technopreneurship" among college students. It dares the students all over the country to create bolder, more creative software and internet-based innovations that solve real problems and help improve the lives of individuals worldwide.

To join the competition, each team must have four members composed of one faculty adviser and three students. The faculty adviser must have attended or will attend at least one of the preparatory boot camps for PSC. These are the Lean Startup 101 Boot Camp in 2014 and the boot camps for 2015 scheduled on the following dates: June 6 in Cebu City, June 13 in Davao City, June 20 in Iloilo City, July 4 in Baguio City, July 8 in Metro Manila, and July 25 in Cagayan de Oro City.

A preparatory boot camp is a series of workshops for faculty advisers and teachers of information technology and computer science for them to learn the basics about building and operating a startup company.

Each aspiring team must submit a five-minute video pitch presentation of their startup idea by the end of August 2015. From the submitted entries, the ten best entries will be selected as finalists and the ten respective teams will be given further mentoring.

These ten finalists will then advance to the National Finals tentatively set in November 2015 where they will get the chance to pitch their products directly to funders, industry experts and government representatives. The top three teams will be picked as winners, and thus gain funding and admission to business incubation.

"During the series of startup workshops that we have conducted before, we have seen the skills and potentials of our students all around the country in the field of engineering, computer sciences, and information technology," said Monchito Ibrahim, deputy executive director of ICT Office.

On the initial run of PSC last year, 51 teams from different colleges and universities all over the country sent their entries. Four out of the top five winners came from outside Metro Manila.

For more information about the Philippine Startup Challenge 2015, contact Karla Legaspi of ICT Office at karla.legaspi@icto.dost.gov.ph or 920-0101 loc. 1301 and Karen Reyes of PSIA at karen.reyes@psia.org.ph, 817-2727 loc. 109, and 0917-9408984.

Innovation Center for Yarn & Textiles to help put tropical fabrics in mainstream market

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

Photos by Henry A. de Leon

The ring spinning machine above, which spins the fibers into yarn, is one of the newly acquired equipment for the ICYT, a P54M flagship project of PTRI.

Secretary Mario G. Montejo (left) examines one of the newly acquired equipment for the Innovation Center for Yarns and Textiles.

CLOTHING MADE from tropical fabrics such as piña and banana are usually used only during weddings, baptisms, burials and other special occasions. The Philippine Textile Research Institute of the Department of Science and Technology (DOST-PTRI) however is keen on making tropical fabrics more mainstream.

The establishment of PTRI's P54M Innovation Center for Yarns and Textiles (ICYT) that will produce yarns customized to customers' and industry needs is a step closer to this goal which is part of the bigger objective of revitalizing the textile industry in the country.

"We aim to make indigenous yarns accessible to our handloom weaving communities as well as commercial millers or knitters," disclosed PTRI Director Celia Elumba during the launch of the Innovation Center last May 25 at the PTRI Compound, DOST Complex, Bicutan, Taguig City.

Dir. Elumba also revealed that PTRI has partnered with Power Fashion, the company behind the local clothing brands Unica Hija, Vise Versa, and Bayo, which has agreed to use locally produced tropical fabrics in one of their capsule collections.

The Center is just the first of PTRI's initiatives geared toward reviving the textile industry. Senator Loren Legarda, who graced the launching, expressed support for these initiatives.

(Left) Sen. Loren Legarda proudly beams as she tries on a cotton vest dyed with natural indigo - a gift from DOST-PTRI. Legarda is the author of the Tropical Fabrics Law which aims to promote Philippine tropical fabrics.

Meanwhile, DOST Sec. Mario G. Montejo noted that the DOST's efforts in reviving the industry is part of its contribution to the government's vision of inclusive growth as these are seen to bring economic activity in the countryside.

Promoting the use of tropical fabrics, said Legarda, will not only preserve our culture and heritage but will also help support the agricultural sector. Legarda is the author of the Tropical Fabrics Law which aims to promote Philippine tropical fabrics through the use of such materials for the official uniforms of government officials and employees.

PTRI will also establish regional handloom innovation centers and work on upscaling the natural dye production in the country to complement the Innovation Center.

Despite the decline of the textile industry in recent years, Sec. Montejo maintains his optimism especially with PTRI's research and development initiatives such as developing less costly ways to process agricultural waste into fabrics, producing bamboo fabrics and smart textiles.

DOST hi-tech labs go full swing with int'l certification

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

Certified world class service standards. DOST-ITDI's ADMATEL was recently awarded the PNS ISO/IEC 17025:2005 by the Department of Trade and Industry-Philippine Accreditation Bureau (DTI-PAB) at its facility in DOST Complex, Bicutan, Taguig City. The accreditation will enable ADMATEL to perform testing and calibration on electronics and semiconductor components and devices in conformity with the world standards. Receiving the certificates of ISO accreditation were ADMATEL project leader Blessie Basilia (third from left), DOST secretary Mario G. Montejo, DOST-ITDI Director Ma. Patricia V. Azanza, and ADMATEL general manager Virgilio Aguinaldo. Also in photo (from left) are DTI-PAB OIC Mr. Ernani Dionisio and Ms. Perla Baje. (Photo by Gerardo Palad, S&T Media Service, DOST-STII)

THE COUNTRY'S hi-tech electronics and semiconductor testing laboratory goes full throttle as it finally gets international certification for its two laboratories.

Receiving the PNS ISO/IEC 17025:2005 certificate by the Department of Trade and Industry-Philippine Accreditation Bureau (DTI-PAB) were the Chemical and Metallurgical and Thermal Analysis laboratories of the Advanced Device and Materials Testing Laboratory (ADMATEL).

ADMATEL is under the auspices of the Industrial Technology Development Institute-Department of Science and Technology (DOST-ITDI), based at the DOST Complex, Bicutan, Taguig City.

The certifications will enable ADMATEL to comply with international standards on testing and analysis therefore making its laboratory results in sync with global standards for electronics, semiconductor and other allied industries.

ISO/IEC 17025:2005 is a competence certification in carrying out tests and calibrations. It covers both testing and calibration performed using standard and non-standard methods, as well as laboratory-developed methods.

ADMATEL's accreditation is valid until February 2020, however, the laboratory has to conform with DTI-PAB's criteria and conditions.

The first accreditation certifies ADMATEL in conducting non-destructive tests on metals and non-metals through visual inspection and dimensional measurement using high and low power optical microscopy. The other accreditation certifies the facility in conducting chemical tests on plastics, rubbers, adhesives, paints, resins, dyes, clays, and ceramics using simultaneous thermal analysis, differential scanning calorimetry, and Fourier transform infrared spectroscopy with microscopy.

With the ISO accreditation, the number of clients is expected to rise in the coming months. Also, with its low-cost, quality testing and analysis, and capable personnel- many electronics and semiconductor companies outside the country are expected to avail its services.

Just recently, ADMATEL GM Aguinaldo reported that in 2013 alone, the electronics testing lab has received more than 40 electronics components for failure analysis (FA) and materials characterization from various S&E companies. Moreover, Semiconductors and Electronics Industries in the Philippines Incorporated (SEIPI) president Dan Lachica confirms that the number of clients availing ADMATEL's services has risen by 60 percent or 120 clients from 14 industries in the country.

In a previous report, Aguinaldo revealed that 38 percent of the testing lab's clients are coming from outside the target industries. He said that companies from the allied industries such as construction and energy, medical, and automotive industries are also sending components and samples for analyses. Aguinaldo mentioned a successful engagement with an auto industry player which availed of ADMATEL's services. And should the demand rise in the coming months, Aguinaldo plans to operate the laboratory round-the-clock.

In addition to this, Sec. Montejo says that the Department has positive outlook

continued on next page

PCIEERD celebrates half a decade of innovative S&T

By ROMELIE JANELLE MARANAN
S&T Media Service, *DOST-STII*

IN CELEBRATION of the Department of Science and Technology's Philippine Council for Industry, Energy and Emerging Technology Research and Development (DOST-PCIEERD) 5th anniversary, Undersecretary Dr. Rowena Cristina Guevara, together with other resource persons, presented the Council's milestones in a press conference held recently at the Luxent Hotel in Quezon City.

"We are one of the best agencies in the DOST system and will continue to be the best," USec. Guevarra assured guests as she showcased each of PCIEERD's accomplishments within half a decade since its establishment in 2010.

The discussion highlighted PCIEERD's performance in their priority sectoral areas which are science, industry, energy, emerging technologies and other special concerns including climate change adaptation, disaster risk reduction and management and environmental issues.

Some of the milestones stressed during the press conference were the Technology Business Incubation facility, launching of the Automated Guideway Transit system in UP Diliman and Bicutan, drafting of Genomics R&D Roadmap, launching of Project NOAH, DREAM and LiDAR planes under the special concern areas, launching of Biotechnology Pilot Plant facility, responsible mining in Mindanao and PGC-DNA Sequencing Core Facility.

USec. Guevarra also enumerated other innovations and interventions of PCIEERD including the inauguration of the Advanced Device and Materials Testing Laboratory, launching of CoaTin, Metrology in Chemistry Laboratory, the revitalization of PCIEERD Consortia around the Philippines, first Electronics Design Competition, first Mining Forum, the Balik Scientist Program and its ISO 9001:2008 certification.

PCIEERD also plans to launch the Electronics Product Development Center this June and the Innovation Hubs in Diliman and Intramuros in July.

"It's a great honor to be a part of PCIEERD. I believe that this council will continue to thrive through its thrusts. I commend all the people behind our achievements and I know that they will remain dedicated to their efforts in helping the public," Usec. Guevarra said.

Among the resource persons are the heads of different divisions of PCIEERD including Engr. Niñaliza Escorial of Industrial Technology Development Division, Engr. Nonilo Peña of Energy and Utilities Systems Technology Division, Engr. Nelson Beniabon of Emerging Technology Development Division, Engr. Albert Marino of Policy Coordination and Monitoring Division, Ms. Russell Pili of Research Information & Technology Transfer Division, Engr. Ernie Bacarra of Human Resource and Institution Development Division and Ms. Sonia Cabangon of Finance and Administrative Division.

DOST hi-tech...from page13

on the local electronics and semiconductor industry amidst the ASEAN economic integration in the last part of the year. He says that ADMATEL will play a big role in turning the country's electronics industry into one of the region's producers of prime products and services.

Development in the local electronics and semiconductor

During the formal ISO awarding, Lachica revealed that USAID and DTI have agreed to fund the electronics and semiconductor industry's research and development roadmap. "This will enable our local industry to go up the electronics value chain," explains Lachica. "By incorporating R&D to develop more electronics and semiconductor products, the Philippines can be a regional power and a global player in the electronics industry."

DOST, in recent years, has expressed its willingness to drive the various manufacturing industries' productivity by providing new and cutting edge service facilities to push them to more product development as a result of public-private partnership on R&D. Sec. Montejo stressed that "DOST has deliberately developed a vibrant S&T ecosystem to help raise the country's economy by strengthening the capabilities of the local manufacturing industries and even the small and medium enterprises rise in the global market."

ADMATEL is one of DOST's initiatives to strengthen the electronics and semiconductor industry, the country's current economic driver which generated $23.5 billion (P94 billion) in revenues for the year 2014. DOST hopes the industry would hit the $50 billion (P2.15 trillion) mark by the year 2016 and become a major electronics and semiconductor exporting country in the global electronics supply chain.

DOST chief urges S&T scholars to contribute to nation building

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

DEPARTMENT OF Science and Technology (DOST) Secretary Mario G. Montejo recently told DOST scholars to "equip themselves with more knowledge… (and) strengthen their belief that science and technology would make a huge difference to improve the lives of every Filipino."

During the recent scholars conference held at Hotel Jen in Pasay City, Sec. Montejo stressed that science and technology remains to be the important engine of the country. It is S&T that drive industry competitiveness, accelerate the delivery of government services, and enhance the country's capacity in emerging technologies, he said.

" With the developing challenges of globalization and tough competition in the market place, S&T innovation and research should be a priority to ensure our nation's global competitiveness", Montejo underscored.

"Filipino S &T scholars can be key players in our quest for global competitiveness," Montejo said.

He looks forward to Filipino S &T scholars pursuing excellence in their studies and later on "dominate" as they enter a career in science and technology.

"I urge you (S &T scholars) to be part of the community leading in providing solutions to our country's major concerns.," he said.

Secretary Montejo also assured that DOST will continue to hone the talents in S&T through scholarships, science culture development, innovation, research, and others. He said that the department is committed to maintaining a holistic approach that touches on developing grassroots talents and introducing new approaches in S&T learning and application in its drive to use science for progress.

The 4th DOST's Science Education Institute Accelerated Science and Technology Human Resource Development Program -National Science Consortium (ASTHRDP-NSC) Scholars' Conference is an annual gathering to provide venue for the scholars and faculty members to meet, to share their ideas, to sharpen their presentation skills, and to help strengthen the community of scientists in the Philippines.

Team up for metal casting coup

By GERALDINE B. DUCUSIN
S&T Media Service, *DOST-STII*
Photos by Henry A. de Leon
S&T Media Service, DOST-STII

Chris Pingol of Pingol Metal Crafts

"Yung talent mo, tama ng puhunan sa pagnenegosyo mo," (Your skill is enough capital to start a business) was what a brother (priest) from Don Bosco told Chris Pingol's grandfather Mamerto Pingol, when the latter was having apprehension over how to get started in the business of metalcraft that largely produces church-related products.

Thus, was his motivation to put up a metalcraft business which manufactured the censer used in the religious incense of Pope Francis' masses in Tacloban, Luneta and University of Sto. Tomas.

Finished product (above) after molding.

It's the same company which manufactured the trophies used at the Philippine Football Peace Cup in 2014 participated in by the Azkals and three other nations.

Humble beginning

Mamerto Pingol was a production supervisor at a metalcrafts shop inside the Don Bosco Mandaluyong Technical College. The shop closed in 1985.

Upon the encouragement of the Don Bosco brothers, Pingol ventured in metalcrafts armed with the necessary know-how. He initially invested P 5,000 and relied on payment deposits from customers, most of whom were referred to him by the brothers. The senior Pingol used to do the crafts at home, by himself, until he encouraged his brother and children to help him.

Product development

Christopher R. Pingol, or Chris, is the grandson of Mamerto. He took over the business when his father passed away in 2000. Chris was then familiar with production having worked in Fujitsu Die-tech. The first thing he did when he took over was to look into the idea of using scrap material. His grandfather used to throw or sell scraps, but Chris learned during his stint at Fujitsu that scrap materials should be recycled.

The younger Pingol then searched the Internet. His search led him to the Metals Industry Research and Technology Center (MIRDC) of the Department of Science and Technology (DOST). He visited the MIRDC and learned about casting which has been one of MIRDC's services. The agency taught him how the scraps can be transformed into other products by undergoing a casting technology process.

Casting is a common metal's technique which is also available in several private companies. But what sets MIRDC apart, according to Chris, is this:

Some other finished products from the metal casting process

Ceramic mold making

MIRDC Metals Technologist Juanito G. Mallari works during the mold and die making phase.

"Sa mga pribadong kumpanya, kung ano lang pinagawa mo, yun lang yun. Sa MIRDC, kung may item ka halimbawa, tutulungan ka nila talaga [kung] paano mo mapaganda pa yung produkto mo (In private companies, they'll only do what you ask them to. In MIRDC, they go beyond what you ask, and would readily help you improve your product further)."

Chris has been a client of MIRDC since 2000 and he credits the Center for making his products look "imported." They are now capable of coming out with products that involve more intricate designs, with more aesthetic value.

"Before we came to know of the casting technology of MIRDC, our products were mostly hammer-finished," Chris said.

"Ngayon may 3-D look na ang produktong nagagawa namin, hindi na tulad nung de-pukpok pa kami. Sa de pukpok, hindi pwede ang sculpture-like designs," (Now our products have this 3-D look, unlike in the past when we're doing things manually, we cannot get that sculpture-like finish)," he added.

Chris also attended MIRDC's training seminar on plating (non-cyanide gold plating) and he has been using their library as well to research on other ways to improve their products.

Expansion

From a small business manned by family members, Mamerto Pingol Metal Crafts now has about 40 employees. They have their manufacturing shop in Malabon and a display area in Sta. Cruz, Manila. Peak seasons are during Holy Week, Christmas, and fiestas. During the remaining lean months, the staff do the stocks. To his knowledge, there are only two others engaged in the same business nationwide.

Aside from church products, Mamerto Pingol Metal Crafts also manufactures plates, medals, trophies and interior design. They've done products for the United States, Guam, China and Brazil and they hope to gain more orders from abroad in the future. Chris believes that product expansion is a must in any business. Hence, they are now trying to develop urns to add to their portfolio of church supplies.

Government's tech support

MIRDC's metal casting services began in 1975. It has helped several companies, largely in their product improvements. Among them are Mamerto Pingol Metal Crafts Manufacturing; Shooters, Guns and Ammunition Incorporated; Enrod Copper Decor; SEACOM; and Mechapil.

MIRDC has been servicing 10 to 15 customers per year, on average, in the last five years. There are 18 personnel handling casting services at the Process Research Section (PRS) of the Materials and Process Research Division, most of whom have been with MIRDC for 20 to 35 years. This is a highly skilled group who can share their skills with entrepreneurs needing their assistance in product development.

"While there are private outfits which provide the same kind of service as we do, especially in the area of conventional casting, a number of industries still prefer MIRDC because we have a track record in providing better service in terms of better surface finish, right dimension and almost zero defects," Engr. Florentino Lafuente, PRS supervisor, said.

MIRDC now focuses on contract or developmental research, which is product development. The mass production is usually contracted out to the private sector by their customers, who are composed of artists, suppliers, middlemen and others.

Juanito "Boy" G. Mallari, a metals technologist at the MIRDC said that the work at the foundry (conventional and investment casting) can be both difficult and hazardous. He said that those involved in this kind of work must wear safety apparel and must be fully trained.

The challenge for Mallari is the variety of casting jobs they do, especially in investment casting, which are often interesting and encourage one to come up with his/her own idea or technique that does not require high-tech machines.

"For me the reward is when my boss or customers appreciate and gain satisfaction from my work," Mallari said.

Fettling.

Forester Arsenio Ella teaches Dumagat tribespeople the right way of tapping resin from the almaciga tree.

Scientists bag environmental award from DOST-NAST

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

BECAUSE OF their contributions in protecting the environment via their research projects, Forester Arsenio B. Ella of Department of Science and Technology-Forest Products Research and Development Institute (DOST-FPRDI) and Ateneo de Manila University Assistant Professor Dr. Severino G. Salmo III bagged the NAST Environmental Science Award (NESA) organized by National Academy of Science and Technology held last April 22, 2015 at the New World Manila Bay Hotel, Malate, Manila.

Ella has worked with indigenous peoples in Palawan and Sierra Madre in protecting Almaciga trees by introducing a sustainable way of harvesting resin from the trees.

Collection of resins is an important source of income for indigenous peoples in the said areas. However, traditional methods of resin tapping such as deep cutting, over tapping and frequent rechipping have resulted into the premature death of Almaciga trees, Ella explained.

Almaciga resin, also known as Manila Copal, is used in the manufacture of paints, varnishes, printing ink, shoe polish, floor wax, incense, and caulking material for boats among others. The Philippines is the second largest producer of the resin next to Indonesia. According to the Philippine Forestry Statistics, the country exported an average of 140,200 kilos of almaciga resin valued at US$ 165,200 in 2004-2013.

Based on his previous studies, Ella recommends to tap only trees with a diameter at breast height of at least 40 cm and the first tapping point should not be more than 30 cm above the ground. The cut should be about 2 cm wide and 30 cm long and not beyond the bark, using a razor-sharp broad-bladed bolo or a large knife. He further recommends gatherers to wait after five days before tapping again.

This scientific tapping method not only prolongs the life of the trees but also increases the production of quality resin in the long run according to Ella. He added that the resin gatherers increased their harvest from 16 percent to 33 percent per month resulting in increased income.

Apart from providing training in the proper tapping of Almaciga trees, Ella and his team also lecture communities on climate change.

Dr. Salmo on the other hand advocates the protection and proper reforestation of mangrove forests for the protection of fisheries and to help lessen the impact of typhoons in coastal areas.

He pushes for the planting of right mangrove species at the right sites to ensure that they will survive. He recommends the planting of avicennia species on the shores, as this species is more adapted to the area and thus more resilient to typhoons.

However, in practice, rhizophora species, which naturally thrive in the inner mangroves, are being used in reforestation efforts.

His recommendations are evidenced by the study he conducted in 2009 in Bani and Anda, Pangasinan wherein the rhizophora species planted along the coasts were heavily damaged by typhoon Emong while the avicennia species survived.

"Just a single event was enough to destroy the mangroves (rhizophora). Remember we have around 20 typhoons in a year," he said.

The winners will each receive a research grant from DOST amounting to P1 million and cash prize from NAST and the Department of Environment and Natural Resources.

Formerly called NAST-Hugh Greenwood Environmental Science Award, NESA started in 2001 through the efforts of former NAST President and National Scientist Perla D. Santos Ocampo through the help of Dr. Hugh Greenwood, a philanthropist and founder of Children's Research Fund in the United States.

PAGASA confers Wind Vane Award to DOST Sec. Montejo, eight others

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

DOST Secretary Mario G. Montejo receives the Wind Vane Award from PAGASA Acting Administrator Vicente Malano and Deputy Administrator Flaviana Hilario.

FOR HIS continued commitment to the improvement of weather forecasting capability in the country and attainment of disaster risk reduction and management (DRRM) goals and objectives, Department of Science and Technology (DOST) Secretary Mario G. Montejo was given the Wind Vane Awards by the Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA) last March 23, 2015 at the PAGASA Main Office Building.

Montejo believes in developing our country's technological self-reliance especially when it comes to DRRM. Under his leadership, DOST was able to develop its own automated weather stations and rain gauges, increase the coverage of flood early warning systems, and develop high resolution maps via the use of Light Detection and Ranging (LiDAR), among others.

Now on its tenth year, the Wind Vane Awards is conducted annually to recognize the contribution and support of individuals and organizations to PAGASA's efforts in disaster risk reduction and management. The awarding ceremony was one of the highlights of PAGASA's 150th year anniversary and World Meteorological Day Celebration.

Other Wind Vane awardees for this year include: Department of Interior and Local Government Sec. Manuel Roxas II, National Disaster Risk Reduction and Management Council Undersecretary Alexander Pama, Former PAGASA Chief Claro Doctor, Rice Watch and Action Network Secretariat Coordinator Hazel Arandez-Tanchuling, Legazpi City Mayor Noel Rosal, UNTV reporter Reynante Pelayo, Cagayan de Oro CDRRMO Mario Verner Monsanto, and the Philippine Australia Human Resource and Organisational Development Facility.

Dr. CP David, new PCIEERD executive director, takes oath

Photo by: Henry A. De Leon, S&T Media Service

DR. CARLOS Primo C. David took his oath with DOST Secretary Mario G. Montejo as the new executive director of the DOST- Philippine Council on Industry, Energy and Emerging Technology Research and Development on June 26, 2015. Prof. CP David is a licensed geologist, a professor of Geology and Environmental Science at UP Diliman, and one of the project leaders of DOST's Project NOAH.

Formerly the head of the Environment Monitoring Laboratory at the UP National Institute of Geological Sciences in Diliman where he ran rain and flood models, Dr. David has a PhD in geology and environmental sciences from Stanford University.

Dr. David, while with Project NOAH, pioneered short term rainfall forecasting in the country and climate change-related research on water resources. He concurrently served as DOST's spokesperson for Climate Change and a resident resource person for disaster preparedness for GMA News and Public Affairs.

Dr. David is a member of the Panel of Experts of the Climate Change Commission and the 2013 awardee of the Oscar M. Lopez Professorial Chair for Climate Change Research.

His other interests include hydrology and water resource management. *(S&T Media Service)*

DOST's complementary food helps dip malnutrition in Agusan del Norte town, study says

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

THE COMPLEMENTARY food feeding program of the Department of Science and Technology (DOST) in Jabonga, a third class municipality in Agusan del Norte, helped decrease malnutrition incidence from a high of 74 percent to 34 percent, according to a study.

The study, tied up with a 120-day complementary food feeding program, is conducted by DOST's Food and Nutrition Research Institute (FNRI).

Findings showed that the significant increase in body weights of children is attributed to the 120-day complementary food feeding program implemented by DOST, through its attached agency the Food and Nutrition Research Institute (FNRI).

The latter developed several variants of said complementary food.

This feeding program is a continuous undertaking in partnership with the Municipality of Jabonga and its Municipal Department of Social Welfare and Development office.

"As part of DOST's commitment to help curb malnutrition in the country, we have developed the complementary food technology through the FNRI several years ago with extensive research using readily available raw materials like rice and monggo," said DOST Secretary Mario G. Montejo.

The DOST-FNRI developed and rolled out three kinds of complementary foods, namely the Rice-Mongo Curls, the Rice-Mongo Baby Food Blend (Instant) and the Rice-Monggo with Sesame.

Complementary food samples were formally presented during the Science Nation Tour (SNT) in CARAGA recently. Sec. Montejo handed over a basketful of complementary foods to Jabonga Mayor Jasmin F. Monton, who welcomed the DOST intervention as a very effective innovation that addressed the municipality's malnutrition problem.

"Nagpapasalamat kami ng lubusan sa DOST para sa programang complementary food feeding program dahil ito ay nakabawas sa malnutrisyon ng mga bata sa Jabonga na may edad mula anim na buwan hanggang tatlong taon sa loob ng 120 araw (We thank the DOST for the complementary food feeding program because it reduced malnutrition of the children in Jabonga with ages from six months to three years old in a span of 120 days)," said Mayor Jabonga.

The Rice-Mongo Curls, a blend of rice flour and mongo, is crispy with an appealing cereal taste enhanced by artificial flavours. This product contains 130 kcal of energy and 4 grams protein per 30 grams. This is enough to meet the 12 percent of recommended energy and 14.3 percent of recommended protein intake of children with age of one to three years.

As a nutritious snack, it contains 15 milligram of calcium, one milligram of iron and 21 grams of carbohydrates.

The Rice-Mongo Baby Food Blend (plain variety), meanwhile, is an instant food preparation rich in protein and energy, processed using the extrusion cooking method. It contains 120 kcal and 4 grams protein per 30 grams. This formulation is enough to meet 17 percent of recommended energy and nutrient intake (RENI) for children aged six to 12 months and 29 percent of recommended protein intake for children of the same age.

The Rice-Monggo Baby Food Blend also comes with sugar and contains 140 calories (19 percent RENI) and four grams of protein (19.4 percent RENI) for children aged six to 12 months.

The first batch of the Jabonga project had two sets of participants who started in April and October 2014. Set A had 73 while Set B had 15 participating children. After 30 days of implementation, 33 of the 73 children achieved the normal weight status for Set A and eight of 15 children achieved normal weight status for Set B. Then after the 120-day period ended, 69 out of 73 was declared with normal weight for Set A and all 15 declared with normal weight for Set B.

This complementary food feeding program of the DOST-FNRI is now being replicated in other towns and municipalities in the province as well as in the nearby province of Surigao del Norte, and other regions in the country with significant malnutrition problem.

The unique and effective health food products of DOST-FNRI will also be featured in the upcoming National Science and Technology Week 2015 from July 24-28, 2015 at the SMX Convention Center in Pasay City. All kids and adults, science aficionados, techies, and fun loving people from all walks of life are invited to see the DOST exhibits of various technologies and innovations for FREE. For more details please log on to nstw.dost.gov.ph or can also visit the DOST website, www.science.ph.

Direct contact with infected horses causes transmission of deadly virus, study shows

By LADYLOVE MAY B. BAURILE
S&T Media Service, *DOST-PCHRD*

HENIPAVIRUS, A virus that usually infects horses, caused human deaths in Tinalon and Midtungok villages in Sen. Ninoy Aquino town of Sultan Kudarat province. The main cause of virus transmission to humans was direct exposure to infected horses, contact with contaminated body fluids during the slaughter of sick horses, and consumption of undercooked meat of infected animals, according to a study. The research was conducted by the Department of Health (DOH), the Department of Agriculture (DA), and the World Health Organization (WHO).

Henipaviruses include two members: Hendra virus (HeV) and Nipah virus (NiV). According to the Centers for Disease Control and Prevention (CDC), HeV had caused a total of 11 outbreaks of acute respiratory diseases among Australia's horses in 1994. Four of the outbreaks had infected the humans as a result of direct contact with the infected animal. The NiV, on the other hand, caused severe neurological and respiratory diseases on pigs, resulting in deaths of pig farmers in Malaysia in 1998.

As a response to the reports of human deaths in the said two villages, 17 case-patients were interviewed and subjected to blood testing.

The study also discovered cases of human-to-human transmission caused by not using protective gears during the contact with infected patients.

The study stated that the most likely sources of the horse infections were pasture and feed contaminated with feces, urine and other excretions of fruit bats (Pteropodidae family) found in one of the two villages.

Ongoing surveillance is encouraged to prevent future outbreak.

This study entitled "Outbreak of Henipavirus Infection, Philippines, 2014" is available at http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4313660/

visitsouth.com

Philippine agriculture employs 47 percent of the total Filipino workforce as of 2013, and accounts for 12 percent of the country's Gross Domestic Product. Through S&T, the country's agriculture sector is now revving up to increase productivity and make a dent in the global market. This article gives a glimpse on how crops, livestocks, and sea products are value-added to mark the Philippines as a bountiful agricultural products producer.

Lakatan. Goat. Crab.

Enriching agri & aqua products for the global menu

By RUBY S. HECHANOVA, RICARDO R. ARGANA, AND GRETCHEN O. NAS
S&T Media Service, *DOST-PCAARRD*

Lakatan is one of the most popular banana varieties in the country. Having a sweet lemony flavor and higher β-Carotene content than other bananas, it is more expensive than other varieties. Currently, lakatan accounts for 11 percent of the total banana production in the country.

Farmers, however, tend in the past to grow lakatan the "kundiman" way, that is, leaving the banana plant to grow on its own until harvest time. Simply, kundiman is a colloquial term for growing bananas without applying proper production practices.

To address this concern, the Department of Science and Technology-Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (DOST-PCAARRD) introduced various interventions for lakatan production that ranged from site selection to packaging. It is collectively referred to as the "Package of Technology" (POT).

The POT briefly describes the requirements from site selection to plant establishment. It defines the fertilization schedule and the cultural management practices that will enable good quality and high quantity of harvest. When applied, the POT will transform the backyard farm into a smallhold banana plantation.

Upon adopting the POT, the farmers have been harvesting bigger fruits with better quality, commanding higher market price, and bringing in more profit. From the use of disease-free planting materials to plant establishment, fertilization, and application of proper cultural management practices, including proper spacing, sanitation, desuckering, and other pest management practices, the farmers harvest more than they expected – making them more productive and progressive banana farmers.

Goat production the Halal way

To contribute to the country's efforts in establishing itself as a major producer of Halal products, DOST's National Goat S&T Program implemented a project on the establishment of standard protocols on Halal goat production and quality assurance system in 2010. The program stemmed from a study of Sultan Kudarat State University (SKSU) researchers in Region 12 that Halal goat production was burdened with issues on authenticity or "Halalness."

The researchers attributed the problem to the absence of Halal goat production and Halalness test protocols in the region and the farmers' limited knowledge on proper production

and post-production practices. As a result, goats tagged as Halal in most markets in Region 12 were considered contaminated with Haram substances, including pork derivative.

Experts explained that Halal system, as it applies to food, incorporates the concept of "farm to plate" and covers the entire Halal food quality assurance process. This is to promote hygiene and good health as prescribed by Allah and Prophet Muhammad, based on Islamic belief.

From the program, SKSU researchers developed a set of protocols on raising Halal goat, while researchers from the University of Southern Mindanao developed protocols to detect haram or unlawful contaminants. These protocols were validated and proved functional.

The protocols have incorporated essential elements of Halal goat production such as religious foundations, cleanliness, hygiene, good health, and good intentions. It underscores basic concerns such as the need for a strategic grazing and housing system, health management, and slaughtering procedures.

Following these protocols minimizes contamination and limits the colony forming unit per gram to the acceptable level of microorganisms for fresh meat.

Raising soft-shell crabs

Soft-shell crabs are crabs that have recently molted their old shell and are still soft. To prepare food using soft-shell crab, the crabs are removed from the water as soon as they molt to prevent any hardening of their shell. As such, almost the entire crab can be eaten as the new shell has not yet grown. Because the crabs can be eaten whole when cooked, soft-shell crabs command a higher price.

Soft-shell crab farming is a profitable business that provides employment and income. In Asia, commercial soft-shell crab production has been established in Thailand, Myanmar, and Vietnam. And now the Philippines is taking a crack into this market.

There are two farmers producing soft shell crabs in Mindanao but the seedstocks are all sourced from the wild. The PCAARRD-funded project "Development of protocols for the production of hatchery-reared mud crab Scylla serrata juveniles for soft-shell crab farming" is under the program "Refinement of Mud Crab Nursery Technology."

The project has shown that hatchery-reared crab grown from nursery can grow to a body weight of between 60 and 100 g. With the results of the project, farmers engaged in soft-shell crab production can now produce through hatcheries to reduce pressure in the wild crab population.

Moreover, commercialization of the soft-shell crab production using hatchery-reared seedstock has become feasible. The newly molted crabs are retrieved, sorted, held in freshwater, packed and stored in freezer prior to marketing.

There is nowadays an increasing interest of farmers and aquaculturists to engage in soft-shell crab farming as the demand increases in both local and export markets. Soft shell crab production using hatchery-reared juveniles will provide income without adding pressure on the wild resources. This will also assure producers of year-round availability of seedstock, provide exportable value-added products for crabs, and provide higher income for crab producers. As such, mud crab farmers will surely get a greater opportunity in the export market.

As the ASEAN integration approaches, DOST is stepping up its support to the MSMEs, which account for 99% of the total business enterprises operating in the country, to help them stay competitive in the ASEAN Economic Community. Romelie Janelle Maranan and Espie Angelica A. de Leon detail the DOST programs for MSMEs and communities that are geared for achieving inclusive growth in the country.

SETUP and CEST to fire up Philippines for ASEAN Integration

Impressively competing with its neighboring countries with its persistent economic boom, the Philippines is now widely eminent as "Asia's New Economic Tiger, "currently home to one of the most dynamic economies in Southeast Asia and nowhere near its prior moniker, the "Sick Man of Asia."

However, there remain huge problems, including unemployment, underemployment and poverty, which need to be addressed. Like the Philippines, countries in the Southeast Asian region are suffering from the same dilemma.

The ASEAN Community composed of the 10 ASEAN member states has the purpose of building a region with "sustainable economic growth." An important part of the ASEAN Community is the ASEAN Economic Community (AEC), focused on the establishment of a globally integrated and competitive region with a single market, production base and equitable economic development by ensuring a free flow of goods, services, investment, capital and skilled labor by 2015.

The AEC is a response to Southeast Asia's increasing role in the global economy that is expected to boost investments and productivity, create jobs and business enterprises, more and better income, attract more foreign investors, eliminate tariffs, and others.

The Philippines, as one of the members of ASEAN and one of the signatories of AEC, will greatly benefit from this.

SETUP sets up brighter future for small entreps

Business enterprise creation and development are some of the goals of AEC. And with the help of science, technology and innovation, these are indeed possible.

One of the Department of Science and Technology's (DOST) interventions, in preparation for the ASEAN Integration 2015, is its support to micro, small, and medium-sized enterprises (MSMEs) through the enhanced Small Enterprise Technology Upgrading Program (SETUP).

SETUP aims to boost the competitiveness and productivity of MSMEs by providing collateral and interest-free loan for technology innovations, as well as manpower training. The priority sectors eligible for SETUP assistance are food processing; furniture; gifts, house wares, and decors; marine and aquatic resources; horticulture and agriculture; metals and engineering; information and communications technology; and pharmaceuticals.

Maricris Huit, owner of Marc's Balut Processing Facility beside the 18-rack bay egg incubator with digital thermostat and control system, acquired under SETUP.

SETUP has been a viable program, helping its Filipino MSME clients develop, resulting to job creation, opening of new markets, booming of sales and profits, as well as improvement of the personal lives of the business owners and their employees.

Ultimately, this progress achieved by MSMEs contribute to the development and comprehensive growth of the county's economy, thus achieving the goal of the ASEAN Integration.

Since its inception in 2002, SETUP has beneficiaries or adoptors in all 17 regions of the Philippines. Among these are product brands with strong market visibility such as Kenneth Cobonpue's Interior Crafts of the Islands, Inc., MFP Home of Quality Food Corporation - makers of House of Polvoron, and Trappist Monastic Products.

Other beneficiaries that have established good markets include Farmtec Foods Incorporated, Total Woodkraft, TAP's Handmade Products, Mindoro Progressive Multi-Purpose Cooperative, Rafols Machine Shop and Engineering Services, Apo Ni Lola, Marc's Balut Processing Facility, and Kablon Farms, among others.

Bags and textiles by the Loom Weavers Association

Products by the Sarakat Women Weavers Association

Many of these adoptors have carved a niche market in their own regions while not a few of them have penetrated the international market successfully.

CEST adds zest to communities

Another program by DOST is similarly providing assistance for livelihood, only this time, it isn't individual small enterprises that are the beneficiaries, but entire communities, marginalized ones.

Furniture by Kenneth Cobonpue

This program is called CEST or Community Empowerment through Science and Technology. CEST helps to alleviate poverty by providing community-based livelihood that is run by the community itself. In particular, it targets 60 of the poorest communities in the country - an entire barangay, a registered organization, a tribal or indigenous group, a cooperative, or perhaps formal or informal settlers within a specified area.

Livelihood/Economic Enterprise Development is actually just one of five areas that CEST focuses on. The rest are Health and Nutrition, Water and Sanitation, Basic Education and Literacy, and Disaster Risk Reduction and Climate Change Adaptation.

In particular, Livelihood/ Economic Enterprise Development aims to increase the number of S&T-based livelihood projects, provide sustainable economic activities among the identified communities, and reduce the country's unemployment rate. This is done with the provision of common service facilities for food/ non-food processing enterprises, technopreneurship program, establishment of technology-based livelihood projects, and technology/capability-building training projects.

Among the CEST beneficiaries under its Livelihood/ Economic Enterprise Development thrust are the Buug Subanen Tribe in Zamboanga Peninsula which was provided with a rice wine and coco water vinegar processing facility; the Loom Weavers Association of Kayapa, Nueva Viscaya; Sarakat Women Weavers Association in Cagayan; and farmers of Jaro, Leyte and Basey, Samar whose agricultural lands were devastated by typhoon Yolanda in 2013.

Overall, there are 91 communities benefiting from CEST as of May 2015, with a total of P 34.44M granted to these communities.

Like SETUP, CEST, under its Livelihood/Economic Enterprise Development, will certainly help prepare these assisted communities to keep pace and compete with other regional products once the 2015 ASEAN integration sets in. At the same time, the program's Basic Education and Literacy thrust will also help ensure the continuous supply of well-educated human resources with the appropriate skillset that will enable enterprises, industries, and communities to thrive, grow, and prosper, and be at par with their ASEAN counterparts.

As the country continues to gain momentum toward the ASEAN Integration, bright opportunities are certainly ahead of us. Giving continuous assistance to MSMEs will help them gear up for the highly anticipated competitive and beneficial business environment. At the same time, empowering whole communities allows government assistance to go to the grassroots and identify specific segments of the population which need the most help, including those ravaged by natural disasters.

Merging science and business is certainly the ideal.

Now gaining much ground as a world-class analysis and testing laboratory for advanced materials, ADMATEL is becoming the talk of the town among its clientele. Rodolfo P. de Guzman indeed has a lot to tell on ADMATEL.

A lot to tell on ADMATEL

ADMATEL laboratory (Photo courtesy of www.itdi.dost.gov.ph)

In one of the inconspicuous places inside the DOST Compound in Bicutan, Taguig City we will find the high tech facility called Advanced Materials Analysis and Testing Laboratory or simply ADMATEL.

ADMATEL is indeed no secret hideaway for it is now gaining much popularity especially among the semiconductor and electronics industry players who are the most frequent visitors to this facility.

Why so?

ADMATEL is a facility equipped with advanced analytical equipment for failure analysis and materials characterization, as well as, for process and product development needs of the semiconductor, electronics and other allied industries with estimated demand amounting to roughly $ 21 billion and still growing.

Where it all started

The Advanced Materials Analysis and Testing Laboratory or ADMATEL was conceptualized by Secretary Mario G. Montejo and implemented by the Industrial Technology and Development Institute (ITDI) which held the groundbreaking ceremony for the construction of the building on September 3, 2012.

The proverbial question posed to everyone back then was, "Can we create a testing facility right in our own backyard that will serve the need of the local semiconductor and electronics industry for analysis and testing services to make them more globally competitive?"

The answer was a resounding yes!

The ITDI personnel took up the challenge that Secretary Montejo threw at them. On day one after that discussion, engineers and scientists from the ITDI worked on the drawing boards to map out the plan and strategy on how to put up this kind of facility: a sophisticated electronics laboratory envisioned to be the first in the country.

Each member of the team was given specific tasks and a timetable to work on because there is the pressure to provide the service ADMATEL had to give immediately. Time is of the essence and there was no room to play around if the DOST is bent on becoming a world player in the semiconductor industry and get its fair share of the market projected to reach $ 50 billion by 2016.

Putting the pieces of the puzzle together

Just like putting each piece of the puzzle meticulously to create an image, the ADMATEL construction team finalized their game plan, and the construction of the facility started. The ADMATEL building practically rose from the old EPCD Building in the same compound.

The ADMATEL team made sure that all construction guidelines were at par with the highest standard for the state-of-the-art facility. This means that the facility should conform to the requirements of the International Standardization Organization (ISO) to be in the same league with the best in Asia that can rival IMR Test Labs in Singapore, Allion Labs, Inc. and MA-tek of Taiwan, Exova in India, and NSF Engineering Lab in Thailand and China.

Thereafter, a shopping list of all equipment and machines needed to get the facility going was drawn. The machines to be procured must be able to conduct surface analysis, thermal analysis and metallurgical and chemical tests.

The list of equipment and machines included the following:

1. Auger Electron Spectroscope
2. Differential Scanning Calorimeter
3. Focused Ion Beam (FIB) Field Emission Scanning Electron Microscope
4. Thermogravimetry/Differential Thermal Analyzer Simultaneous Thermal Analyzer
5. Thermo-Mechanical Analyzer
6. Time-of-Flight Secondary Ion Mass Spectrometer
7. Fourier Transform Infrared Spectroscopy and Imaging Microscope

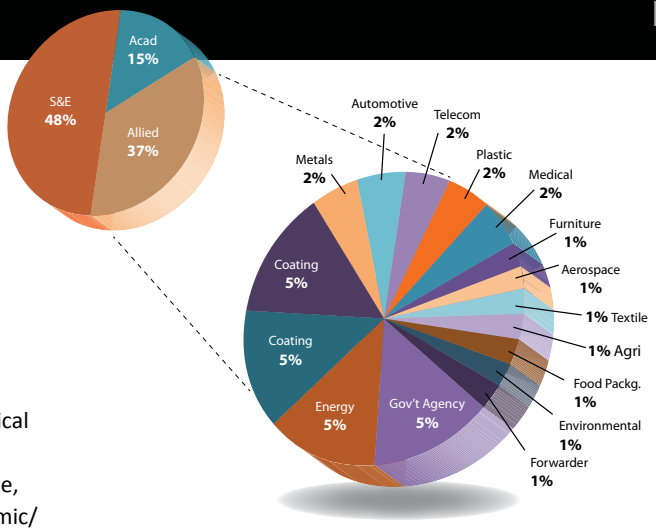
After all the infrastructure and hardware have been set in place, the ADMATEL team focused on the manpower requirement of the facility. The Human Resource Department implemented an intensive training program consisting of both local and foreign trainings and industry immersion.

Finally, the red carpet was rolled out with no less than President Benigno Simeon C. Aquino III as the guest of honor during the inauguration of ADMATEL on May 31, 2013.

"The ADMATEL is a testament to the talents of our Filipino engineers and scientists who worked hard to make this a reality," President Aquino said.

Indeed the ADMATEL facility proved that the Filipino can do it. Montejo further said that given the right environment and the needed technical and financial support especially from the national government, ADMATEL will deliver to the world what it ought to deliver. At the end of the line, DOST through the ADMATEL will deliver world class products and services that pass the highest standard of quality.

ADMATEL now provides



testing services that include the following: Compositional Analysis, Failure / Defect Analysis, High Resolution Imaging, Thermal Analysis and Sample Preparation & External Visual Inspection.

Reaping success

After two years since its inauguration, ADMATEL has something to brag about.

The three laboratories under its wing are now ISO 17025 certified. This year, the Thermal Analysis Laboratory and the Chemical and Metallurgical Laboratory demonstrated technical competence for their specified scope attested to by the Philippine Accreditation Bureau (PAB) of the Department of Trade and Industry.

According to PAB Officer-in-Charge Ernani M. Dionisio, the two laboratories manifested three marks of excellence namely: intact and well maintained technical infrastructure; proof of staff competence, experience and capability and effective quality management system.

The Thermal Analysis Laboratory provides testing services for miscellaneous materials like clay, ceramics, plastics and rubber and chemical tests of products to measure weight loss, temperature range, glass transition and endothermic/ exothermic peak temperature.

On the other hand, the Chemical and Metallurgical Laboratory is accredited to conduct nondestructive tests by visual inspection of metals and non-metals using optical microscopy and dimensional measurement.

Advantages

ADMATEL now gives local semiconductor and electronics companies a better alternative with service rates much lower than similar test facilities in Asia. These companies need not send their products anymore to Singapore or Japan to have them tested. With ADMATEL, there is a shorter turnaround period for testing their products like microchip sets tested within 24 hours compared with 5-6 days if tested outside of the Philippines.

President Benigno Simeon C. Aquino III (right at center) inspects the ADMATEL facility with DOST Secretary Mario G. Montejo and other DOST officials during the inauguration of the facility on May 31, 2013. (Text by Rodolfo P. de Guzman/Photo courtesy of www.gmanetwork.com).

Another advantage ADMATEL provided its end users is the cost of local testing for electronic chipsets at 40% less than abroad. Further, ADMATEL has discounted rates for local small and medium enterprises (SMEs) that is 20 percent lower than the regular rate. This enables MSMEs to maximize their capital resources and utilize them for other income generating activities.

As of May 2015, there were 113 clients availing of the ADMATEL facility, a 157 percent increase from just 44 clients when it started in 2013. About 44 percent of clients are returning customers signifying their trust and confidence in ADMATEL.

The future beyond

The future of ADMATEL beckons well as the demand for its services continues to grow- a tangible proof that ADMATEL is performing way above expectation.

As the DOST pushes the bar of excellence several notches higher every year, ADMATEL welcomes the new challenges with an optimistic philosophy that they can do it. Indeed, it was proven so many times that ADMATEL has what it take to be world class. Since its establishment, it has been serving a number of internally known companies that would not settle for mediocrity. The growing list of clients of ADMATEL is solid proof to its significant presence in the industry.

For its future plans, the ADMATEL has made several projects as to where it wants to be 10, 15, 20 years from now. The future for ADMATEL has just started and there is a lot of battles to fight in the near future; battles that have to be won if ADMATEL is to position itself at the forefront of the semiconductor and electronics testing industry.

Our Filipino scientists and engineers have the competency, the drive and the passion to cross the whole nine yards and they would not settle for anything less but excellence. It is in the blood of our highly capable scientists and engineers the DNA to excel. Even without genetic alterations, ADMATEL is expected to be one of the best testing facilities to reckon with now and in the future.

To serve enterprises better, DOST unifies the services of its laboratories in a way that clients can access the labs better and avail of important services that may not be physically available in their local lab but in other DOST labs across the nation. Rodolfo P. de Guzman explains in this article how it is done.

One lab, one direction

The Department of Science and Technology (DOST) is heading to One Direction! Yup, you heard it right, but this is not a queue for the famous boy band you probably know.

DOST, in its aim to provide efficient and fast delivery of science and technology services to the countryside, is going towards one direction. And one of the pitstops along the road is the establishment of a network of laboratories across the country, one that connects regional standards and testing laboratories (RSTL) under a single and unified program called One Lab.

One Lab is envisioned to provide an institutionalized network of existing test and laboratory services and offer open-web services platform to DOST RSTLs using the so-called Unified Laboratory Information Management System or ULIMS.

"The One Lab project is intended to harmonize and integrate DOST laboratory testing services, thus eliminating the need of the MSMEs (micro, small and medium enterprises) to shuttle from one laboratory to another to complete their laboratory testing requirements," said DOST Secretary Mario G. Montejo.

The One Lab project is very timely in the light of the forthcoming ASEAN integration where it is critical for local entrepreneurs to be in cadence with the world recognized product standards and quality in order to survive possible stiff competition from other ASEAN countries like Korea, Japan, Singapore, Malaysia, India and Thailand.

"With ASEAN economic integration just around the corner, products need to comply with various standards and certifications. Testing and meteorology facilities are needed for these," Montejo said.

One Lab too many?

So, can one lab be enough for the growing needs of our local industry and enterprise?

The answer is yes because the One Lab project of the DOST primarily focuses on fusing together--though operating independently]--the different RSTLs in the country by providing an efficient and effective system where one laboratory supports and complements the other.

At present, there are 21 DOST testing laboratories, 15 regional laboratories and six DOST research and development institutes cooperating under the One Lab project. As it matures, the One Lab project plans to include in its fast growing network the different state universities and colleges, and later on other public and private testing laboratories.

The creation of One Lab is spearheaded by DOST's Philippine Council for Industry, Energy and Emerging Technology Research and Development in cooperation with the RSTLs of DOST. The project leader of the One Lab project is Dr. Brenda L. Nazareth-Manzano, regional director of DOST Region 9.

The One Lab project earmarked a total funding of P 173 million with the first phase covering June 1 to December 31, 2014 with allotment amounting to P 42 million.

Under this system, DOST allows the networking of laboratory transactions to other DOST Regional Offices that are capable of doing specific testing not available in one particular region. This basically addresses the problem of MSMEs in transporting their products from one testing center or laboratory to another to complete the product testing requirements.

In implementing the One Lab model, the DOST will provide testing and analysis services particularly to its target audience, the MSMEs in the countryside, with faster turn-around time and lesser costs. This enables the enterprises to maximize their resources and contribute to increasing their net profits.

Moreover, the One Lab project will provide the needed boost to MSMEs to become globally competitive, with their products undergoing stringent quality standard tests recognized internationally.

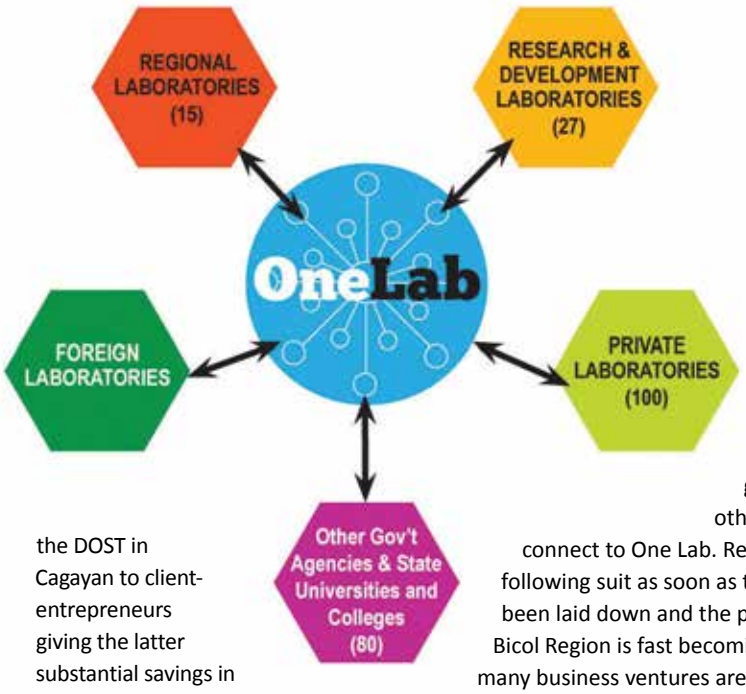
One Lab Davao

The initial phase of the One Lab project kicked off with the RSTL in Davao. This involved the installation of the ULIMS software, updating of laboratory data for samples and test requests, updating of data on the laboratory tests conducted and build up of customer data.

According to a briefer produced by DOST Region XI-Davao, its testing facility and laboratory has been certified PNS ISO/ IEC 17025: 2005 as an accredited testing laboratory for chemical, microbiological and calibration by the Philippine Accreditation Office.

Because of this certification, the Davao Regional testing facility can now offer microbiological and physico-chemical testing for food and water; conduct calibration services for length, mass and big and small volume; and accept shelf-life testing and sensory evaluation.

In the near future, the Davao facility is poised to offer test services to ensure Halal products manufactured and marketed in the region and in other countries conform to the prescribed standards dictated by the growing Halal market.



As proof of the success of the One Lab project in Davao region, the facility generated an income of P3.1 million for 2014 coming from fees for different laboratory tests requested by the local based MSMEs. This promising figure is around 11% increase from revenues amounting to P2.8 million in 2013.

One Lab Tuguegarao

Another addition to the One Lab project is the RSTL in Cagayan for the Northern Luzon corridor. It has a computerized system that identifies where MSMEs in Cagayan Valley are located so that they are matched with other laboratory testing offering services not available in their region, according to former Industrial Technology Development Institute (ITDI) Director Dr. Nuna E. Almanzor.

The RSTL in Cagayan region provides microbiological (sensitivity testing of plant extract and plant products against microogranisms), chemical (food and feed analysis), and metrology (calibrations) laboratory test services.

As part of the service of One Lab, it will provide the courier service needed to transport the products for testing in nearby regional laboratories. The results will then be released by the DOST in Cagayan to client-entrepreneurs giving the latter substantial savings in time and money.

"The move is consistent with our aim for cost-effective and appropriate technologies that enable small and medium enterprises to develop competitive products that meet world-class standards," said Dr. Carol M. Yorobe, DOST Undersecretary for Regional Operations.

According to a document attributed to DOST Secretary Mario G. Montejo, Dr. Yorobe said that the DOST has initially identified 10 priority agricultural commodities included for testing. These agricultural products are the following: banana, coconut, mango, rubber, rice and coffee for crops and shrimp, tilapia, mud crab and milk fish for aquaculture.

One Lab at a time

As the demand for more efficient processes in almost all sectors of industry and manufacturing increases, so will the network of laboratories under the One Lab project continue to grow.

The system is fast gaining ground with other RSTLs expected to connect to One Lab. Region 6 of the DOST is following suit as soon as the ground works have been laid down and the phase in completed. The Bicol Region is fast becoming industrialized and many business ventures are already sprouting like mushrooms particularly in urban centers like Legazpi and Naga.

On the other hand, the establishment of the ITDI Nano Lab that started operations in July 1, 2015 will further boost demand from enterprises requiring nanotechnology services for their products. The facility, housed at the Materials Science Division (MSD) of ITDI in Bicutan, Taguig City, has several high-tech equipment in its inventory.

For one, the Nano Lab has a high-resolution Field Emission Transmission Electron Microscope, the first equipment of its kind in the Philippines. FE-TEM has the ability to magnify materials up to 1.5 million times providing ultrahigh resolution imaging and is capable of rapid data acquisition.

There are 19 other high-level machines that MSD carries, including X-Ray Diffractometer, Atomic Force Microscope, Particle Surface Area Measurement, Dynamic Light Scattering Particle Size Analyzer, Twin Screw Extruder, Compression Machine and Contact Angle Measurement.

Soon, other DOST regional offices and RSTLs will be adopting the system of One Lab and will supply the needs of its MSMEs in their regions that will guarantee high quality standards for their home grown products.

In the end, the network of both public and private laboratories under One Lab will benefit all industries, small or big, and the gains of one will transcend to other businesses by increasing productivity and competitive advantage – a winning formula founded on creating diversity --of products and services-- in unity.

Secretary Mario G. Montejo has geared up DOST laboratories and facilities to help propel the Philippine Halal industry into the global market. The priming up is indeed timely as the opportunities have become bigger than ever. Framelia V. Anonas gives a glimpse of the priming up that DOST, especially DOST-XII, has done in its foray into the Halal industry.

Hello Halal

Priming up labs, facilities, network for a crack in the global Halal industry

"Undeniably, the Philippines is now faced with a great opportunity to tap into the global Halal economy," Sec. Montejo said during the Philippine Halal Assembly, International Conference and Expo held at the Manila Mariott Hotel in Pasay City in June this year.

According to studies, the trillion-dollar Halal industry involves food products that can be produced in the Mindanao area. The market itself is staggering- ASEAN alone is composed of 62 percent Muslim who are Halal products consumers. Add to this the non-Muslims who prefer Halal products for quality and health reasons.

Halal Assembly

To gather all partners and stakeholders to prep up, DOST-XII organized said Assembly with the theme "Synergizing Halal thru S&T. " Over 1,500 delegates from some 40 countries participated in the event.

"The theme speaks of our determination to collaborate with local and international partners in leveraging Science, Technology, and Innovation to bring about an internationally-accepted regulatory framework for a reliable and credible Philippine Halal Premium Brand," said Sec. Montejo.

Montejo lauded the efforts of Dir. Zenaida Laidan, Regional Director of DOST's Region XII for successfully organizing the event. "This event is another milestone in the efforts of the Philippine Government to develop our Halal industry."

Collaboration for Halal

The DOST is collaborating with the National Commission of Muslim Filiinos in priming up the country for the global Halal industry. The NCMF leads the promotion and development of the Philippine Halal Industry, and accredits Halal-certifying entities or bodies.

"We fully recognize and support the NCMF's critical role in harmonizing government efforts," acknowledged Montejo. "And we are fully committed to fulfil our part in this whole-of-government effort."

The partnership was formalized with the signing of a Memorandum of Agreement between DOST and NCMF during the Assembly.

Some of the exhibits during the Gen. Assembly
Photos by Ceajay N. Valerio.

Sec. Montejo and Sec. Yasmin Busran-Lao, chief executive officer of the National Commission of Muslim Filipinos, sign the MOA between DOST and NCMF on their commitment and responsibilities in supporting the development of the Philippine Halal industry. The NCMF is the Philippine government's agency mandated to promote and develop the Philippine Halal Industry and accredit Halal-certifying entities or bodies.

Discussing more about Halal and the industry's prospects in the Philippines are (from left): Lofti Ben Said, asst. general secretary of the Organization for Islamic Cooperation-Standards Metrology Institute for Islamic Countries or OIC-SMIIC in Turkey, Dir. Laidan, and Mr. Asad Sajjad, CEO of the Gulf Halal Center/Halal Development Council.

Gen. Assembly had a big audience, including many international participants.

Sec. Montejo with Dr. Mustafa Cevic, Grand Mufti of Bosnia and Herzegovina.

(Photos by Ceajay N. Valerio)

Lab, other facilities for Halal

The MOA between DOST and NCMF, represented by Sec. Montejo and NCMF Secretary Secretary Yasmin Busran-Lao, will establish the DOST OneLab as the NCMF's official laboratory. OneLab is a DOST flagship program that makes all testing services of all DOST laboratories accessible to the public

The Halal market requires safe and wholesome products, and food and non-food items produced in DOST laboratories can conform to Halal standards.

"We have been working tirelessly and continuously invested in the latest state-of-the-art equipment and facilities, as well as highly-qualified and sufficient technical manpower," revealed Sec. Montejo. "This ultimately enabled the DOST-XII laboratory to provide quality and safety assurance to locally-produced and manufactured Halal products."

DOST XII laboratory management system has been accredited according to the International Standardization Organization and International Electrotechnical Commission 17025:2005 standards, and is now duly certified under ISO 9001:2008 standards.

The DOST XII laboratory also has a pending application for accreditation with the Turkish Accreditation Agency TURKAK, the head of the accreditation committee of the Organization for Islamic Cooperation - Standards Metrology Institute for Islamic Countries or OIC-SMIIC. TURKAK is responsible for the implementation of the SMIIC accreditation standards globally.

Further, DOST's Food Innovation Centers (FIC) complements the OneLab. Currently established in three major cities in Luzon, Visayas, and Mindanao, FICs are equipped with DOST-developed food processing technology, such as the water retort, vacuum fryer, and spray dryer.

Aside from making these machines available to local enterprises, the FICs also enable food experts to develop and create new and innovative food products, enabling them to compete at the local and international market.

At the same time, food products produced in FICs can also be tested in Halal accredited laboratories, giving local products the opportunity to launch into the international Halal market. Such development will contribute to the increased market share of the global Halal economy.

More Filipinos are now building careers in the regions because of more opportunities opened to them via BPOs. Allan Mauro V. Marfal gives us an update on this sector that continues to grow and expected to bring in investments and more income to the country.

Stay. Have income. Build career.

Most Filipinos from provinces still flock to Metro Manila and other major urban areas in search for better career opportunities as their own hometowns have limited avenues for career growth. As a result, Metro Manila, being the hub of commercial and activities is plagued with urban problems like heavy traffic, pollution and space congestion, among others.

IT-BPM in the provinces

The Department of Science and Technology-Information and Communications Technology (DOST-ICT) Office believes that strengthening Information Technology-Business Process Management (IT-BPM) industry in the countryside could help resolve the limitations and issues experienced both by rural and urban areas.

For more than a decade now, the Philippines is still considered as a prime location by many IT-BPM investors around the world. This can be attributed to relatively low cost of business operations in the country and the skills of Filipino workers in terms of English language, technical, adaptability and creativity.

To maximize and spread the success of IT-BPM industry in all parts of the country, the ICT Office is pushing Next Wave Cities, a program that aims to develop areas in the countryside suitable for IT-BPM operations.

Through the said program, ICT Office recommends top places in the regions that are ideal for IT-BPM companies by providing industry investors extensive reports on the competency of the cities in the countryside, such as number of quality educational institutions, infrastructures, and crime rate.

"With these reports, IT-BPM investors can evaluate closely those cities that could give them higher chance of success," said Monchito Ibrahim, deputy executive director of ICT Office.

He also said that the establishment of Next Wave Cities is one way of pushing for a more robust ICT climate

beyond Metro Manila to generate more employment and business opportunities in rural areas.

"We want the local residents in the countryside to have decent employment that will support their needs, without leaving their families," Ibrahim pointed out.

Ibrahim also emphasized that there is a need to spread economic growth across other regions and cities while easing the congestion in NCR and in other high-density IT-BPM locations. Helping the IT-BPM industry move to graduate-rich but less IT-BPM–congested locations would result in a more balanced development across the country.

He noted the tremendous growth of the number of full-time IT-BPM employees in the provinces in 2014. From just more than 63,000 in 2010, it increased to more than 300,000 which is around 30 percent of the total population of the said industry as of August last year.

Other career opportunities for IT-BPM

Under the Next Wave Cities program, ICT Office also conducted road shows in the previous years to increase awareness and to promote other career opportunities and to dispel the misconception by many Filipinos that IT-BPM is only about call center services.

"We want to present to them various options (in the IT-BPM industry). If you are a nursing graduate and you are finding difficulties in searching for a job, particularly in other countries, you can use your expertise in healthcare information services. If you are an IT or multimedia arts graduate, you can maximize your creative skills in IT-BPM services such as animation, game and software development," Ibrahim explained. As of now, there are 385,000 are employed outside voice services.

As of August 2014, IT-BPM industry in the country has employed more than one million Filipinos and generated revenue of $18 billion. ICT Office is optimistic that establishing Next Wave Cities or IT-BPM hubs outside Metro Manila can help generate additional 141,000 employees by the end of 2015 alone. It only goes to show that these NWCs can be crucial in enabling and supporting industry growth.

Fast, transparent, efficient delivery of government services are the core of the Integrated Government Philippines (iGov) Project which is being implemented by the DOST's Information and Communications Technology Office. The following article discusses the steps being undertaken by ICT Office to achieve this goal.

Next generation cloud, iGov policies

For a more efficient, integrated government services

By DOST-INFORMATION AND COMMUNICATION TECHNOLOGY OFFICE

About iGovPhil Project

The Integrated Government Philippines (iGovPhil) Project is an essential element in the implementation of the e-Government Master Plan of 2013-2016 which aims to improve processes in government to provide better services to both citizens and businesses as well as promote public participation.

The P470-million iGovPhil Project, launched on 28 June 2012, is one of the latest projects that seek to achieve a higher level of e-governance or the application of Information and Communications Technology to rationalize government operations and improve the delivery of goods and services to the people.

With more and more agencies turning to cloud computing, the government is investing its resources in virtualization platform that will address the situation.

The Integrated Government Philippines (iGovPhil) Project is preparing to buy a complete cloud solution that adheres to its whole-of-government initiative. The next generation cloud solution will have a capacity to host 1,000 virtual machines.

At present, there are 33 government agencies in the GovCloud. Although initially intended to cater only to iGovPhil-developed applications,

the current setup of GovCloud is expected to scale up as the demand from agencies in need of cloud computing increases.

When the next generation cloud is already operational, it is expected that systems and services deployed in the cloud will enable more efficient operations in the government, which is what iGovPhil has envisioned since the beginning.

Operational standards, Web hosting, gov't email

Operations in government offices will likewise be more efficient as the policies on operational standards, web hosting, and email have been laid out for adoption by agencies.

Louis Napoleon C. Casambre, ICT Office executive director, signed the memorandum circulars governing Government Web Hosting Service (GWHS), Government-wide Email (GovMail), and Philippine eGovernment Interoperability Framework Part 2, otherwise known as the Information Interoperability Framework (IIF).

The GWHS, meanwhile "is the government's answer to the need for greater security and robustness in the Internet technologies it uses," said Casambre.

"The adoption of GovMail Services will rationalize government communications as well as improve the delivery of goods and services to the general public," according to Denis F. Villorente, the deputy executive director for e-Government.

The memorandum circular on GovMail is in line with the provision of Republic Act 9485 or the Anti-Red Tape Act of 2007, which requires the government to redesign their transaction systems and procedures to reduce bureaucratic red tape and processing time.

It also provides the basis for appropriate disciplinary actions on violations of the use of the GovMail service.

The circular on interoperability lays out the policies on information standards to be adopted by government agencies.

"The IIF will certainly enable the Philippine government to share and reuse information in a uniform and effective manner among its various agencies and instrumentalities as well as between the government and its stakeholders," said Villorente.

With the current innovations in R&D, the prognosis for the county's health sector is getting healthier and better. Health and medical R&D is an exciting cocktail of new technologies -- such as the use of ICT and mobile devices – and traditional knowledge, such as the use of endemic herbs in drug development. Maria Luisa S. Lumioan features here two developments in the health sector that we can show with pride in the global realm.

Health lifelines

New technology, endemic resources

Limited access to affordable healthcare services is just one of the country's most pressing problems. The Department of Science and Technology (DOST), mainly through the Philippine Council for Health Research and Development (PCHRD) is focusing its efforts in improving the delivery of healthcare services especially to the marginalized sectors of our society via research and development. The following are just two of the many DOST-initiated and supported programs on health.

RxBox: Optimizing access to healthcare

A person who feels discomfort in the chest wants to consult a doctor. He goes to the nearest health center which is a few kilometers away. When he arrives, there are other patients who are already lined up for consultation with the only doctor who services the entire municipality. When it is finally his turn, the doctor informs the patient that the center does not have the equipment for him to be properly diagnosed. The doctor refers him to the nearest hospital which is a good four to five hours away. The patient has to spend for fare, food, and other incidentals along the way and during his stay in the capital town, as well as for medical tests that will be required by the doctors there.

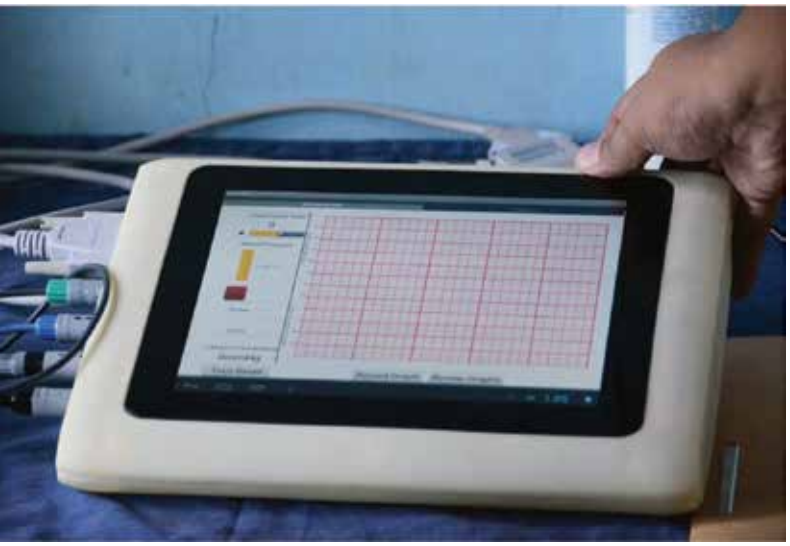
This scenario is true for many places in the country. But for at least 115 municipalities, some improvement in healthcare service is underway through the RxBox.

The RxBox—a medical device, electronic medical records system, and telemedicine device in-one is designed to provide better access to healthcare services in isolated and disadvantaged communities nationwide. A joint project of the Department of Science and Technology-Philippine Council for Health Research and Development (DOST-PCHRD) and the National Telehealth Center in University of the Philippines Manila, RxBox harnesses the power of Information and Communications Technology in health services.

As a medical device, the RxBox captures medical signals through built-in medical sensors which include the following:

Sec. Mario G. Montejo has his blood pressure checked by Dr. Winston dela Cruz using the RxBox during a recent visit to Marinduque. (Photos by Gerardo G. Palad)

1. Blood pressure monitor – measures the patient's blood pressure to detect cardiovascular (heart and blood vessels) problems especially hypertension, a disease which can also worsen other chronic lifestyle disease conditions.
2. Pulse oximeter –measures the level of oxygen in the patient's blood and can help detect lung and cardiovascular problems – leading causes of death among Filipinos.
3. Electrocardiogram (ECG) – monitors the heart's movement to pump blood throughout the body, helpful for those with acute and chronic heart problems,



The RxBox is equipped with medical sensors including a blood pressure monitor, pulse oximeter, electrocardiogram (ECG), fetal heart monitor, maternal tocometer and temperature sensor. (Photos by Gerardo G. Palad)

including pregnant mothers with cardiovascular problems.

4. Fetal heart monitor – measures the baby's heart rate while in the womb, helping detect fetal distress at critical times of the pregnancy and delivery.
5. Maternal tocometer – measures the strength of a mother's uterine contractions during labor and delivery, enabling early detection of distress to the mother and/or the baby.
6. Temperature sensor – measures a patient's body temperature. It can help detect fever, a common medical sign of infection and other disease conditions.

On the other hand, the electronic medical record (EMR) using the Community Health Information Tracking System or CHITS of the Department of Health embedded in the RxBox has made the work of healthcare workers more efficient and also resulted in less waiting time for patients.

Further, the device helps address the lack of specialists in the countryside since it has capability to connect the local doctors to clinical specialists in Philippine General Hospital and transmit the medical information needed via the internet.

Dr. Winston dela Cruz, a doctor to the barrio in Buenavista, Marinduque related how RxBox has helped them in their municipality: "They (the patients) don't have to go to Boac, Marinduque and pay Php 500 to have an ECG (electrocardiogram) done. It can be done here in Buenavista for free." He also mentioned that he had also used the RxBox in referring one of his patients to a specialist.

Meanwhile, in Sabtang, Batanes, RxBox is credited for saving the life of a young pregnant woman in 2013. With the help of the RxBox's built in medical devices, the health worker was able to determine a high-risk delivery and immediately ordered the patient to be transferred to a better facility thus saving the lives of both the mother and child.

While it does not promise to solve all the problems that plague the healthcare system in the country, the RxBox has clearly shown that it can help improve the situation of both the doctors and patients in geographically isolated and disadvantaged areas.

On top of the positive response from users and beneficiaries, RxBox has gained additional recognition for having been successfully nominated in the eHealth category of the World Summit on Information Society (WSIS) Prizes 2015.

The WSIS Project Prizes 2015 contest provides the platform to identify and showcase the success stories and models that could be easily replicated, to empower the community at the local level, to give the chance to everyone to participate in the contest and mainly to recognize the efforts of stakeholders for their added value to society and commitment towards achieving WSIS goals.

Tuklas Lunas Centers to drive drug discovery research

In our country where safe and effective medicines are inaccessible and unaffordable for some, having alternatives to costly imported medicine is a must.

Drug discovery and development is one of DOST-PCHRD's priority programs. Banking on our country's rich biodiversity and pool of experts to jumpstart its drug discovery initiatives, DOST-PCHRD has established the Tuklas Lunas Development Centers in various locations nationwide.

These Tuklas Lunas Centers have received equipment and research grants from DOST-PCHRD to improve their research capability in drug discovery with focus on the plant resources abundant in their localities.

So far, there are ten (10) TLDCs in the country namely: (1) Mariano Marcos State University (2) Visayas State University, (3) Mindanao State University-Iligan Institute of Technology, (4) Central Luzon State University (5) University of San Carlos, (6) Central Mindanao University, (7) Ateneo de Manila University, (8) University of the Philippines Los Baños, (9) Cagayan State University, and (10) University of Santo Tomas. Two more TLDCs will be established in 2016.

Apart from the goal of developing safe, effective and affordable products, the drug discovery programs of DOST-PCHRD are also geared to spurring the local medicinal industry and providing opportunities in rural areas.

STARBOOKS - the first science digital library in the Philippines - is lighting up more and more schools and libraries, thus helping keep to make the future bright for science education and appreciation in the country. Espie Angelica A. de Leon and Romelie Janelle Maranan file this report.

STARBOOKS helps equip every Juan for ASEAN integration 2015

Getting hold of science and technology (S&T) materials for learning has just been made easier, thanks to the Department of Science and Technology's (DOST) Science and Technology Academic and Research-Based Openly Operated Kiosk Station or STARBOOKS.

STARBOOKS ready for launching at the Capiz State University.

Developed by experts from DOST's Science and Technology Information Institute (STII), STARBOOKS is the first digital science library in the country - a one-stop S&T information source that works even without internet connection.

Dubbed as the "Library in a Box," STARBOOKS is a compendium of thousands of digitized S&T materials and resources from all over the world, available in text, video and audio formats placed in especially designed "pods" in a user-friendly interface.

First launched in 2011, STARBOOKS was created to establish greater interest in the field of S&T, lure more young Filipinos to take up S&T courses, and encourage great and curious minds, especially the youth, to develop new ideas.

Additional good thing about STARBOOKS is that it also contains livelihood videos --dubbed "Tamang DOSTkarte Livelihood Videos"for aspiring entrepreneurs-- and research materials for socio-economic development. This "library in a box" also enabled its users to access the Britannica Ultimate Encyclopedia 2013 Edition after an agreement with the encyclopedia giant.



DOST-STII staff during installation of STARBOOKS at the Capiz State University, in Roxas City, Capiz last April 2015.

ASEAN integration: STARBOOKS' role

One of the goals of the ASEAN Economic Community (AEC) is to improve the quality of education in each of their member states to be able to produce competent graduates and achieve its objective. The

High school students at the University of Perpetual Help System Dalta (UPHSD) in Pamplona, Las Piñas City try a newly installed STARBOOKS unit at their school library.

STII staff provide training to students and library personnel of UPHSD.

community aims to establish a globally integrated and competitive region with a single market and production base and equitable economic development by ensuring free flow of goods, services, investment, capital and skilled labor by 2015.

As the AEC is pushing to increase the demand for skilled workers, education becomes a critical factor for employment. According to the ASEAN Community 2015 report, if the quality of education is improved, ASEAN could become a regional production center driven by skills, innovation and creativity, resulting in likely economic growth. More jobs, business opportunities and innovations are expected during the ASEAN integration 2015,so more educational interventions need be introduced and embraced by every Filipino.

With its focus on S&T materials, STARBOOKS has become one of the government's strategies in addressing the country's problems in quality education, aside from the scholarships offered by DOST. S&T, with its multi-sectoral applications, is regarded as the nucleus for national development. Governments around the world pour resources and investments in S&T initiatives to help cement the growth of their industries and fast-track their country's economic development. Transfer of knowledge is a necessary part of the process for these S&T programs to take off and for industry players and stakeholders to take part in these initiatives.

This is where STARBOOKS plays a part.

DOST Assistant Secretary and STII Officer-in-Charge Director Raymund E. Liboro once said that the installation of STARBOOKS in several schools nationwide, including places where there is lack of resources and where people have not seen a computer, is like bringing the STII library to the far regions of the country.

Not only is STARBOOKS available in schools. The kiosks may also be found in LGUs, thus reaching a wider section of the Philippine population. STII also plans to install STARBOOKS in public libraries in every barangay and other public areas.

As of May 2015, a total of 635 STARBOOKS units have been deployed to different sites all over the country since its launching in 2011. Of this number, 273 units were deployed from January to May 2015, more than double the total of units deployed for the entire previous year. Of these 273 units, 155 were hard disks installed with STARBOOKS, delivered to Regions 6, 7 and 8, for the victims of typhoon Yolanda .

STARBOOKS is also one of four projects from all over the world chosen recently by the American Library Association (ALA) to receive the 2015 ALA Presidential Citation for Innovative International Library Projects on June 29, 2015 in San Francisco, USA. It was also presented last August 2014 to the World Library Congress 2014.

Additionally, STARBOOKS has established a collaboration with the Department of Education and National Library of the Philippines to beef up its content as well as to facilitate deployment in different regions and establishments. Said partnership will be launched on July 25, 2014 during the National Science and Technology Week.

STARBOOKS will also be available online soon and will be of great help to more people on a different platform.

We know fairies can be terrestrial or even sub-terrestrial, and fairy tales say fairies can help make wishes come true. Now we have the Philippine "fairy" to help us prepare ahead and keep ourselves safer during disasters. Joy M. Lazcano introduces "Diwata" in this article.

Diwata in the sky

A "fairy" to help in disaster preparedness

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

It was like a fairytale story when it hit the news sometime last year that the Philippines, after 20 years, is embarking on a space mission. The headlines declared that the country is not just sending satellite into space but is developing its own.

And yes, it's true, the Philippines in 2016 will send into orbit the first of the two locally developed microsatellites into space. The first microsatellite will be baptized as "Diwata" which means "fairy' in English.

Diwata is a 50-kilogram class satellite armed with complex, high resolution cameras that can capture the Earth's surface, even the minutest details, in high resolution images. Primarily, micro-satellites are cheaper to develop nowadays and can be done in the university environment. Further, it is as efficient as other regular size satellites despite its smaller size.

Dr. Joel Marciano Jr., project leader for Philippine Scientific Earth Observation Microsatellite Program or Phil-Microsat, says that with the miniaturization of electronics components, microsatellites have become the inevitable innovation in space technology today.

Diwata will be used primarily for weather monitoring, agriculture, and national security surveillance among others.

It will be orbiting the Earth for a year with an altitude of 400 kilometers from the ground. Its 550x550x350-millimeter body makes it cheaper to send it to space by launching it "piggyback" style. Diwata is set to pass the Philippine islands four times a day at six minutes per pass. It is estimated to capture 900 images per pass.

Satellite technology in the Philippines

It was in the 60s when former President Lyndon Johnson discussed with then President Ferdinand Marcos the possibility of a joint US-Philippine space program which will primarily be used for monitoring storm conditions in Asia. Pres. Marcos then announced the planned development of satellite technology in the country but the satellite shall be used foremost for military communication more than for civilian use.

But the development of the technology did not prosper as the country had relied on the US space capabilities when the latter had military presence in the country.

However, in 1996 or six years after US left its military facilities in the Philippines, the country acquired its first satellite named Palapa B-2P from Indonesia through the Mabuhay Philippines Satellite Corporation, a subsidiary of the Philippine Long Distance Telephone Corporation (PLDT). Palapa B-2P was renamed as "Mabuhay". The following year, PLDT launched its own, the Agila-2 satellite, which functions as a communication satellite similar to Mabuhay. Its ground station is located in Subic Space Center, in Subic Bay Freeport.

Sadly after 12 years, Agila-2 was decommissioned and was sold to Asia Broadcast Satellite in 2009 for P400 million. Since then, the Philippines had relied on foreign satellite services for all its communication and broadcasting needs.

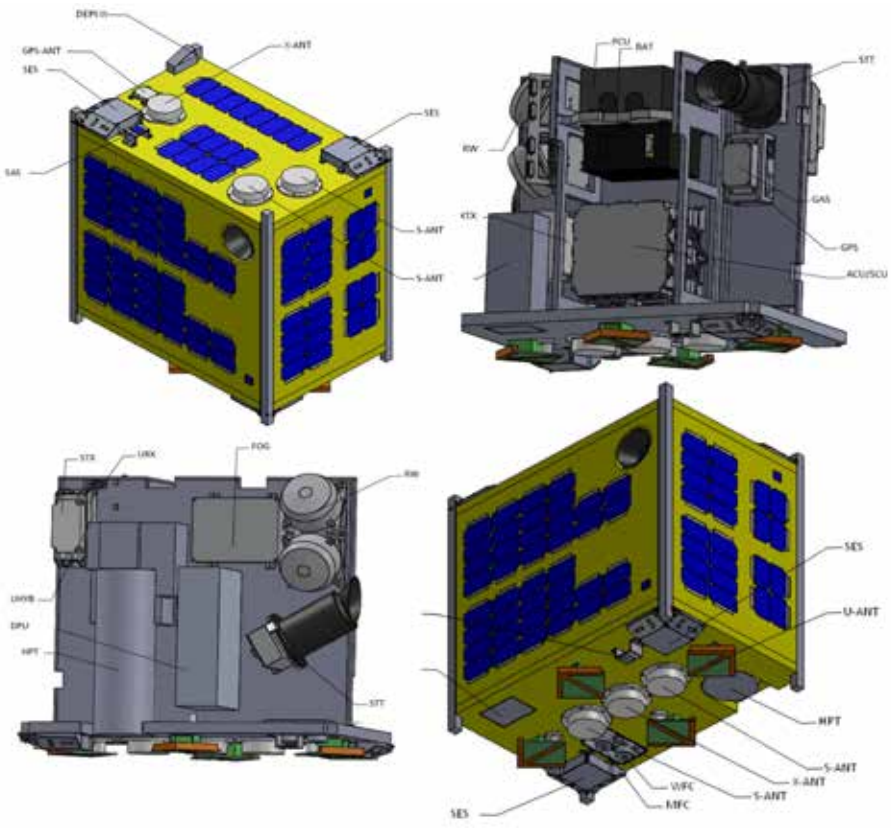
Satellite technology comes back

In the last seven years, the climate has changed dramatically the landscape of the country. Extreme heat during summer is experienced ranging from 39° - 42° and monsoon rains flooded Metro Manila and other provinces like mad.

These extreme weather disturbances prompted the Department of Science and Technology (DOST) to come up with cutting-edge weather forecasting technologies designed to enhance the country's weather forecasting using combination of satellite data and remote sensing technologies to develop multi-hazard modeling that can help mitigate the impacts of these natural calamities.

DOST used technologies such as the Light Detection and Ranging or LiDAR technology in mitigating the effects of hydrometeorological hazards. LiDAR is a remote sensing technology used by the Disaster Risk Exposure and Assessment for Mitigation or DOST-DREAM Project to measure ranges of the Earth through pulsated laser.

DOST-DREAM's component program, the Phil-LiDAR I, produced 3D flood and hazard maps using LiDAR images



Orthographic view of the Philippine Microsatellite. Image courtesy of Dr. Joel S. Marciano, EEE-UPD

obtained through LiDAR aerial surveys at the 18 major river basins. However, these LiDAR images are still in raw form and need to be processed for flood and other hazards modeling. To calibrate the processed spatial data, experts use satellite images taken from foreign sources.

During the media launch of DOST's microsatellite program, Dr. Enrico Paringit revealed that the country buys billions worth of satellite data from foreign source. However, Paringit explained that the quality of the satellite images are not guaranteed. "Sometimes these images are cloudy and you can't choose the images you want to acquire," said Paringit.

With the emergence of new uses for spatial data, the Philippine government is pushed to finally come up with its own space program through the Philippine Scientific Earth Observation Micro-Satellite Program (Phil-Microsat).

Under the Phil-Microsat, the Philippines is set to develop and send into space two microsatellites to help monitor weather patterns, agricultural conditions, marine behavior, and forest degradation.

DOST will also set its ground receiving station called Philippine Earth Data Resources Observation in Subic Bay Satellite Service Facility.

DOST Undersecretary for S&T Promotions and former Executive Director of the Philippine Council for Industry, Energy, and Emerging Technologies Research and Development Rowena Cristina Guevara described this endeavor as something that will transfer cutting-edge technology know-how to local engineers.

Under the microsatellite program, local engineers from the University of the Philippines-Diliman Electrical and Electronics Engineering Institute will be assisted by Japanese microsatellite experts from two Japanese universities of Tohoku and Hokkaido Universities. Part of the Philippine contingent's responsibility is to go through post-graduate studies on microsatellite development. The second microsatellite will be developed right inside UP and is now being developed.

Benefits of satellite technology

The Philippine microsatellites will be used in monitoring weather abnormalities. Data and images obtained from Diwata will be used in coming up with more accurate weather forecasts.

Moreover, the technology can also be used in monitoring crop conditions. The real-time vegetation index obtained through satellite data allows farmers to work on disproportioned crops and correct it at the early stage of growth. This makes agriculture industry more precise, sufficient, and profitable for the farmers.

Monitoring forest degradation and mining minerals through satellite can also help in the preservation of these critical areas.

Also, satellites can help in the monitoring of marine behavior and resources especially in studying sea warming which affects marine life.

NanoTech lab:
Pinoy's foray into the room at the bottom

By ADELIA M. GUEVARA
S&T Media Service, *DOST-ITDI*

Bicutan, Taguig City – "Making the invisible visible" and "There's plenty of room at the bottom" are just two of the many ways to describe nanoscience and its end product – nanotechnology.

Both colorful idioms of describing this "science of small" refer to the ways researchers manipulate materials in order to come up with a product – the traditional top-down method and the new common of bottom-up approach.

The top-down method produces cutting-edge forms by continuously chipping and removing pieces from a large material. It is similar to creating a sculpture out of a big stone. The method uses much energy, releases toxic chemicals, and generates much wastes.

On the other hand, the bottom-up approach is like playing with Lego. Pick and connect desired shapes one by one until one gets the desired form and function. The approach is achieved by molecular assembly techniques.

In 1959, Richard Feynman, an American theoretical physicist, described the process in which scientists of the future would be able to manipulate and control individual atoms of a molecule in a talk called "There´s Plenty of Room at the Bottom" referring to the molecular stage where nanoresearch begins.

Size does matter

Nano as a unit of measurement of length is comparable to similar units like meter. But, exactly how small is nano small?

Just divide a meter into one billion -- that is one nanometer. If you would like to play on the comic side of it, try converting an inch into nanometer and you will get 25,400,000 nanometers. Still finding it hard to imagine the quintessential size of a nano? A newspaper page is 100,000 nanometers thick.

Indeed, research exploits that focus on playing this field require very sophisticated equipment and tools. One such is STM or Scanning Tunneling Microscope which IBM invented in 1980 and used to observe the structure of a molecule.

The world, however owes to Norio Taniguchi, a professor of Tokyo University of Science, the earliest efforts on nanotechnology. He coined the term in 1974 to describe work

on semiconductor processes such as thin film deposition and ion beam milling on the order of a nanometer.

Today, nanotechnology research mainly consists of the process of separation, consolidation, and re-development of materials by one atom or one molecule.

A Pinoy NanoLab for Juan techies

Now there is already a laboratory right at the DOST to handle research and development at the nanoscale. The DOST NanoLab, launched on July 1 this year, was opened for public viewing so people can personally appreciate the look and feel of new nano products.

"At the Industrial Technology Development Institute (ITDI-DOST), our NanoLab is one of the youngest of units providing technical services to our local industries," Josefina R. Celorico, a supervising science research specialist at the Materials Science Division (MSD) recounted.

Introduced in 2012 by Science Secretary Mario Go Montejo, NanoLab is one of the very few public nanotechnology research laboratories in the country.

It offers to the public world-class equipment and devices meant to provide nanotechnology-related technical services. By developing materials with structure at the nanoscale, researchers can explore their unique optical, electronic, or mechanical properties.

NanoLab is currently housed at the MSD building where a high resolution field emission transmission electron microscope (FE-TEM) can be found, a first in the Philippines. FE-TEM can magnify materials up to 1.5 million times and is capable of rapid data acquisition. There are also 19 high-level machines and gadgets that MSD researchers use in their constant blending and re-development.

Churning the nanomill

Outside of NanoLab's aseptic walls, the curious may find a variety of sources of nanomaterials, often natural and functional.

Our biological systems boast of these. Foreign researchers may have in fact used any one of these in their studies -- wax crystals covering a lotus leaf, or spider and spider-mite silk.

For the really adventurous some may have even used butterfly wing scales, or the horny materials from birds and animals such as skin, claws, beaks, feathers, horns, and hair.

Even our own bones are all natural organic nanomaterials- all of them uniquely different but difficult to gather to form the critical volume. Explaining the material type chosen by NanoLab, Celorico said, "We decided to rely on what are abundant, unexploited, and natural organic or inorganic nanomaterials."

And so the stakes for the ordinary, dull, and everyday nanomaterials have been raised. Materials like nanoclay from the Bicol Region, cassava and corn starch from your local supplier, and zeolite from Pangasinan have taken the nanoresearch spotlight.

Likewise, Camarines Sur supplies silica or quartz. Further along, the list contains other materials such as natural rubber and halloysite from Mindanao. Calcium carbonate, a substance found in rocks, is also included, among others.

New butter from the mill

It took NanoLab researchers quite some time to bring to the selling table new and extraordinary products.

After the required separation, consolidation, and re-development, Celorico lists the following innovations which are certainly nothing but common.

Suitable for use to address waste management and environmental concerns is fiber membrane or filter to treat heavy metal contaminated water using chitosan, a material produced by treating shells of shrimp and shellfishes.

As well, industries powered by biogas digesters can profit from the use of nanofiber from zeolite to purify methane gas in methane-running pipelines; impure methane gas causes rapid pipe corrosion.

Construction firms working on skyways, on the other hand, may well wonder at the 20 to 60 percent increase in loading strength of high-performance concrete due to silica additives. Meanwhile, maintenance and cleaning of glass walls and metals of high-rise buildings can be low-cost and headache-free with the use of nano titanium dioxide.

To get value for money on infrastructure investments, the new metallic zinc nano silica composite coating for steel-based tools, part and components can improve corrosion resistance.

But for Dr. Marissa A. Paglicawan, supervising science research specialist, an environment champion is their team's 100 percent biodegradable food cutlery.

Made from corn starch (industrially termed as thermoplastic starch) and polylactic acid or PLA, cutleries are rendered degradable.

"Toxin migration tests conducted by the Packaging Technology Division of ITDI were negative," Paglicawan related.

She continued that, in lab tests, cutleries degraded from within three to four months at low colony of bacteria and fungi. Those buried in soil with high colony get degraded within a month.

A survey conducted by TESDA in 2014 counted the food services group in the country has a total of 1,093 establishments. It is not hard to imagine the volume of non-biodegradable cutleries and other food packaging materials that they use up and throw away. These, however, do not just end up in landfills.

At the larger scheme of things, the United Nations Joint Group of Experts on the Scientific Aspects of Marine Pollution estimated that land-based sources account for up to 80 percent of the world's marine pollution, and 60 to 95 percent of the waste are plastics debris.

According to *Claire Le Guern Lytle, a plastic pollution advocate,* global plastic consumption worldwide in 2008 was estimated at 260 million tons. Global Industry Analysts reported in 2012 that plastic consumption will reach 297.5 million tons by 2015.

With Paglicawan's research on biodegradable foamed food containers, food packaging films, and cutlery from corn and cassava starch, it is easy to picture a low- plastics use in the food industry – at least in the country.

Food Innovation Centers
fortify local food industry's stake at ASEAN

BY URDUJAH A. TEJADA
Regional Director, *DOST-II*

An upbeat future awaits the micro, small and medium enterprises in the food processing sector with the launch of the Department of Science and Technology's first two Regional Food Innovation Centers in the Philippines. DOST-II Regional Director Urdujah A. Tejada tells us how the Philippines can be quite competitive for ASEAN 2015.

DOST's Food Innovation Center is a one-stop shop- a food research and development center that seeks to address the perpetual challenges faced by the food processing sector.

The Center enables micro, small, and medium scale enterprises (MSMEs) in the food trade to access a range of facilities that would help ensure the safety and quality of food products and preserve shelf-life. These facilities include vacuum packaging machine for meat and dried fruit products; freeze dryer for dehydrating heat-sensitive food products; spray dryer for producing powder from liquid by rapid drying with hot gas; vacuum fryer for deep-frying process under vacuum pressure to produce food of low oil content, good texture, original color and flavor characteristics; vacuum evaporator to pre-concentrate food prior to drying or freezing; cabinet dryer for removing water from the foodstuff; and the water retort for sterilizing glass and PET or polyethylene therepthalate bottles.

Stake for ASEAN economic community

The development of MSMEs is one of the core components of the third pillar of ASEAN Economic Community. The establishment of FIC will therefore enable the MSMEs to be ready with ASEAN Integration.

Leading this nationwide initiative is DOST Secretary Mario G. Montejo who says that these state-of-the-art equipment will enable MSMEs to improve their products and increase their productivity. DOST targets to make this technology available to more MSMEs and processed food manufacturers all over the Philippines to make Filipino products more competitive in the global market.

The establishment of the FIC is part of DOST's innovation strategy. The strategy includes seeking partnership with various government agencies such as academic institutions and local government units to transform agriculture-based regions into food processing havens by enhancing the innovative capacities of MSMEs in the food trade and increase their competitiveness in local and export market.

Aside from food technology equipment, other services offered by the Center include the use of the research and testing laboratories, technology information system, packaging and labeling, consultancies and conduct of trainings.

DOST requires that the FIC be located in a state university and college or in a private higher educational institution to also enable faculty and students to access modern equipment to pursue research and development on food processing. This provides more opportunities for local food traders to learn and boost their connections.

More than an innovative complex, the FIC creates opportunities for MSMEs engaged in business startups, for companies requiring assistance on food packaging and labeling, and for researchers interested in the development of product standards.

Giving Filipinos a leg up in the food trade

The first-ever FIC in the country was launched in Davao City (Region XI) in May 2014. This was followed by another Center in Tuguegarao (Region II). These FICs currently

The FIC in Tuguegarao City, Cagayan.

The Malunggay Tea is one of the vacuum packed products developed by the FIC.

house locally developed food technology equipment designed to fit the needs of the local industry.

The Centers are stationed in the country's leading learning hubs for food and innovation and serves as a venue for universities to perform its various functions such as instruction, research, extension and production that will benefit students, faculty members, the community, enterprises and cooperatives.

The presence of an FIC in the regions has enabled Filipino entrepreneurs in the food industry to enjoy the availability of technology and services in food packaging, product development and product quality improvement.

Opportunity for R&D

In addition to providing modern facilities for food processing, the FIC also aims to build interest among MSMEs to undertake R&D, thereby giving them a leg up to further enhance their existing range of food products and develop new ones to increase competitiveness in local and export markets.

With the help of spray dryer equipment, the local tamarind fruit that is usually left unharvested is now gradually gaining popularity as a good stamina booster. A juice drink made from the same fruit is currently underway for development. Other products currently being developed include crispy vegetables (ampalaya, chili, squash, etc.) and vegetable and fruit powdered drinks (ampalaya, pomelo, calamansi).

The FIC is capable of developing as much as 2,000 new products every year. Creation of new products across hubs is in progress as a result of the research studies of students, faculty, and SMEs this year. Several manufacturing companies have already tied-up with and availed of the services available at FICs. As of today, the two FICs have developed over 100 new products within four months, with improved quality, cost, packaging and acceptability.

Making local food concepts global

The Centers comply with good manufacturing standards and boast of fabricated equipment from the Industrial Technology Development Institute as part of the department's High-Impact Technology Solutions program.

An initial budget of P56 million was allotted for equipment for the first seven FICs in 2014. This project is expected to significantly augment the sales generated by 40 percent for MSMEs due to much improved product quality and efficient processing materials. It is also expected to increase farmer's income to as much as 60 percent due to increased availability of market for fruits, vegetables, legumes, root crops and other commodities.

DOST hopes to establish FICs in five more regions in the country before the end of 2015, and in all 16 regions by the end 2016. FIC aspires to be the center of standard and excellence on food innovation and technology support services, transforming concepts into yields towards producing world class Filipino food products.

From poor farmer's son into skilled engineer

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

Joseph D. Gimang during the DOST Scholars Forum in Cebu City.

"Tonight, I would like to look back to where I came from and look forward to where I am going. I am a son of a farmer and my parents are very hard-working," the son of a sugarcane farmer began as he told his story in a DOST Scholars Forum recently.

His name is Joseph D. Gimang from Lapu Lapu City, Cebu. His parents never reached high school; his father completed Grade 2 while his mother graduated elementary school. The youngest in a family of nine, he felt it most that the times were hard.

Yet, despite these, young Joseph had his hopes and dreams alive. As a boy, he wanted to follow his dad's footsteps and be a farmer too. Later on, he harbored dreams of becoming a lawyer. All that changed in high school when he realized he wanted to be a doctor. But then the teenaged Joseph loved building things and so he finally decided to be an engineer.

"The only treasure we can leave you is education," his parents' words rang in his heart every day. And indeed, he pinned his hopes on education. And education it was that spurred him on to what he has become today.

Now, Joseph spoke to the crowd inside the Elena O. Diola Memorial Hall of the DOST Region VII office in Lahug, Cebu City as a former DOST scholar turned successful electronic hardware design and printed circuit board development engineer.

In said forum where he spoke, DOST scholars from Region VII gathered to listen to life and career tips from past scholars who are now successful and productive professionals.

One of them was Joseph. Only, he still does not consider himself successful yet, despite his challenging and already fruitful journey.

"Career-wise I'm still beginning my journey," he stated. "Let's say, I will consider myself successful in this field when I've already invented something that helps a lot of people."

His story

As he spoke from his heart, Joseph elicited oohs and aahs, and a lot of laughs and applause from his listeners.

As a high school student, he claimed, he was serious about taking the DOST scholarship.

"I submitted the requirements at the very last minute. I took the exam and there were hundreds of us in our school who took the exam. By God's grace, I passed," he recounted. "I believe that was an answered prayer because He knows that I cannot go to school without the scholarship."

He enrolled in communication engineering at the Technological University of the Philippines-Visayas where the tuition fee was only P600 pesos per term, with three terms in a year. With his scholarship, Joseph even got to support his older brother's schooling.

After graduation, Joseph had a string of jobs – one of which was at a multinational company in Lapu-Lapu City where he worked as a hardware design engineer. It was here that he fell in love with research and development (R&D) work and its many challenges.

Joseph at the Power Measurements, Inc. (PMI) office in Lapu Lapu.

Photos by Gerardo Palad, S&T Media Service, DOST-STII

Now, the farmer's son is working at Power Measurements, Inc. (PMI) – a high technology R&D and product assembly startup also in Lapu-Lapu City which he helped establish with some former colleagues.

PMI delivers total solutions in field instrumentations and electricity power metering systems. Its product development team boasts of core competencies in electronic/electrical hardware design and validation engineering, software development and validation engineering, mechanical design engineering, systems level test and validation and product support.

"Working there for just a few months has lifted my skills in electronic design and circuit design," he claimed.

PMI's founder, CEO and president, Dr. William H. Hardy, serves as chair of several American National Standards Institute committees in the field.

"He loves to work here because he saw a lot of potential in Filipino engineers," Joseph disclosed about his boss.

Pleased with DOST scholars

The very first person hired by PMI when it was established in 2014 was a DOST scholar. "He's one of my very best people," Hardy beamed as he revealed this fact with a tone that spoke of pride.

He continued, "Before that, I went over to San Carlos University, told the technical engineering department head that we would like to get a student or graduate student to work part time. I needed someone to help with one particular piece of software-related technology. He said, 'Oh, I have a very bright master's degree student who I think would be perfect for that.' Well, he is very bright and he's also a DOST graduate fellow."

When summer came, PMI hosted seven summer interns, two of whom were DOST scholars arranged by the DOST Regional Office to work for PMI. "I've been very impressed by the quality of the students," Hardy said. "I think it's a great program."

At present, PMI has three former DOST scholars onboard, including Joseph. The other two are Junior Software Engineers Mark Anthony Cabilo and Jedidiah Tamayo who both work part time. Joseph, on the other hand, works full time.

"They're bright, they're inquisitive, they want to learn, and they aren't afraid to tackle hard problems and figure out how to solve them. That's what you need when you're doing the kind of work we do. You probably always start out not knowing how to solve the problem, but you have to have a bright, inquisitive mind and really dig in, you know, go to the Internet, go to the books, figure out how to do it and get it done. They learn things very fast. That's what you need," said Hardy about the three.

His advice to scholars

Joseph himself agrees with his boss.

"We Filipinos have deep, great potential. We are just not overconfident but shy," Joseph lamented. "We are shy to show it, that we have the potential."

The young speaker who captured the attention of his audience with his sense of humor encouraged the youngsters to give back to the country after they step out of the academe and carve their own careers. He emphasized that one way of giving back is to develop a technology – a product that is not just beneficial, but originally Filipino-made.

"We have the tendency to be proud," he reminded the scholars. "But no matter what you achieve, no matter what you become someday, always consider yourself a student. Because we will keep learning, so much learning."

Learning is at the center of Joseph's plans, as he wants to learn as much as he can in order to invent something that will help a lot of people.

"Remember, intelligence without diligence is nothing," he stressed to the young members of the audience.

A hearty applause came easy as Joseph finished his talk. No doubt, his audience was impressed. But for sure, not only were the students impressed; they were inspired as well, by his all too familiar story of a kid who was poor, yet dreamt big, studied hard, kept on learning, and never quit, until great opportunities came along.

One of these opportunities was a college education which came in the form of a scholarship by DOST.

How ICT breaks barriers, bridges gaps for differently-abled people

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

BREAKING BARRIERS OF BLINDNESS | ICT has helped Rhea Althea Guntalilib reconnect to the world after she lost her eyesight because of a rare retinal disease. She currently works as a software development analyst in Smart.

Breakthroughs in the field of information and communications technology (ICT) have definitely changed the way we live. We can communicate instantaneously with our loved ones who live abroad, study or work from the comforts of our home, do business with anyone from any part of the world, shop or pay bills online, and connect to anyone via social networking, among others. But for some people, the impact of ICT in their lives is life-changing.

A case in point is Rhea Althea Guntalilibwho suffered from a rare retinal disease that led to her blindness.

"Eighteen years old pa lang ako noon. Sinusubukan ko pa lang buuin ang buhay ko; inaabot ang mga pangarap ko. Then in a flash, pakiramdam ko biglang binawi lahat sa akin (I was just 18 then. I was just starting to build my life and chase my dreams. Then in a flash, I felt everything was snatched away from me)", Guntalilib shared in the recently held Juan Konek Launch organized by the Department of Science and Technology-Information Communications Technology Office (DOST-ICT Office) in Pulilan, Bulacan.

But through her family's support, she was able to connect to various organizations for the visually impaired to help her to continue chasing her dreams and building her life.

The turning point of her life was when she came across ATRIEV (Adaptive Technology for Rehabilitation, Integration, and Empowerment of the Visually Impaired), a computer school for the blind based in Quezon City. The school uses software applications such as screen reader to allow the blind to use the computer.

"Dahil sa ICT natuto po ulit akong mangarap, at di naman po ako nabigo (Because of ICT, I learned to dream again, and I did not fail)", she said.

She was later granted a full scholarship at the Informatics International College and graduated with flying colors. Since 2012, she has been working in Smart Communications as a software development analyst.

"It (technology) gave me back the hope and self confidence that I lost when I lost my sight. In a way, this reconnected me to the world."

She faced another challenge when recently, her trusted household help did not return from a supposed vacation. As she works in the city and her family stays in the province, she was worried that she may have to quit her job. It is a good thing that Smart allowed her to work from home until such time she finds another household help. ICT saved her once again.

Guntalilib believes that technology will help end discrimination completely. "Since we already have the means to bridge the gap, we can better assert and exercise our right to education and our right to equal opportunity,"`she explained.

Mentoring program to level up entreps in MIMAROPA

By MAE ANGELICA F. FABITO,
KATHY LYNN A. BOLOTAOLO
S&T Media Service, *DOST-MIMAROPA*

Dr. Carl E. Balita, entrepreneurship guru, media personality, and mentor-consultant to the MSME Mentoring Program initiated by DOST-MIMAROPA, conducts training on operations management for the MSMEs at the Provincial Science and Technology Center-Romblon

(From right to left) DOST-MIMAROPA Regional Director Dr. Ma. Josefina P. Abilay, together with Romblon Gov. Eduardo C. Firmalo, entrepreneurship advocate and TV and radio personality Dr. Carl E. Balita, and PSTC-Romblon Provincial Director Marcelina V. Servañez, kick-start the "MSME Mentoring" in the province on March 11, 2015.

THE MICRO-, small-, and medium-scaled enterprises—also called MSMEs—are the backbone of our country's economy. MSMEs constitute 99.6 percent of all businesses nationwide, and account for 53 percent of the total employment in the private sector, as well as 61 percent of the Philippine exporting firms. MSMEs serve a critical role in generating employment, earning foreign exchange, stimulating development and driving inclusive growth in the countryside.

The Department of Science and Technology-MIMAROPA Region (DOST-MIMAROPA), seeking to address the need for a vibrant and healthy technopreneurial ecosystem that will enable the region's MSMEs to seize opportunities and successfully meet business challenges—whether locally, or internationally via the ASEAN integration—initiated the MSME Mentoring Program.

Mentoring refers to a partnership between a less experienced individual (mentee) and a more experienced individual (mentor). The mentoring scheme adopted by DOST-MIMAROPA involves specialized mentors, composed of a mentor-consultant and mentor-trainors who are tapped to work with the MSMEs.

A Provincial Mentoring Network composed of DOST, Departments of Labor and Employment, Trade and Industry, and Agriculture, as well as local government units, Provincial Planning and Development Office, and State Universities and Colleges-based mentors, and "MSME Champions"—those who are one step ahead of the others—was organized to complement the specialized mentors.

Early this year, the orientation and organizational meeting with the Provincial Mentoring Network were conducted in preparation for the mentoring program. The meeting included activities such as Memorandum of Agreement signing, orientation on the mentoring program, presentation of mentoring guidelines, pledge of commitment of the provincial mentoring network, and setting of criteria for the selection of mentors and mentees.

On March 11, 2015, the DOST-MIMAROPA kick-started the Mentoring Program in the province of Romblon in cooperation with its Provincial Government. Thirty-five MSMEs participated in the activity. This number was derived from the results of the Mentoring Needs Assessment tool administered to 60 MSMEs from municipalities in Tablas and Romblon Islands, with priority on government-assisted enterprises. The assessment tool was developed by renowned entrepreneurship guru and media personality Dr. Carl E. Balita who also serves as the mentor-consultant assigned for the whole duration of the program.

The mentoring program lasts for 12 months. The mentor-consultant will provide six mentoring sessions focused on pre-identified individual needs of the selected mentees. For other technical and non-technical concerns, mentor-trainers will provide three special sessions delving on selected relevant technical areas, two of which were already facilitated. Each session will have discussions, consultations, mentoring and training, and firm-based business clinic operations on a one-time basis. The remaining mentoring sessions will be handled by the local mentoring team which is currently undergoing capability building by attending mentoring sessions, small business coaching and trainings conducted by the mentor-trainors.

The initial move was a meeting of the group mentor and the mentees through a focal group discussion to identify common mentoring needs. This has been the basis in the structuring—and possible restructuring—of key areas to be discussed such as goal planning, business strategy, human resources solutions, and market analysis. Topics derived from the common concerns of all entrepreneurs such as marketing and promotion, accounting and financial management, business structure and organization, and personnel and staffing concerns are also catered in the program. The course has its complete range of technical services, but is not limited to what was set upon it as it is primarily spurred by the entrepreneurs' needs.

Through the mentoring program, DOST-MIMAROPA envisions a vibrant and dynamic economy in Romblon run by properly mentored and geared up MSMEs.

DOST-MIMAROPA Regional Director Dr. Ma. Josefina P. Abilay welcomes the participants at the kick-start of the MSME Mentoring Program at the Provincial Science and Technology Center-Romblon.

PSTC-Romblon conducts the "Orientation and Organizational Meeting of the Regional and Provincial Mentoring Networks" in preparation for the mentoring program.

Mentor-consultant Dr. Carl Balita visits a firm to provide advice and lend insights to the entrepreneur for the improvement of the enterprise.

Health info in a tablet docks in MIMAROPA

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

A HEALTH information support system in a tablet has arrived in the islands of MIMAROPA (Mindoro, Marinduque, Romblon, Palawan) to help local government officials make informed decisions about health-related concerns in their localities.

The ceremonial turn-over of the tablets dubbed as eHATID (eHealthTABLET for Informed Decision-making) was one of the highlights of the recent Science Nation Tour: Agham na Ramdam MIMAROPA leg, a roadshow of the Department of Science and Technology which coincided with the 51st Regional Development Council Meeting held in Bellaroca Island Resort, Marinduque.

The project, called eHATID LGU, is funded by the DOST's Philippine Council for Health Research and Development (PCHRD) in partnership with Ateneo de Manila University. It aims to support LGUs with the use of an Electronic Medical Record mobile application that generates reports for the Philippine Health Insurance Corporation and Department of Health. Furthermore, the said tablet ensures a more efficient patient record system that will save time and effort for both health workers and patients.

According to project leader Dr. Dennis Batangan of Ateneo de Manila University, eHATID LGU features a dashboard for real-time visualization through charts and graphs of the aggregated patient information in the locality for the decision making of LGUs. It also features a mayor-doctor communication system as a channel for decision-making and sharing of health information.

Dr. Batangan added that in the case of unavailable or intermittent internet connection, a health worker can use the tablet offline to input patient records and then synch the encoded information later to a government cloud facility.

The island-province of Marinduque was the first in the region to fully adopt the eHATID LGU project which targets to deploy the tablet to 450 municipal and city LGUs by the end of 2015.

The project is a spin-off from the eHealth Tablet which was piloted in ten sites two years ago. The current eHATID integrates the PhilHealth's outpatient benefit package and claims system in the software.

Scholarships offer ray of hope for Yolanda-stricken Warays

By RAMIL T. UY
S&T Media Service, *DOST-VIII*

DOST Secretary Mario G. Montejo addresses the scholars, posing to them the challenge to be innovative and ready for the 2015 ASEAN Integration.

THE KILLER strength of super typhoon Yolanda (Haiyan) that hit Region VIII on November 8, 2013, was not enough to extinguish the fiery spirit of the Warays. The whole world wept but the Warays' fiery spirit impassioned them to stand and pick up the broken pieces left by the typhoon and start building their lives all over again.

Packing unprecedented power, Yolanda made landfall five times while crossing over the central Philippine islands, decimating entire regions on the wayside.Particularly affected were many of the poorest communities whose already difficult circumstances were even further compromised by the storm.

The most affected sector was education, since almost all education institutions suffered heavy damage of their classrooms and facilities. High school classes were gravely affected due to these damages.

Hopelessness came across the faces of high school graduating students and their parents. Lurking in their minds were the questions *"Makaka-kolehiyo pa ba kami? Hain daw la kami makuha pan gastos kay waray naman kalubihan ngan mauuma?"* (Can we still go to college? Where can we get money for our education when there is no more coconut and a farm to till?)

Even the DOST Region VIII office begged off and asked for the postponement of the conduct of the Junior Level Science Scholarship Program, a scholarship designed for incoming junior college students, as there were no venues to conduct the scholarship exams, and no regular transportation and electricity in most areas.

Revival of hope

A ray of hope lit up the Warays' hearts however, months after the Yolanda disaster. By this time, the situation had become almost normal. In July 2014, DOST VIII started a caravan on Republic Act 7687 or the DOST Scholarship Program which targets poor but talented and deserving students, as well as the Merit Scholarship Program, a socialized scholarship for students whose socio-economic income is above the prescribed socio-economic indicator from the RA 7687. Both programs areimplemented by DOST through one of its agencies, the Science Education Institute.

The DOST VIII scholarship unit moved around the whole region to campaign for the program and reached as far as those island municipalities and other areas not frequented by other government agencies.

As a result, 5,765 students from the region took the exams, representing 40 percent of the national takers who numbered 14,500. The turn-out of applicants for the scholarship in 2014 generated a 51 percent increase from 2013 which had 3,806 takers for the same scholarship program - a tremendous increase from previous numbers generated by the program. This can be attributed to the opportunity and hope that the program offered these high school students who thought they did not have any other options for college. Surprisingly, even those municipalities that did not have any applicants for quite a long time produced their share of takers for the scholarship.

Ramil Uy, senior science research specialist from DOST-VIII, orients students on the different scholarship programs of the Department.

The results of the September 20, 2014 Undergraduate Scholarship Examination showed that Region VIII had 319 passers - a 36 percent increase from the previous year which generated 234 passers. The new set of scholars filled up the absence of scholars in other municipalities in the region.

Now, Region VIII, composed of 6 provinces, 143 municipalities and 7 cities, has at least one scholar per municipality - the only region with such accomplishment as far as undergraduate scholarship implementation is concerned, specifically, RA 7687.

This is truly a huge leap for a region seriously devastated by a typhoon of unparalleled ferocity less than two years ago. It may have taken away the Warays' hopes as they sensed a specter of hopelessness in the horizon. But with the turnout of the DOST scholarship examinations, their hearts are whole again and their hopes are rekindled.

DOST Siquijor braces up support to LGUs

By ENGR. REINHOLD JEKABING
S&T Media Service, *DOST-Siquijor*

(From L-R) PSTD Engr. Mario E. de la Peña signs the MOA with Mayor Dean S. Villa of Larena and Mr. Clifford Quilicot, Municipal Tourism Officer Designate as witness.

THE DEPARTMENT of Science and Technology here in Siquijor through its Provincial Science and Technology Director Engr. Mario de la Peña strengthened its support to LGUs through various collaborations and projects.

e-SIGNS for Larena

Recently, the PST Center turned over a check worth P 645,000 for the Grant-in-Aid Project entitled "Electronic – Services on Innovation, Government, Nature and Society (PROJECT e-SIGNS) for the Local Government of Larena".

The funding is part of the Memorandum of Agreement (MOA) on the former's Grant-in-Aid Project to the municipality which aims to maximize the use of the Larena Tourism Center. DOST Provincial Director de la Peña, Mayor Dean S. Villa and Municipal Tourism Officer Designate Clifford Quilicot signed the MOA.

The project aims to procure and install Digital Signage and Juan Time Clock on the Larena Tourism Center.

Upon installation of the Digital Signage, Larena can tap this device to disseminate powerful and useful information. Specifically, the project is expected to promote tourism by posting Siquijor Tourism information, location maps, conference proceedings and educational programs; to deliver advisories pertaining to public service announcements, weather alerts, disaster mitigation, health and wellness, disease prevention, traffic situation and product price monitoring; to aide in maintaining peace and order by posting images of wanted criminals and crime prevention tips; and to generate additional revenue by enticing advertisers to post their ads at a reasonable price thru the e-SIGNS.

PSTD Engr. Mario de la Peña (center, in chequered polo) hands over the check worth P645,000 to Mayor Villa of LGU Larena. Also present in the picture are Vice-Mayor Calibo (3rd from right), Municipal Budget Officer Quilicot (4th from right), Municipal Treasurer (3rd from left) and SB members

On the other hand, the installation of Juan Time clock at the Larena Tourism Center will serve as Philippine Standard Time (PhST) reference for people to ensure that their time pieces are synchronized with PhST.

Mayor Villa and Municipal Tourism Officer Designate Quilicot expressed gratitude to DOST for the GIA project and expressed full support and cooperation on the project implementation.

STARBOOKS to SPSHS and Maria town

Meanwhile, Science and Technology Academic Research-based Openly Operated Kiosk Station (STARBOOKS) units, developed by DOST-Science and Technology Information Institute, were turned over to the Siquijor Provincial Science High School (SPSHS) and the local government unit of Maria in two separate events.

One turnover was held at the Office of the Municipal Mayor of Maria and witnessed by DOST Siquijor personnel and LGU Maria employees. Mayor Meynard Asok together with First Lady Roslyn Asok and MDRRMO Joel Tingcang received the digital library from DOST Siquijor.

The STARBOOKS turnover was part of the S&T Social and Environmental Concerns which aims to promote and operate STARBOOKS in the municipality. Students from Maria Central Elementary School and Candaping National High School are expected to benefit from the wealth of S&T materials that they can use for research as well as for livelihood opportunities.

Meanwhile, DOST Siquijor through a Grant-in-Aid program, also turned over

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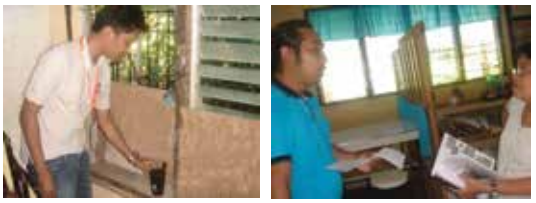
From left to right: SSP-I Angie Manginsay of Candaping NHS, SST-I Estergelina T. Laranjo of Basac NHS and SST-III Darlene T. Patagoc of Enrique Villanueva NHS receive the package containing educational comics and OL kits from DOST.



Eliezer Serra of DOST 7 (right) and Engr. Reinhold JekAbing of DOST Siquijor PSTC (left) conducted monitoring and evaluation of OL Trap implementation on the 12 sentinel schools in the province.

DOST Siquijor intensifies campaign against dengue

By ENGR. REINHOLD JEKABING
S&T Media Service, *DOST-Siquijor*

THE DEPARTMENT of Science and Technology in Siquijor, in coordination with DOST-VII Regional Office, distributed Ovicidal-larvicidal (OL) Kits and related reading materials in a bid to intensify its efforts in educating the public about the DOST-developed OL trap and how to prevent dengue.

DOST-Siquijor set off its campaign at the Basac National High School, Candaping National High School, and Enrique Villanueva National High School.

Each school received "Ang OL Trap sa Brgy. Madengue", an educational comics intended to inform the public, especially high school students, about the OL Traps and how it can help prevent dengue. Also included in the package are OL pellets, lawanit strips, and containers.

The OL pellets, if used accordingly, works by attracting female *Aedes aegypti* mosquitoes to lay eggs on the lawanit and in the solution. Six days after the OL solution has been exposed as laying site, the dead mosquito eggs and larvae are dispensed by throwing the solution on dry areas during sunny days or by putting boiling water during rainy days. In this process, they are killed even before they mature as dengue-carrying adult mosquitoes.

During the turnover of the package, OL school coordinators expressed their support on the on-going study regarding the efficacy of OL traps.

In an interview with Provincial Science and Technology Director Engr. Mario E. de la Peña, he said that the schools were identified by the regional office and were assigned corresponding number of items based on imposed criteria. "So far, the respondent-schools have been very cooperative," he added.

Further, as part of DOST's intensified efforts in dengue prevention by mosquito prevention, representatives from DOST recently conducted rounds of monitoring and evaluation on the implementation of the OL trap programs in 12 different sentinel schools in Siquijor province.

The activity was part of DOST's effort to step up its program implementation and to re-orient the OL coordinators of sentinel schools on the 2015 School-Based OL Trap Roll-Out Program.

The program was supposed to end last December 2014 but is extended until the December this year due to promising results.

In line with this, new supplies of ovicidal-larvicidal (OL) pellets, lawanit strips, and containers will be turned over to respective schools.

On the progress of the program in their respective schools, some OL coordinators expressed minor concerns that resulted in inefficient implementation. Some OL coordinators said that they had stopped receiving supplies of OL kits. Others were unable to send report through text but were later solved upon learning that the codes used in the reporting via SMS were inappropriate. They were however advised to send their reports as soon as possible using the recommended codes.

Asked on how beneficial OL Trap program is to their school, Mrs. Ellie May G. Bulahan of Enrique Villanueva Central Elementary School expressed her gratitude to the program. She said that she attributed the decline of the number of mosquitoes to the affectiveness of the OL traps. She further said that the school used to have cases of dengue before the School-Based OL Trap Roll-Out was implemented.

She said that all of her co-teachers willingly cooperated in the program implementation. She further said that students and teachers saw the benefit, that is why all are participating.

To increase efficiency in gathering the information, some OL coordinators organized the so-called "Lamok Patrollers" – group of students who are tasked to determine the number of OL traps lost and those which indicated positive or negative to possible larvae of the Aedes mosquitoes.

In the province, six public elementary and high schools of the different municipalities were identified as sentinel schools, namely Enrique Villanueva National High School, Enrique Villanueva Central Elementary School, Basac High School, Larena Central Elementary School, Campalanas National High School, Simacolong Elementary School, Candaping National High School, Maria Central Elementary School, Catulayan National High School, San Juan Central Elementary School, Cang-alwang National High School, and Candanay Elementary School.

Lubao workers upgrade their bamboo finishing skills via DOST training

By MAYBELL MARIELLA A. AMADOR
S&T Media Service, *DOST-FPRDI*

FPRDI's Eduardo M. Atienza lectures and demonstrates to Lubao furniture and handicraft shop workers the basic concepts and proper way of bamboo finishing.

Some of the participants show off their finished products.

FURNITURE AND handicraft workers at a Lubao, Pampanga-based bamboo-making hub have honed their skillset in bamboo finishing and thus look forward to better saleability of their products.

The workers credit this new opportunity to the Department of Science and Technology - Forest Products Research and Development Institute (DOST-FPRDI) that recently conducted a three-day training on bamboo finishing at the Sta. Catalina Bamboo Negosyo Village, a spin-off project of the Province of Pampanga through DTI's "industry cluster approach."

The village has been producing engineered bamboo products like armchairs, e-wall panels, ceiling tiles, floor tiles, wall decors, and novelty items since its launch in 2010.

Spearheaded by the local government of Lubao and assisted by the DOST regional and local offices, the training taught participants the proper way of applying finishes to various kinds of bamboo products.

"The participants learned about the step-by-step process of bamboo finishing –from surface preparation until the application of coatings and finishes," said FPRDI's Forester Zenaida Reyes.

Laila Tulabut of the Municipal Agriculturist Office and the bamboo project coordinator explains, "The local government of Lubao is very supportive of the bamboo village project as this will boost the town's small and medium enterprises, create livelihood opportunities and alleviate poverty. Also, our Mayor, Hon. Mylyn P. Cayabyab, encourages us to come up with quality products that will showcase Lubao artisans' craftsmanship and serve as souvenirs for our visitors."

The FPRDI training has certainly helped to cement this seal of quality and craftsmanship.

Expressing gratitude for the knowledge and skills imparted to workers at the village, Tulabut stated that the training course will certainly help them improve the quality of their products and eventually increase their saleability in the market.

To know more about bamboo finishing and other FPRDI technologies, contact FPRDI at (+6349)536-2586/ 536-2360/536-2377 or email us at info@fprdi.dost.gov.ph.

DOST helps light up Ilocos Norte

By RIZALINA K. ARARAL & MAYBEL MARIELLE A. AMADOR
S&T Media Service, *DOST-FPRDI*

Introduced by the Department of Science and Technology - Forest Products Research and Development Institute (DOST-FPRDI), this method called high pressure sap displacement treats newly-felled trees for electric poles in a shorter period. The technique hastens the treatment period and prolongs the service life of power and telecommunication poles. (S&T Media Service)

THE PROVINCE of Ilocos Norte is among the "brightest" in the Philippines, as every barangay now enjoys the benefits of electricity.

Playing a key role in the province's rural electrification program is a forestry technology called high pressure sap displacement that is used in treating electric poles on-site.

Developed by the Department of Science and Technology's Forest Products Research and Development Institute (DOST-FPRDI), this method prolongs the service life of power and telecommunication poles. It is also used in treating bamboo poles for fishpens, poles for bridges, wharves and mining operations, and pole-type building materials.

The technology entails using a water-borne preservative capped from one end of the pole that forces the sap of a freshly felled tree out of the wood.

According to the local electric company, the method shortens the waiting period for treating the poles, hastening the connection to the province's power grid.

According to the cooperative's OIC-General Manager Felino Herbert P. Agdigos, the technology has generated for INEC at least Php 22 million in savings for pole treatment.

DOST Siquijor...from page 56

STARBOOKS to SPSHS represented by School Principal Anita Dinolan and Mr. Roland Tuangco.

With the turnover of two additional STARBOOKS units to recipients, Siquijor province now has a total number of eight units installed at DOST Siquijor PSTC, Siquijor, and the towns of San Juan and Enrique Villanueva, plus two more units at the Siquijor State College library.

Assistance to San Juan

Moreover, a funding worth P613,000 was turned over recently to the local government of San Juan as Grant-In-Aid Program. Hon. Wilfredo Q. Capundag Jr., municipal mayor, received the check personally from Provincial Director de la Peña.

The fund will be used for the construction of a butterfly sanctuary, establishment of STARBOOKS at the Tourism Office, construction of a water treatment facility at the Capilay Spring Park, installation of solar-operated lamp posts at the park, and establishment of Wi-fi connectivity at the park and nearby locations.

Disaster preparedness project

The local government unit of Lazi and PSTC-Siquijor also inked a MOA recently on disaster risk reduction management (DRRM) Grant-in-Aid project. The signing of the MOA sealed the assistance on the GIA Project of DOST with Lazi entitled Enhancing the Disaster Prevention and Mitigation Capability of LGU-Lazi Disaster Risk Reduction and Management Office.

Specifically, the project will provide technology support for the establishment of an information system for the MDRRM office; develop a computerized database on local hazards, vulnerabilities, risks, and other DRRM-related matters; organize and facilitate data gathering for proper identification, assessment, reduction, and management of disaster risks; support the orientation/training of local DRRM officers and personnel on appropriate disaster prevention and mitigation strategies, tools and techniques; and develop the institutional linkages and mechanisms needed.

Hon. Orpheus Fua, municipal mayor and Hon. Earl Aljas MDRRMO designate signed the MOA on behalf of LGU Lazi while PSTD de la Peña represented DOST Siquijor PSTC.

DOST funds community empowerment program for Southern Leyte university

By ENGR. RAMIL T. UY
S&T Media Service, *DOST VIII*

Dir. Edgardo M. Esperancilla discussing CEST to SLSU-Bontoc faculty.

SLSU-Bontoc Adm. Mabel Calva (center) receives the check amounting to P0.4M for the project Strengthening and Monitoring of CEST Program in Region VIII. (L-R); Dr. Dominador Clavejo, PSTD Southern Leyte, Dir. Edgardo M. Esperancilla and Engr. Ramil T. Uy, DOST VIII CEST Coordinator.

BONTOC, SOUTHERN Leyte – Department of Science and Technology – VIII Regional Director Edgar Esperancilla recently turned over P400,000 funding to Southern Leyte State University – Bontoc Campus for the project "Strengthening and Monitoring of Community Empowerment through Science and Technology (CEST) Program in Region 8". Said project was conceptualized by SLSU-Bontoc and DOST 8 in the last quarter of CY 2014.

Developed by the DOST, the CEST program aims to provide livelihood and alleviate poverty in communities. Campus Administator Madel Calva received the funding.

The program's implementation in Region 8 entails provision and transfer of technology-based livelihood projects to six identified new CEST communities. CEST will also facilitate the transfer of know-how and technologies to beneficiaries along the areas of education, health and nutrition, water and sanitation, disaster risk reduction, and industry development or livelihood.

The program will focus on communities located in Jaro, Leyte; Basey, Samar; Salcedo, Eastern Samar; and Sogod, Southern Leyte.

A firm believer and one of the prime movers of the program, Dir. Esperancilla encouraged SLSU-Bontoc Campus to include in their extension function the transfer of SLSU's developed technologies to communities. Empowerment is highly needed in said communities, he said, and livelihood opportunities provide sound option to alleviate poverty.

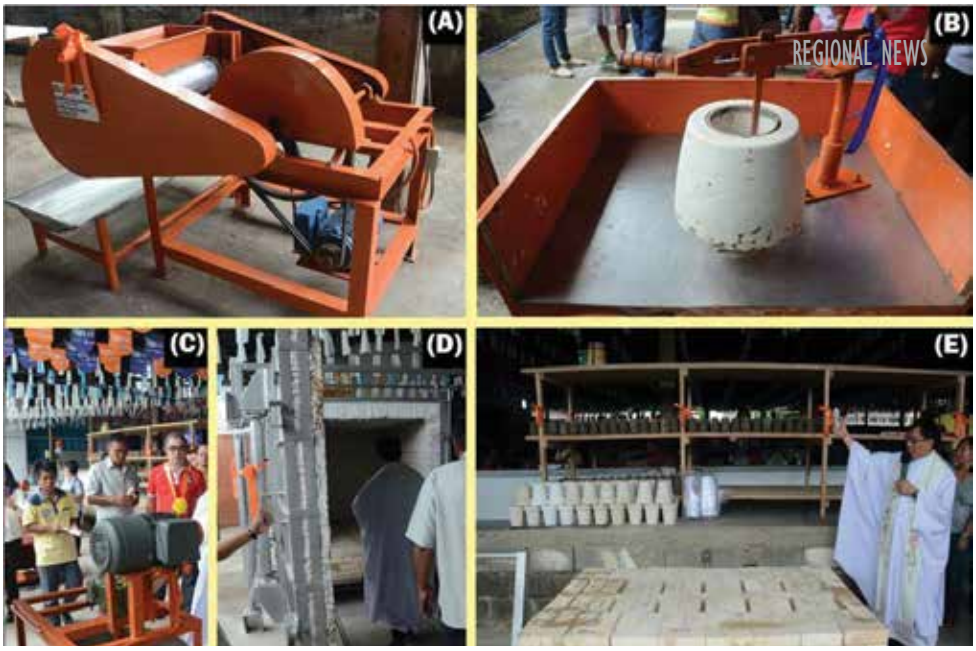
Esperancilla cited the case of Bobon, Northern Samar, a pioneering CEST beneficiary municipality that empowered a women's group through the provision of a Common Service Facility (CSF) for the processing of their local food products called "piñato" and "pinangat." The facility's establishment was made possible by the collaboration among DOST VIII, the local government, and the University of Eastern Philippines (UEP) Research office consultancy group. The said women's group is now competitive and generating income that augments their respective families' revenue.

Other components such as water and sanitation, health and nutrition, and others, have also been implemented by the municipality in coordination with DOST VIII and the UEP.

Esperancilla emphasized that the higher education institution plays a vital role in empowering communities because it can conduct research, access information, develop new products, educate a community, and access sources of funds.

He stressed that this call for the participation of different higher education institutions and its external campuses in the CEST implementation in the region has already been agreed and approved by the different SCU Presidents in one of the Board of Regents Meeting.

Calva on the other hand, accepted the challenge of Dir. Esperancilla and stressed that the early release of the project funds and the presence of the director himself in the fund turnover showed the seriousness and the commitment of DOST VIII to hasten the CEST implementation program in the municipality of Bontoc and its nearby municipalities, and to identify other possible areas where CEST could be best implemented.



INNOVATION SYSTEM SUPPORT. **(A)** Roll kneader, **(B)** Jiggering machine, **(C)** Clay mixer, **(D)** Shutter Ceramic kiln (2 cubic meters), and **(E)** Ceramic slabs (Photos by Gerardo G. Palad, S&T Media Service, DOST-STII)

Water filtration technology bolsters Isabela ceramics

By HAZIEL MAY C. NATORILLA
S&T Media Service, *DOST-STII*

STA. MARIA, Isabela -- A ceramic water filter facility outfitted with high-performing equipment from the Department of Science and Technology (DOST)'s program for small businesses, dubbed SETUP or Small Enterprise Technology Upgrading Program, was blessed recently during the Cagayan Valley leg of DOST's "Science Nation: Agham na Ramdam" nationwide roadshow.

SETUP offers assistance to micro, small and medium enterprises via funding, technology upgrade, and manpower training, to improve their production and product quality, and be at par with other small businesses in the regional and national levels.

In 2013, the facility, which has been operating since 1977 (initially as a ceramic facility), acquired important machines via SETUP. Under the program, the DOST regional office's testing laboratory may also be used by pottery enterprises and others for water and soil analysis.

SETUP provided assistance through the initiative of then newly elected Mayor Gilbert Masigan and the Sta. Maria Potters Association. This initiative was part of the campaign to secure clean drinking water for communities with less access to water.

Ceramic production goes high-tech

The ceramics used in the facility was found to have antimicrobial property, so it was upgraded to become a water filter facility. Likewise, the facility's processes used to be done by hand, and these are now mechanized through the SETUP assistance.

The candle-type filter pot produced at the facility has two parts: a ceramic pot where untreated water passes, and a container that stores treated water.

"Our water filters are made from clay or ceramics, but we used advanced technology to produce them," said DOST Secretary Mario G. Montejo during the blessing rites officiated by Rev. Carlos Villanueva.

During production, clay is mixed with water and other combustible materials. Water impurities like suspended particles are sifted because these cannot pass through the clay pores. Meanwhile, water that flows through the spaces in between the slightly-porous clay reacts with trapped silver ions. Silver ions deactivate and kill the pathogens in the water, including coliform bacteria and protozoa.

Better days for industry

The abundant red clay in the area has long served as raw material for ceramic and pottery production. From a neighborhood of around 30 households that made ceramics without electricity, there are now four barangays and around five families working for the pottery. The families in the area have practically grown up with this local industry that has been running in the community since the pre-war era.

The Sta. Maria Potters Association is among this bevy of potter makers in Isabela. Prior to SETUP intervention, association members faced negative net income due to low market demand for the clay pot products for ornamental purposes.

With the SETUP-assisted ceramic water filter facility however, things are expected to start looking up for them. Not only will the potters have a higher quality product that can fetch higher revenues; they will also be able to save on costs. Air drying, as opposed to oven drying, saves up on fuel and other costs, and reduces industrial pollution as well.

"At dumating na ang pagkakataon na itong ating ceramic ay mabibigyan ng isang booster, isang tulong na siya siguro ang mag-papalago sa kanya in the future (And now the time has come for our ceramic pottery to be given a booster which may allow the industry to grow and thrive in the coming years)," said Sta. Maria Vice Mayor Geoffrey T. Formoso.

For inquiries about SETUP and setting up a ceramic water filter facility, please contact or visit your nearest DOST regional office.

Ever heard of seiche?

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

NOW HERE is another hazard to remember especially if you are living near a lake.

It's called seiche, pronounced as saysh. It is a large wave similar to a tsunami but occurs only in enclosed bodies of water such as a lake, bay, or gulf. It is triggered by the strong shaking from an earthquake or volcanic eruption.

Joan Salcedo, supervising science research specialist from the Department of Science and Technology's Philippine Institute of Volcanology and Seismology (DOST-PHIVOLCS), introduced this term during a recent earthquake awareness seminar in Muntinlupa organized by the DOST-National Capital Region.

According to Salcedo, Muntinlupa should not be aware of storm surges alone, but of seiches as well, since Laguna Bay is just on its eastern side.

A seiche occurs during a meteorological or seismic event which causes water to oscillate or move back and forth, producing large waves. For a body of water to produce this phenomenon, it should be partially constrained to allow the formation of standing waves. In some instances, seiches can also be caused by a tsunami.

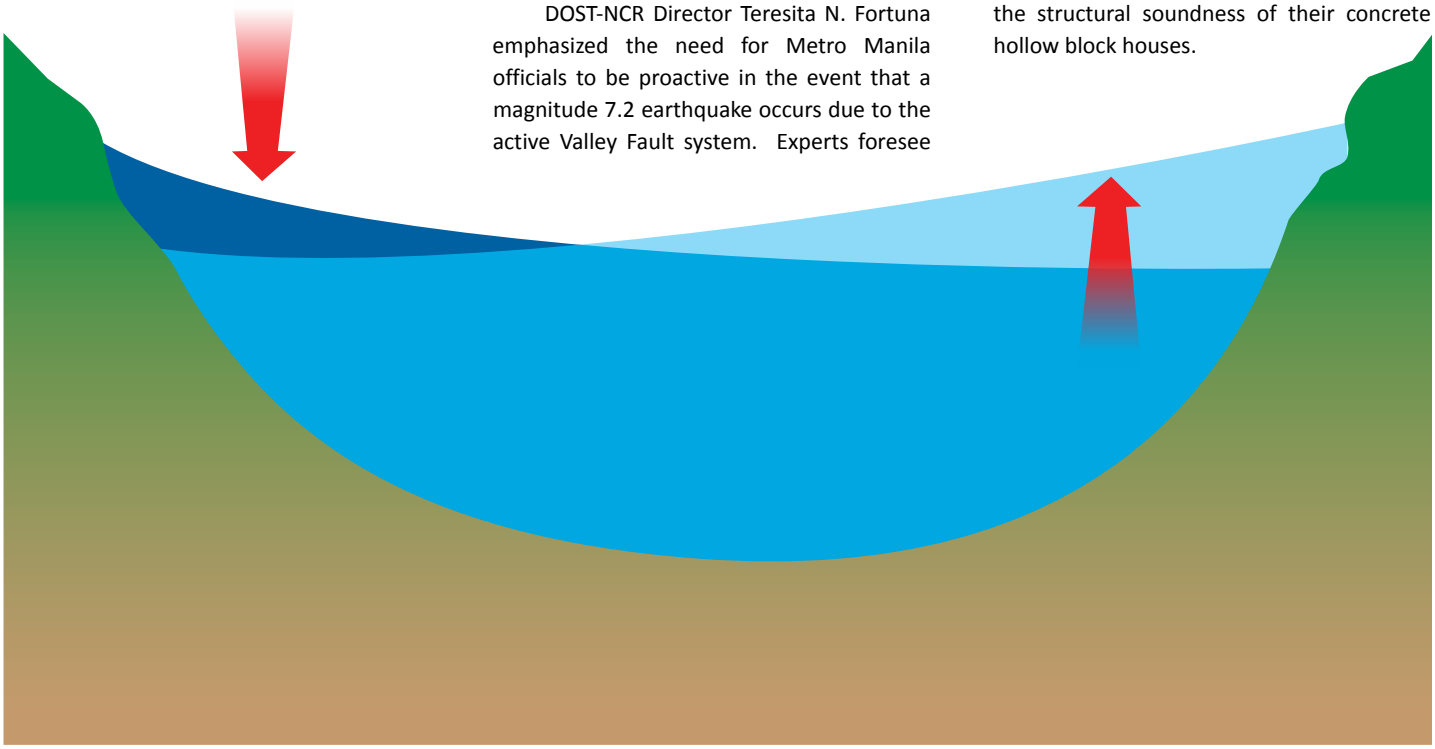
DOST-NCR Director Teresita N. Fortuna emphasized the need for Metro Manila officials to be proactive in the event that a magnitude 7.2 earthquake occurs due to the active Valley Fault system. Experts foresee problems in accessibility and mobility as major bridges and national roads shall be impassable due to collapse and sprawled debris, cutting the metropolis off from the rest of the provinces, said Fortuna.

According to the book "Philippine Tsunamis and Seiches (1589-2012)", a compilation of tsunami and seiche events that occurred in the country from 1589 to 2012, the country has had six seiche incidents caused by volcanic eruptions and 16 others caused by an earthquake.

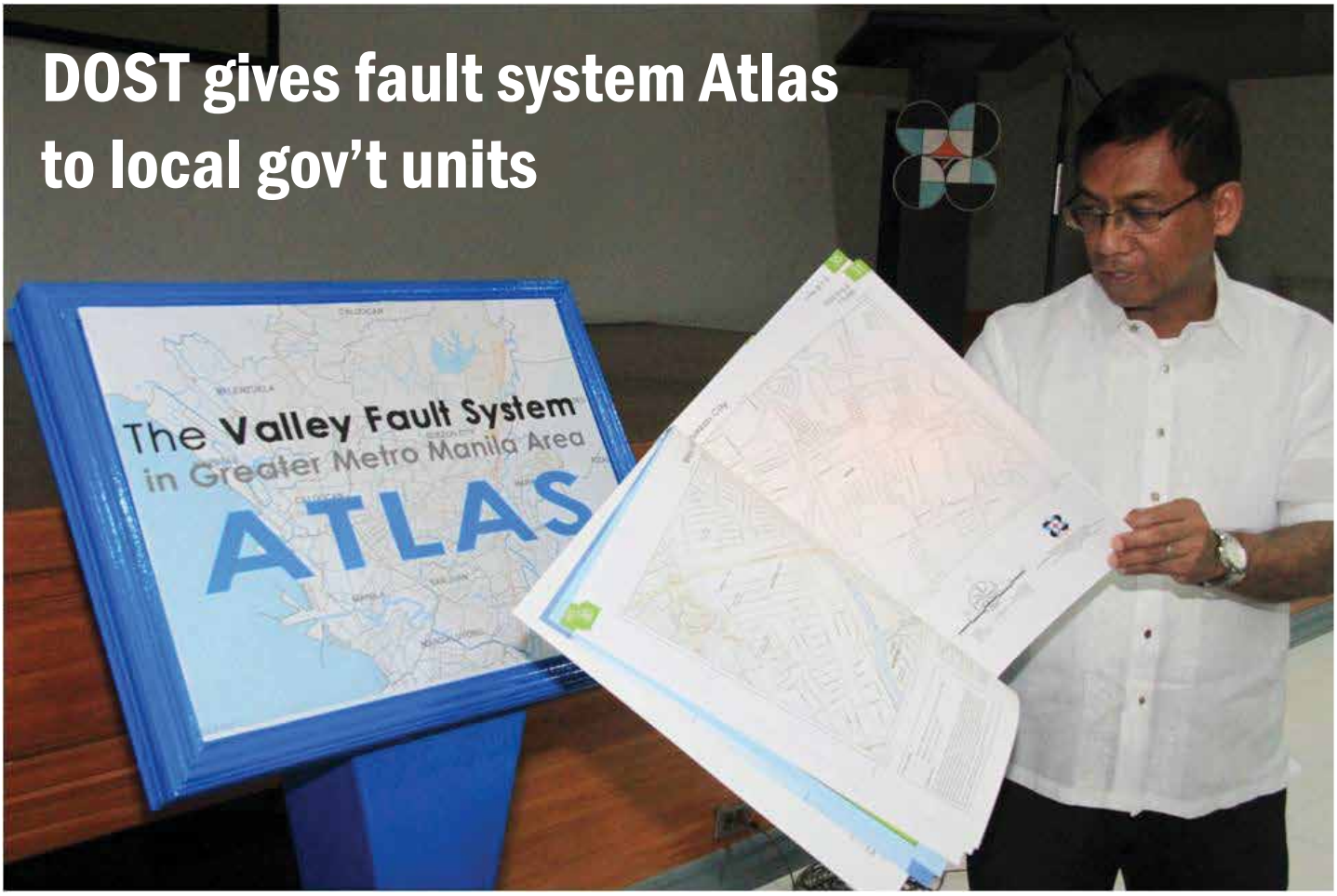
Meanwhile, Muntinlupa Mayor Jaime Fresnedi shared that his administration is encouraging constituents to do similar information and education campaigns on disaster preparedness as the threat of a big catastrophe lurks.

"Sabi nga ng mga taga PHIVOLCS, hinog na ang West Valley Fault kaya naman dapat tayong maghanda (As PHIVOLCS officials said, the West Valley Fault may be triggered anytime and so we must be prepared)," Fresnedi emphasized.

During the seminar, PHIVOLCS also introduced its "How Safe is my House?" checklist for earthquake safety (downloadable in www.phivolcs.dost.gov.ph) for residents to make initial examinations on the structural soundness of their concrete hollow block houses.



DOST gives fault system Atlas to local gov't units



THE DEPARTMENT of Science and Technology- Philippine Institute of Volcanology and Seismology (PHIVOLCS) launched and distributed the Valley Fault System (VFS) Atlas to local government officials recently at the PHIVOLCS office in Diliman, Quezon City.

The Valley Fault System (VFS) Atlas is a handbook of large scale maps showing in detail areas traversed by the Valley Fault System, an active fault system in the Greater Metro Manila Area (GMMA). The fault system has two fault traces: the 10 km long East Valley Fault in Rizal and the 100 km long West Valley Fault that runs through different cities and towns in Bulacan, Rizal, Metro Manila, Cavite and Laguna. The West Valley Fault can generate a large earthquake which poses threat to people's lives, buildings, infrastructure, and livelihood.

According to Dr. Renato U. Solidum, Jr., director of DOST-PHIVOLCS, the Valley Fault System Atlas was conceptualized as a handy reference for everyone to serve as a guide in making sure that areas traversed by active faults are avoided. Such sites include houses and structures that are considered in various mitigation and response actions.

Response actions, according to Dr. Solidum, enhance the safety and resilience of communities to strong earthquake events.

The atlas shows the actual fault line that runs through a few cities in the metro. Thus, by knowing where the active fault lies "is the key to people's awareness and preparedness for earthquakes, appropriate land use, contingency planning for disaster response, and design of houses, buildings and infrastructures."

The importance of the VFS Atlas to local governments is stressed by National Disaster Risk Reduction and Management Council (NDRRMC) Executive Director Undersecretary Alexander P. Pama who said, "Through the publication of this Atlas, which specifies the position and location of the Valley Fault System in GMMA, we have taken a leap forward in reducing risk from earthquake."

"This tool will help us closer to achieving the goal of our national DRRM effort to build safer, disaster-resilient and climate-change adaptive communities throughout the country," Pama added.

In 2012, PHIVOLCS revisited the VFS as one of the component activities of the AusAID-funded GMMA Ready Project under the United Nations Development Programme (UNDP) and implemented by member agencies of the National Disaster Risk Reduction and Management Council. The mapping efforts discovered new fault traces and validated previously mapped traces of the VFS. (S&T Media Service)

Abaca: Weaving more opportunities into farmers' lives

By SHARIE AL-FAIHA A. ABUSTAN
S&T Media Service, *DOST-PCAARRD*

ABACA KNOWN worldwide as Manila Hemp, is an economically important crop indigenous to the Philippines. It is the lifeblood of more than 200,000 farming families from 56 abaca growing provinces in the country.

Abaca is also a top export commodity of the country with an average of US$80 million annual export earnings. It is of high demand in the global trade as raw material for cordage, textile, handicrafts, and specialty papers. Just recently, it found its niche in the automobile industry as the "strongest natural fiber material" for dashboards and car interiors.

Supplying 85 percent of the total world abaca fiber production, the Philippines prides itself as the world's top producer of abaca fiber. Despite its dominance in the world market, however, the country is confronted by the reality that abaca remains a poor man's crop. The small farmers get meager income from abaca production, and this eventually forces them to shift to other crops.

Confronted by these concerns, coupled with many industry problems, abaca production in the country declined in the past years. As Ecuador tails behind in terms of production and with Indonesia's aggressive abaca reforestation program, the Philippine abaca industry is put in a precarious situation. If not addressed, the Philippines might lose its leadership in the abaca global scene in the future.

The government, through the Department of Science and Technology-Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (DOST-PCAARRD) and its partners, is pushing several S&T interventions to address poor technology adoption of farmers, lack of high-yielding and virus-resistant planting materials, and prevalence of pest and diseases pressures – most notorious of which is the abaca bunchy top virus (ABTV).

One of the major initiatives on abaca is the development and promotion of improved abaca varieties to strengthen commercial production.

After many years of research and field tests, researchers from the University of the Philippines Los Baños (UPLB) led by Dr. Antonio G. Lalusin were able to develop high yielding and ABTV-resistant abaca hybrids. These hybrids are more vigorous, could produce a yield of 1.56 mt/ha/yr, and give 20-30 percent higher fiber recovery than traditional varieties.

Since traditional varieties are very susceptible to the dreaded ABTV disease, the new resistant hybrid abaca of UPLB is considered very promising in rehabilitating abaca plantations affected by the ABTV disease.

The high yielding and ABTV-resistant hybrids project is an R&D initiative under the PCAARRD's Industry Strategic S&T Plan for Abaca. Specifically, it is expected to contribute in achieving a higher fiber yield from 0.527 mt/ha to 1.2 mt/ha and increased fiber recovery from 1 percent to 1.5 percent by 2020.

The project on abaca production is a collaborative work among UPLB, Visayas State University, University of Southern Mindanao, Bicol University, Western Mindanao State University, University of Southeastern Philippines, Caraga State University, and Catanduanes State University.

Currently, the research team is now mass producing and promoting the use of hybrids in major abaca producing provinces such as Sorsogon, Catanduanes, Leyte, Southern Leyte, Northern Samar, Western Samar, Davao Oriental, Davao del Sur, Surigao del Sur, and Sulu. Once fully commercialized, 1,568 hectares of abaca farms is targeted for rehabilitation out of the project.

By rehabilitating abaca farms with high yielding and virus-resistant hybrids, DOST-PCAARRD and its partners hope to usher more and better opportunities for the local farmers, processors, and other industry stakeholders. Through the adoption of these UPLB hybrids, the government aims to ease the plight of poor abaca farmers and help improve their income and social status.

As competition for leadership in abaca production tightens, the government takes on the challenge of stepping up the game in the global market and keeping pace with other rising abaca producing countries.

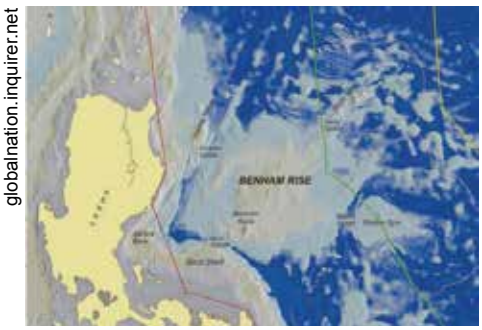
PCAARRD's commitment to Outcome One will be showcased by the Council in its participation to the National Science and Technology Week (NSTW) on July 24-28 at SMX Mall of Asia, Pasay City.

The 2015 NSTW adopts the theme Philippines: A Science Nation Innovating for Global Competitiveness.

PCAARRD, on the other hand, adopts the theme Strategic Industry Program for Agricultural Growth (SIPAG) ni Juan to bolster PCAARRD's commitment to Outcome One which the Council pursues, through its Industry Strategic S&T Plans, among other programs, hence the tagline SIPAG ni Juan. (S&T Media Service)

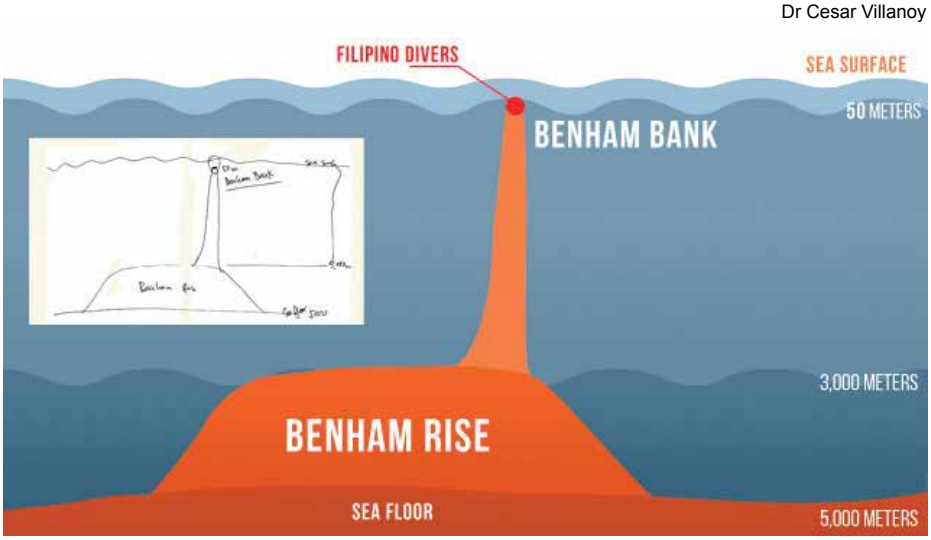
Explore it wise on Benham Rise!

By DR. CESAR L. VILLANOY & MA. ADELA C. CORPUZ
S&T Media Service, *DOST-PCAARRD*



globalnation.inquirer.net

This graphic, based on a sketch by UP's Dr Cesar Villanoy



www.rappler.com

ON APRIL 12, 2012, the Commission on the Limits of the Continental Shelf of the United Nations adopted in full the country's declaration of the Benham Rise as part of the Philippine Extended Continental Shelf. This effectively gives the Philippines sovereignty over the Benham Rise Region which covers a seabed area of 135,506 sq km.

The Philippines' declaration over the Benham Rise has inevitably increased the area of the country's marine bottom habitats. The Benham Bank is the shallowest area of the Rise and within this shallow area emerged the peak of an isolated seamount, one among over 30,000 seamounts found in the world's oceans. Seamount habitats can be biodiversity hotspots because of available substrates for macrophyte and invertebrate recruitment and settlement, abundance of food, and the interaction of dynamic currents (e.g., the Kuroshio) with the supply of nutrients from the deep.

Recognizing the importance of knowing the resources available in this new Philippine territory for future economic benefits, the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development of the Department of Science and Technology (DOST-PCAARRD) funded the program "Exploration, Mapping, and Assessment of Deep Water Areas."

The program seeks to learn the dynamics of the region and to generate benchmark data as basis for the national government to proactively plan and manage its territory. It is being implemented by the UP Marine Science Institute, UP National Institute of Geological Sciences and UPLB – School of Environmental Science and Management.

Filipino scientists conducted the oceanographic exploration and surveys at the bank's shallowest part with a depth of 50 meters on board the research vessel M/V BFAR on May 3-18, 2014. The activity is a collaboration among UP Diliman, UP Los Baños and DA-BFAR. The team was backed-up by researchers, scientists and seasoned dive specialists from the UP Mindanao, UP Baguio, Xavier University, Ateneo de Manila University and from the local diving industry.

This pioneering research project initiated the assessment of the benthic marine biological features and resources of the Benham Bank Seamount, contributing to the efforts of documenting deep-water biodiversity in the Philippines. Knowledge about these features and resources may also be linked to the productivity of the Benham Rise Region where fishing activities were done even before the country was awarded its claim.

Results of the surveys will input to the knowledge/status of the Philippines deep sea biodiversity, resource planning and management. It will benefit the scientific community, government line agencies tasked to manage the resources, and the general public. It will also contribute to the effective management and scientific understanding of this globally significant area.

The exploration of Benham Rise is only one of the many research and development initiatives on aquatic concerns supported by DOST-PCAARRD.

PCAARRD will showcase its leading R&D initiatives during its participation to the National Science and Technology Week (NSTW) on July 24-28 at SMX Mall of Asia, Pasay City.

The 2015 NSTW adopts the theme Philippines: A Science Nation Innovating for Global Competitiveness. PCAARRD, on the other hand, adopts Strategic Industry Program for Agricultural Growth (SIPAG) ni Juan as its theme to bolster PCAARRD's commitment to DOST's Outcome One.

Outcome One seeks to provide science-based know-how and tools that will enable the agricultural sector to raise productivity to world-class standards. PCAARRD pursues its commitment to Outcome One through its Industry Strategic S&T Plans, among other programs, hence the tagline SIPAG ni Juan. (S&T Media Service)





Jar test treatment


Organomineral treated wastewater


Raw wastewater

Organominerals technology helps deodorize Boracay's wastewater

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

BORACAY ISLAND has long been the subject of issues regarding wastewater, drainage systems, and residual solid waste that fill the air with noxious odor. While there are regulations governing waste treatment in the island, the problem persists due to an inadequate treatment system especially with the continuous influx of tourists to the island.

Boracay may have found the answer to this problem through Department of Science and Technology's (DOST)-developed Eco-Sep, an organomineral treatment used in a self-sustaining and portable wastewater treatment system.

Organominerals are mineral products that are formed by interaction of organic matter.

The Eco-Sep is a low-cost and deployable method for immediate installation of domestic wastewater clean-up anywhere in the country. Being enhanced with organominerals makes the Eco-Sep appropriate in disaster-stricken areas. Among others, i*t may be used in condominiums, housing projects, hotels and areas where wastewater treatment is a problem.*

The Eco-Sep was developed by Dr. Merlinda Palencia of Adamson University whose research for the project was funded by DOST's Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD). Initially, Tacloban was the chosen demonstration area for the Eco-Sep following the disastrous effects of Typhoons Yolanda and Ruby. Three Eco-Sep Systems were installed for 522 residents in temporary shelters in Palo, Leyte with 61 latrines and 30 bathing cubicles.

The demonstration showed positive results, prompting Mayor Remedios Petilla of Palo, Leyte to recommend that the Eco-Sep be incorporated in the engineering design for the rehabilitation projects in Leyte.

Inspired by these results, DOST opted to help Boracay solve its wastewater problem.

The DOST team composed of Project Leader Dr. Palencia and staff from DOST-PCIEERD namely, Ninaliza Escorial, Laarni Piloton, and Candy Ilaw, together with the Municipal Environment Office and the local government of Boracay, applied the organomineral treatment in selected Materials Recovery Facilities (MRF) and some hotels within the beach area.

For the past two weeks, the team checked on the number and volume of septic tanks in the selected hotels for the computation of the dosage for the treatment. The team has also collected samples of raw wastewater.

In two facilities in Balabag and Manoc-Manoc in Boracay, the team sprayed organominerals to reduce odor from the heavy loads of garbage in the areas. Spraying was concentrated in biodegradable and some residuals that produce bad odor. According to reports, seven trucks of residual waste is generated in Brgy. Balabag alone.

Like the results yielded in Palo, Leyte, initial results on the use of the Eco-Sep system with organominerals in Boracay showed significant reduction of odor both in the selected hotels and especially in the MRFs where results were almost experienced instantly.

One of the hotels that agreed for the testing said that it spends about P20,000.00 on commercially available chemical spray for the odor. Now it found the organomineral technology as a cheaper substitute.

In the jar test conducted by Dr. Palencia in a pumping station in Boracay, the caretaker reported that after organomineral application, the wastewater isolated for the jar test changed color and eliminated the bad odor. With the positive results shown in the jar test, the organomineral treatment was finally used on-site, resulting in a cleaner wastewater compared with raw wastewater.

Eventually, LGU Technical Operations Officer Glen Sacapano told the DOST team that the LGU is interested in applying the technology in the island to address the septic wastewater problem and to use it for the development of their industries. He suggested to Dr. Palencia to submit a proposal and policy recommendations on the management of septic wastewater using the developed technology.

Scientists' lighter side featured in DOST's online publication

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

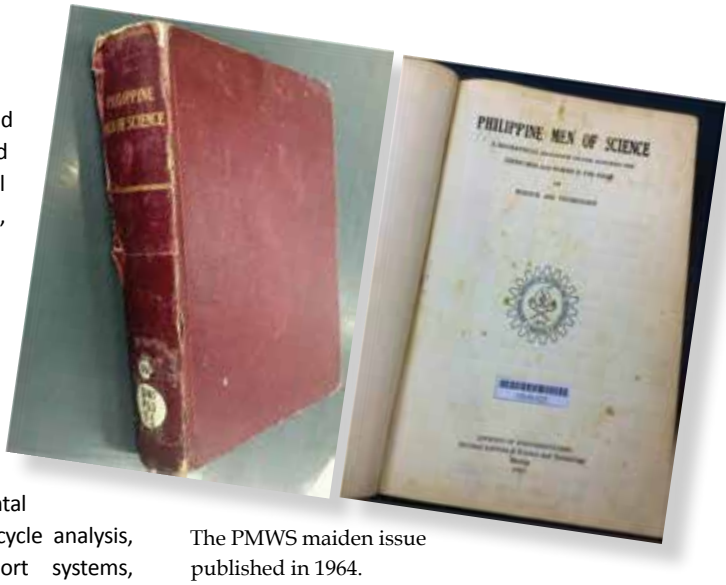
THE DEPARTMENT of Science and Technlogy's Philippine Men and Women of Science (PMWS) – a 51-year-old publication by the Science and Technology Information Institute, introduced a new feature titled "*Heart of a Beautiful Mind"* in its web version *(pmws.dost.gov.ph).*

The publication highlights the individuals behind those groundbreaking inventions and industry-changing innovations and exposes the Filipino scientist by baring their lighter side – from their childhood and student days to their thoughts, hopes, and dreams for future scientists.

Through interviews that delve on their thoughts and the little-known sidelights of their lives, as well as pictures that paint more than images of a brilliant minded individual, *"Heart of a Beautiful Mind"* aims to inspire in young Filipinos especially those aspiring to become scientists themselves, a sense of meaning and responsibility as they carve their niche in the professional world. This way, the reader gets a glimpse of the scientists' less technical persona, thus capturing their more human side while learning what the job of a scientist is really all about.

The column featured ten scientists in 2014 in collaboration with the National Research Council of the Philippines and the Scientific Career System Secretariat of the National Academy of Science and Technology. Featured scientists are Socorro E. Aguja (expert agriculturist specializing in Citriculture and Horticulture), Marina A. Alipon (led the team whose work on a locally available digital wood moisture meter has been recognized here and abroad), Orville L. Bondoc (made vast contributions in the field of animal breeding/ genetics), Arvin C. Diesmos (significantly contributed in the field of wildlife ecology and environmental science), Arsenio B. Ella (awarded for his contributions in developing scientific and sustainable techniques in resin-tapping),

Ramiro P. Escobin (one of the country's experts in wood identification), Erlinda L. Mari (rendered her expertise to environmentally sound projects, such as wastewater management and paper recycling projects), Mildred A. Padilla (specializes in animal welfare, disease prevention, and food safety), Maricar S. Prudente (ecotoxicologist and conducts researches on environmental monitoring of Persistent Organic Pollutants), and Raymond Girard Tan (environmental system modeling life cycle assessment, environmental decision support systems, life cycle analysis, environmental decision support systems, process mass integration/water pinch technology, fuzzy modeling techniques and chemical engineering).



The PMWS maiden issue published in 1964.

DOST-STII made the PMWS website online to celebrate PMWS' golden year in 2014.

The site offers more content and information, such as the complete collection of PMS (Philippine Men of Science, former name of the publication) and PMWS publications' past and current issues, making it a goldmine of information for researchers. The site likewise makes it convenient for the scientists to update their profile data.

Among the profiles currently in the database are members of the National Research Council of the Philippines, Scientific Career System of the Philippines-National Academy of Science and Technology and National Institute of Physics-University of the Philippines and other academic institutions.

PMWS' roster of scientists is being expanded with the constant addition of other science professionals. In line with this, PMWS aims to integrate scientist information from various reputable institutions in the Philippines.

This initial version of the website was uploaded to gather feedback from stakeholders (scientists and students), with the aim of improving the site along the way.

Figure 5. Initial attempt at PMWS website

Local engineered bamboo industry can look forward to better days

By RIZALINA K. ARARAL
S&T Media Service, *DOST-FPRDI*

Engineered bamboo flooring

THE HUMBLE bamboo has gone a long way. From being called "the poor man's timber," it now graces many high-end homes, hotels and offices around the world, as attractive engineered panels, floors, furniture and handicrafts.

The global market for bamboo products amounts to US$12 billion and much of this is for the engineered bamboo sector.

"We are happy to say that the Philippines now has its own engineered bamboo industry," says Dr. Romulo T. Aggangan, director of the Department of Science and Technology-Forest Products Research and Development Institute (DOST-FPRDI). "Although still immature and bugged by various problems, it is also blessed with a lot of strengths, and given enough support from concerned groups, can be expected to grow strong, and in time be able to meet the needs of local clients or even capture a slice of the global market."

According to Dr. Rico J. Cabangon, also of FPRDI, "Engineered bamboo includes a wide range of products made by binding together bamboo veneers, strands, fibers, strips or slats, woven mats or flattened bamboo with a suitable glue to form a composite material designed to meet specific needs. It is often stronger and less prone to warping than equivalent solid woods."

In the Philippines, there are about 10 companies making engineered bamboo products. Most of them are small-scale enterprises producing items on a per order basis. The most common species they use are kawayan tinik (Bambusa blumeana), giant bamboo (Dendrocalamus asper), bolo (Gigantochloa levis), botong (D. latiforus) and bayog (B. merrilliana).

These are not easy days for the young industry. It does not have enough supply of bamboo poles, the quality of poles is low, and the price high. Plus, glues are expensive and producers do not have the means to buy high-capacity machines.

"Fortunately," discloses Dr. Cabangon, "these weaknesses are offset by a lot of plus points. For instance, there is at present a huge national demand for engineered bamboo. Since 2010, it has been mandated by law that 25% of all school desks and furniture in the country's public schools should be made of engineered bamboo."

To meet the projected annual demand of 312,000 school desks and other saleable products such as panels, flooring, decors and high-end furniture, about 10,000 hectares of plantations must be established using the right bamboo species.

"Good thing there are government projects that push for the development of plantations," reports Dr. Cabangon. "These include those of the DENR and the National Greening Program which lists bamboo as a priority reforestation species.

"Likewise, we also have R&D agencies which are studying advanced methods of mass producing bamboo planting materials and checking if some lesser-used species may also be fit as raw materials."

Dr. Cabangon lists the other strengths of the local engineered bamboo industry: availability of cheaper yet effective glues in the market, availability of labor force, as well as several groups, both private and public, which are ready to help the industry in various ways – from standardizing product quality, manpower training, machine design and fabrication, R&D, and financing.

In machine design and fabrication, for instance, FPRDI has developed the bamboo flattening machine and the bamboo veneer lathe specifically for the engineered bamboo producers. "It is important that all the industry's strengths are tapped," he adds, "considering that the world market for engineered bamboo can reach US$20 billion by 2020."

One of the biggest boosts to the sector was the creation in 2010 of the Philippine

Bamboo Industry Development Council thru Executive Order 879. Tasked to provide policy and program directions, it is expected to push for robust and sustainable bamboo enterprises nationwide, with the help of both government and private groups.

"In the end," concludes Aggangan, "the strength of the country's engineered bamboo sector is in people. The policy-makers, researchers, foresters, trainers, machine engineers, product designers, artisans, plantation owners and farmers, and bamboo enthusiasts who see the industry's potential and are willing to give it the necessary push."

To know more about engineered bamboo and other FPRDI technologies, contact FPRDI at (+6349)536-2586/ 536-2360/536-2377. You may also visit FPRDI's booth at the National Science and Technology Week celebration at the SMX Convention Center, Mall of Asia Complex, Pasay City on July 24-28, 2015 for other technologies. Admission is free. For more information, go to www.nstw.dost.gov.ph or like us on Facebook at nstw2015 (S&T Media Service).

The Department of Science and Technology's Hybrid Road Train

Clark Freeport may adopt Road Train

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

CLARK FREEPORT has expressed the possibility of adopting the Hybrid Road Train system of the Department of Science and Technology (DOST) to ferry employees from various locators of the Freeport zone. This was revealed by Clark Freeport representative during the recently held media tour and demo ride at the Clark Freeport Parade Grounds.

Eyed as one of the possible solutions to ease Metro Manila's traffic congestion and public transport woes, the DOST-developed Hybrid Road Train is a 40-meter long system of interlinked and air conditioned coaches. It is estimated to serve 650,000 passengers a day, or 60 passengers per coach for a total of 240 passengers. The train can run at a top speed of 50kph.

Tugade also opened the idea of ferrying passengers from Clark Airport to the Freeport facilities. "I've discussed this with Secretary Montejo and what we want is to have an efficient mass transport system that is RFID (Radio Frequency Identification) compliant and WIFI ready," he explained.

Tugade said the Freeport needs a smaller type of train to fit the needs of the Freeport which has more than 1,000 business locators on its 4,400-hectare land.Also, he is encouraging DOST to roll out the road train inside the Clark Freeport so that similar economic zones may adopt the same public transport system in the future.

Weighing about 10 metric tons in full capacity, the train uses ordinary rubber tires so there is no need for rails. It is likewise equipped with dual braking system for efficient braking. The road train is environment friendly, with the last of the five coaches dedicated to its electric power batteries which are used alternately with its diesel fuel. It is also cost-effective since most of its parts are locally sourced like the coaches which are fabricated locally.

The road train project is part of the three-component projects of DOST's Advanced Transport Program under the Makina Para Sa Bayan Program or MakiBayan.

According to Dr. Rio S. Pagtalunan, chief of the analysis and testing division of DOST's Metals Industry Research and Development Center (DOST-MIRDC), the train system is still the most efficient public mass transportation system. This is why the Science Department is looking at developing an innovative transportation system out of the train system model.

Dr. Pagtalunan assured the public that DOST is regularly performing trial runs to ensure the Hybrid Road Train's road worthiness prior to its rollout.

DOST VII Regional Director Edilberto L. Paradela guests in the local TV show "Hello Cebu, Maayong Buntag Pinoy", kickstarting the Region VII edition of Science Nation Tour: Agham na Ramdam.

DOST Asec. Raymund E. Liboro (middle) leads the ceremonial ribbon cutting for the opening of the Regional Invention Contests and Exhibits for Region VII

DOST Asec. Raymund E. Liboro interviews European Chamber of Commerce of the Philippines (ECCP) Vice President for External Affairs Henry J. Schumacher at the Materials Technology Innovation Center (MATIC) housed at the ECCP office in Banilad, Cebu City. MATIC is a collaboration between ECCP, DOST, and other government agencies and organizations. It was established to support ECCP's materials research and development program for the promotion of creativity and competitiveness in the local design industries through the use of new materials, innovation of indigenous materials, reinvention of designs and utilization of new and efficient technologies.

At Philippine Science High School Central Visayas Campus

Dr. Priscilla F. Kimes, president and CEO of coconut food wrap maker Kimes Foods International, Inc. (KFII), tours Asec. Liboro around the facility. KFII is a SETUP adoptor with markets in the US, Canada, Australia and Europe.

Scholars' Night featured past DOST scholars like PSTC Region VII Provincial Director Tristan Abando who shared his experiences with the current crop of scholars.

Engr. Benjamin Comoda, proprietor of agri-machinery builder Vircap Light Metal Industries in Bohol, receives the Best SETUP Adoptor Award.

The RICE exhibits

Winning Central Visayas inventors to qualify for 2016 national tilt

TUKLAS Award Outstanding Invention: Mammoth Coffee Table, Radica Panels and Planters by Engr. Ramir Bonghanoy

FORTY-SEVEN INVENTIONS by students and professionals vied for awards in six categories to earn a berth in the 2016 National Invention Contests and Exhibits and represent the Central Visayas region to the prestigious competition.

The local competition, called Regional Invention Contests and Exhibits (RICE), is as part of the activities under Science Nation Tour: Agham na Ramdam in Cebu City, the DOST nationwide roadshow's fifth leg held from June 18-20, 2015 at Cebu City Marriott Hotel.

After three days of exhibition dubbed as Technology and Innovation Expo, the winners were announced in a ceremony that capped the Region VII edition of Science Nation Tour.

They are:

SIBOL Award Outstanding Student Creative Research for High School: Human Locomotion Vibrational Energy (VIBRA-E) Harvester Prototype for Powering Light-Emitting Diode by Peter Gabriel Muaña and Reisha Claffel Ferrarren of Philippine Science High School - Central Visayas Campus

SIBOL Award Outstanding Student Creative Research for College: Remote Solar Powered Rainfall Monitoring and Alarm System by Nick Jonathan Gandionco, et al of Cebu Institute of Technology- University

LIKHA Award Outstanding Creative Research: Camomot Cylinderless Pneumatic Press by Engr. Noro Camomot

Outstanding Industrial Design: Theo Cocktail Table by Vito Angelo Selma

TUKLAS Award Outstanding Invention: Mammoth Coffee Table, Radica Panels and Planters by Engr. Ramir Bonghanoy

Outstanding Utility Model: Compact Diesel Brewer by Ralph Cabrera and Romeo Saison

Among the criteria for judging were originality, creativity/methodology, degree of inventiveness and development, commercial viability, usefulness, aesthetics, uniqueness, presentation and demonstration.

"Inventions are considered vital and necessary in accelerating and sustaining our country's economic growth," said Edgar I. Garcia, director of DOST's Technology Application and Promotion Institute (TAPI) during the awarding ceremony. "The active participation of the sectors of technology producers: the researchers, innovators and inventors, are part of the important segments of the nation's progress. We, at the DOST-TAPI continue to give importance to the role they play as our researchers, innovators and inventors."

Meanwhile, DOST VII Regional Director Edilberto L. Paradela urged the participants to keep on inventing products. "We encourage you to continue your inventions and innovations even without the Regional Invention Contests and Exhibits. Try to look at the needs of the community and being an educator, inventor and researchers, maybe we can work together in addressing some problems that our community is facing today," he said. *(S&T Media Service)*

SIBOL Award Outstanding Student Creative Research for High School: Human Locomotion Vibrational Energy (VIBRA-E) Harvester Prototype for Powering Light-Emitting Diode by Peter Gabriel Muaña and Reisha Claffel Ferrarren of Philippine Science High School - Central Visayas Campus

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Outstanding Industrial Design: Theo Cocktail Table by Vito Angelo Selma 2743

LIKHA Award Outstanding Creative Research: Camomot Cylinderless Pneumatic Press by Engr. Noro Camomot

Outstanding Utility Model: Compact Diesel Brewer by Ralph Cabrera and Romeo Saison

Marinduqueños warmly welcome the delegation of the Department of Science and Technology led by Hon. Mario G. Montejo (in blue) and MIMAROPA government officials led by Regional Development Council Chairman and Romblon Governor Eduardo C. Firmalo (in white) of during the Agham na Ramdam Science Nation Tour held in Marinduque last June 3-5.

The hydraulic pipe bender acquired through DOST SETUP has helped produce uniform and smoother bended steel pipes which are used to produce sidecars like the one shown above. In the photo are Hon. Mario G. Montejo and Rhenn Welding Shop owner Gener M. Selda.

Hon. Mario G. Montejo meets with DOST Scholars

The hydraulic pipe bender in action

Hon. Mario G. Montejo discusses DOST Plans and Programs in the recently held 51st MIMAROPA RDC Full Council Meeting which coincides with the Agham na Ramdam Science Nation Tour.

Hon. Mario G. Montejo during the Regional Development Council 51st Meeting held in Bellaroca, Marinduque together with Marinduque Governor Carmencita O. Reyes and Romblon Governor Eduardo C. Firmalo.

DOST helps keep candle livelihood project burning

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

THE FUTURE burns bright for a church-based organization in Sta. Cruz, Marinduque as it expands the operation of its candle production livelihood project with the help of the Department of Science and Technology (DOST).

The Batayang Pamayanang Kristiyano (BKP) Holy Cross Parish Chapter started candle production in March 2011. Then, they were producing an average of 510 (both votive and standing) pieces of candles from 150 kgs of paraffin wax per month which were supplied to the local parish. The group was earning an average gross income of P 10,000 per month.

Realizing that there is still untapped market for their products in the province, BKP thought of improving the candle production. It was then that they sought the assistance of the Provincial Science and Technology Center of Marinduque to scale up their production through mechanization.

The group was able to acquire a votive candle molding machine in 2013 through a Grants-in-Aid fund from DOST-MIMAROPA.

The machine has helped increase production from 40-60 votive candles to 216 candles per day which translates to 4,752 votive candles per month. The monthly gross income of the group is now pegged at around P 18,500.

Furthermore, the BKP-Holy Cross Parish Chapter is now able to supply the candle needs of all the 14 parishes in the province.

Bishop Marcelino Antonio Maralit Jr., the newly installed bishop of the Diocese of Boac is very appreciative of DOST's initiatives in promoting science and technology livelihood activities. "Napakalaki ng nagagawa ng DOST (DOST has been a big help)", he said, adding that he sees the agency as one of the frontliners in serving the poor in the country.

DOST Secretary Mario G. Montejo visits the production site for candle making livelihood project of BKP-Holy Cross Parish. Shown in photo is the votive candle molding machine acquired by the group through DOST-MIMAROPA Grant-in-Aid fund.

Finished products (Photos by Gerardo G. Palad)

San Andreas

By GODLY ANN T. CAMITAN
S&T Media Service, *DOST-STII*

THE FORMER wrestling star Dwayne Johnson a.k.a. The Rock, hits the big screen as he takes on an action-filled role in “San Andreas” - a terrifying disaster movie about an earthquake in California. The film is directed by Brad Peyton.

Raymond "Ray J" Gaines (Johnson) is a good and lovable father but his field of work as a Los Angeles Fire Department Air Rescue pilot is too demanding for him to maintain quality time with his family. His marriage is already in the midst of a divorce. But despite that, he still manages to have good rapport with his wife and daughter Blake.

The terrible disaster starts when Dr. Hayes and his co-worker Dr. Park conduct a breakthrough study at Hoover Dam about the possible earthquakes that might occur in their city. All of a sudden, an unknown fault ruptures. That’s when the movie begins to show different disastrous scenes: massive destruction of buildings, roads, houses; people being crushed by floods; countless dead bodies.

The sequences just keep on repeating, allowing the story to suddenly become extremely predictable due to the unbelievable endurance of the main characters in the face of tragedy, especially Raymond Gaines.

Moreover, according to American geological seismologist Lucy Jones, a magnitude 9.6 and 9.1 earthquake cannot occur along the San Andreas Fault. A magnitude 8.3 tremor is the limit, she added.

Jones likewise commented on the enormous quake-caused tsunami in the movie. Again, this is not possible, Jones emphasized, simply because the San Andreas Fault Line is on land. An oceanic quake is what causes a tsunami.

There is also slight criticism regarding the prediction of earthquakes because these can't really be predicted. According to the website “how stuff work”,’ seismologists base quake predictions on an area's geological makeup and history of seismic activities.

But on the other hand, the movie was also able to push a message of preparedness and what exactly do people need to do when an earthquake occurs.

Obviously, the movie prefers to show rather than tell, with its impressive special effects that make moviegoers crave for more.

But films like this, especially if the plot tackles a natural catastrophe, should be more careful especially in delivering the details of a science-related topic such as earthquakes. Filmmakers should take note that too much exaggeration can lead to a misconception.

S&T Post welcomes contributions for our Movie Review section. Please email your contributions to eadeleon.dost@gmail.com. Reviews should tackle the book’s science and technology component, subject to the approval of the Executive Editor. For inquiries, call 837-2191 local 107 and look for Gigi de Leon.

"What the Dog Saw" by Malcolm Gladwell

By ALAN MAURO MARFAL
S&T Media Service, *DOST-STII*

A DISASTER is a painful event which we cannot prevent from happening at least once in our lives. Either it is caused by natural calamities or human errors; it seems each of us is destined to experience devastation which, eventually, will mold us into better individuals.

Malcolm Gladwell raises this idea as he shares the story of a tragedy that happened almost three decades ago in one of the chapters of the book "What the Dog Saw," a collection of real events and other non-fiction writeups featuring the "you must fail to succeed" kind of theme.

In the chapter "Blowup," Gladwell revives the story of the "Challenger" disaster, whose aftermath is essential in all aspects of life.

On January 28, 1986, the "Challenger," a space shuttle orbiter by the National Aeronautics and Space Administration (NASA) blew up over Southern California merely 73 seconds into its tenth mission, killing all seven crew members.

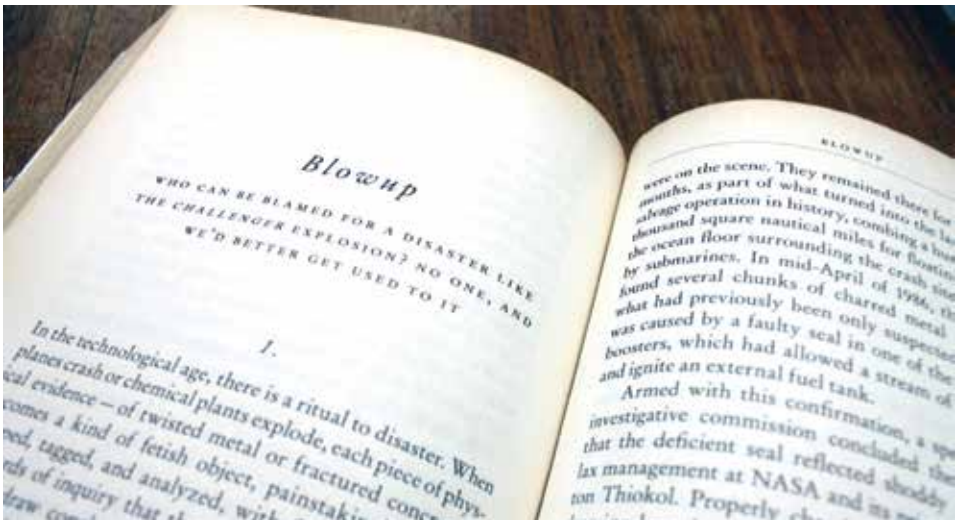
Immediately, a fact-finding committee was formed to investigate the said incident. The results of the investigation centered on technical failures as expected, as well as the lack of consultation with regard to the construction of the space shuttle.

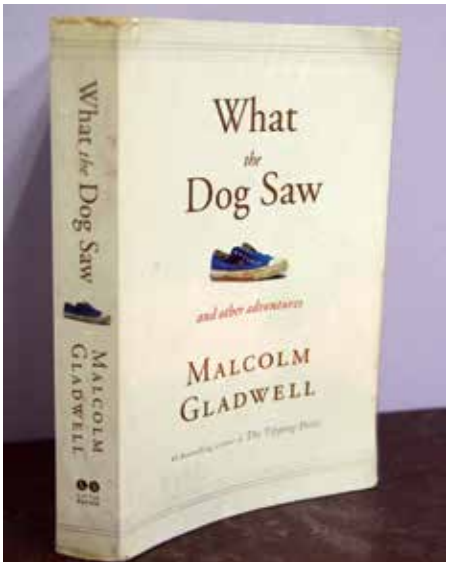
The author provides specific details and events that led to the "Challenger" explosion. He uses background information in order to explain to the readers why and how the explosion happened. He also cites similar situations that can be compared to the said explosion, so that the readers can relate and, perhaps make their own standpoint. The technical terms were also simplified, making it easier for the readers to understand the article.

On the other hand, Gladwell also covers the other side of the story. When all the findings pointed to human error as the cause of the explosion, several sociologists including Boston College sociologist Diane Vaughan, did not agree fully with the popular opinion. According to her, there are certain problems and failures found in the normal functioning of complex systems which could ultimately lead to tragedy which no amount of preparation and knowledge would stop from happening.

All of the data and theories gathered in the aftermath of the tragedy have major contributions to how NASA runs its system today. The adjustments and developments on technical procedures and manpower skills could be attributed to the lesson learned from the Challenger tragedy.

The author presents different arguments and with the way he organizes these in the said chapter; the readers would be able to have a better understanding of how science and history have different roles in an individual's improvement. Science could initiate the change but history could sustain it. Scientific data could provide the knowledge to sharpen our decision-making but historical facts could illustrate to us the need to improve certain systems in our community.





With the story of the Challenger, the author encourages the readers to look at the bigger picture. The lesson learned from the said disaster obviously could also be applicable in different situations and aspects of our life.

One such situation is how Filipinos prepare for natural calamities such as typhoons and earthquakes. Despite having enough knowledge and resources in place during preparation, a significant number of casualties in affected areas remain in some cases. Nevertheless, experiencing natural calamities like typhoons Sendong, Pablo, and Yolanda, among others, is supposed to be a prerequisite to better disaster preparedness management as there are factors that could only be discovered in those kinds of situations which will lead to better decision making the next time disaster strikes.

"Who can be blamed for a disaster like the Challenger explosion? No one and we'd better get used to it." Thais statement is what really comprises the whole idea of this chapter and what really represents our life. Adversity and setbacks will always be there and we cannot escape from these. But learning from an error or a tragedy and learning how to apply it would really help one weather those storms.

S&T Post welcomes contributions for our Book Review section. Please email your contributions to eadeleon.dost@gmail.com. Reviews should tackle the book's science and technology component, subject to the approval of the Executive Editor. For inquiries, call 837-2191 local 107 and look for Gigi de Leon.

Chinese scientists use zoos, animal parks to predict quakes

THE BELIEF that animals can help in seismic prediction has been around for too long. In fact, they are even believed to be as effective as modern technologies used by seismologists.

And because of this, Chinese seismologists in Nanjing, Jiangsu province, China have officially established seven observation centers at zoos and animal parks within the region to use animals in forecasting earthquakes. These animals will be closely monitored for changes in behavior which might be a sign of a forthcoming seismic activity.

According to Nanjing Seismological Bureau Chief of Scientific Monitoring Zhao Bing, animals sometimes become anxious before an earthquake but the abrupt strangeness of one animal does not necessarily mean trouble. Hence, groups of animals will be observed properly to be able to cross check their behavior.

One of these observation centers is Yuhuatai District's ecological park with more than 2,000 chickens, 200 pigs and 2 sq. km. of fish ponds.

A study conducted by scientists in 2011 shows that animals may be able to detect chemical changes in groundwater which initiate an earthquake. Most records dated years ago assert that animals displayed abnormal behavior before a major earthquake.

For instance, in L'Aquila, Italy, a colony of toads abandoned their pond days before it was ravaged by a 6.3 magnitude quake. Scientists also noticed changes in some wild animals' behavior tin Peru a few weeks before a 7.0 magnitude earthquake hit in 2011.

As early as 1968, China started an experimental station for earthquake prediction in Hsingtai province using biological observations, while they began studying

unusual animal behavior. By December 1974, the Chinese successfully predicted the February 4, 1975 magnitude 7.3 earthquake that walloped Haicheng county in the province of Liaoning using observation of unusual behavior among snakes, dogs, horses, cows, and pigs in the area.

Sources:

http://rense.com/general61/use.htm

http://www.bbc.com/news/blogs-news-from-elsewhere-33362592

WANTED: Agri workers with STEM background

AROUND 9.6 billion people are expected to populate the planet by the year 2050 according to the United Nations in 2013.

With a population that big, coupled with the scant resources available for producing more high quality foods for a growing population and continuous progress of developing countries, there is a need to double agricultural production worldwide to be able to feed everyone.

And despite all the modernization taking place, including heaps of innovation and alternatives in food creation, the agriculture sector will perpetually play a vital role in feeding millions of stomachs.

According to the US Department of Agriculture, about 58,000 high-skill agriculture-related jobs are expected to open up between 2015 and 2020 to address this dilemma. Candidates for these jobs, which will normally be in the food, renewable natural resources, and environmental industries, will need to have at least a bachelor's degree and more.

To be able to maintain and eventually amplify agricultural output, there is a need for skilled workers, aside from actual farmers, as modern farming involves a combination of technological know-how and proper land-management strategies to boost productivity.

"Improved land management strategies are very important – that includes no-till, precision agriculture and integrated soil fertility management," Claudia Ringler, deputy director of the International Food Policy Research Institute's environment and production technology division, stated. "You need a mix of technologies and approaches."

Apparently, 27 percent of the imminent agricultural job openings will require Science, Technology, Engineering and Mathematics (STEM) education from its workforce.

Engineers will construct more farm machineries. Chemistry, ecology and mathematics will help in improving plant yields and increasing food productivity. Job opportunities for food scientists, biological and irrigation engineers, and water and soil scientists are all expected to escalate.

About 46 percent of these jobs are expected to be integrated with management and business sectors. Hence, economists, analysts, marketing and e-commerce specialists and sales representatives will likewise be in demand.

According to one report, "Increasing computerization in the nation's food production and distribution system underscores the need for computer programming and support specialists for precision agriculture applications."

"Not only will those who study agriculture be likely to get well-paying jobs upon graduation, they will also have the satisfaction of working in a field that addresses some of the world's most pressing challenges," said US Agriculture Secretary Tom Vilsack.

Sources:

http://www.usnews.com/news/articles/2015/05/11/science-technology-engineering-and-math-skills-a-necessity-in-27-percent-of-new-agriculture-jobs

http://www.refractionmedia.com.au/does-industry-have-the-solution-to-the-stem-skills-shortage/

Participants of the APEC's 5TH Meeting of the Policy Partnership on Science, Technology and Innovation held in Boracay Island, Malay, Aklan last May 2015.

Turn over of books for the DOST-STII's Building Back Libraries program | From left is Prof. Allan Loreto of Visayas State University; Dr. Eduardo Campoto, president of Eastern Samar State University; Dr. Eusebio Pacolor, president of Samar State University; and Engr. Edgardo M. Esperancilla, director of DOST-VIII. **(Ramil Uy, S&T Media Service, DOST-VIII)**

PSciJourn Oath taking: Philippine Science Journalists Association, (PSciJourn) Inc. officers oath-taking administered by Sen. Ralph Recto (middle). From L-R: Linda Bohol (PRO), Estrella Gallardo (Secretary), Dr. Aristotle Carandang (Vice President), Angelo Palmones (President), Izel Gonzales (Treasurer), Melly Tenorio (Auditor), Ruby Cristobal (Executive Director).

HAND PAINTING INNOVATION IN DOST ROADSHOW. A young artist demonstrates how the Gx3 Garneth: The Original Hand Painting Multiplier Device operates during the Technology and Innovation Expo of the Department of Science and Technology's (DOST) Science Nation Tour Central Visayas leg in Cebu City. An entry to the 2015 Central Visayas Regional Invention Contest and Exhibit, the device enables the artist to paint or draw multiple original figures simultaneously,making the technology ideal for businesses engaged in the creation of original handpainted products.It consists of multiple brush holders which help the artist to control his strokes so that they have identical movements. Gx3 Garneth was invented by Engr. Nono S. Camomot of Consolacion, Cebu. **(Text by Espie Angelica A. de Leon / Photo by Henry A. de Leon, S&T Media Service, DOST-STII)**

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National Science & Technology Week

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Athena Michael
Chair, Reception Committee
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